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Smoking and Smoking Cessation in those with Mental Health Difficulties in Ireland

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Smoking and Smoking Cessation in those with Mental Health Difficulties in Ireland

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A thesis submitted to the School of Postgraduate Studies, Royal College of Surgeons in Ireland, in fulfilment of the degree of Doctor of Philosophy

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Dr Judith D Strawbridge

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February 2018
Candidate Thesis Declaration

I declare that this thesis, which I submit to RCSI for examination in consideration of the award of a higher degree of Doctor of Philosophy is my own personal effort. Where any of the content presented is the result of input or data from a related collaborative research programme this is duly acknowledged in the text such that it is possible to ascertain how much of the work is my own. I have not already obtained a degree in RCSI or elsewhere on the basis of this work. Furthermore, I took reasonable care to ensure that the work is original, and, to the best of my knowledge, does not breach copyright law, and has not been taken from other sources except where such work has been cited and acknowledged within the text.

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List of Abbreviations

- **CES-D**: The Center for Epidemiologic Studies Depression Scale
- **CHD**: Coronary Heart Disease
- **CI**: Confidence Interval
- **CVD**: Cardiovascular Disease
- **GP**: General Practitioner
- **HADS-A**: Hospital Anxiety and Depression Scale - Anxiety subscale
- **HCP**: Healthcare Professional
- **HSE**: Health Services Executive
- **ICD-10**: International Statistical Classification of Diseases and Related Health Problems by the World Health Organisation - 10th Revision
- **IPAQ**: International Physical Activity Questionnaire
- **MHDs**: Mental Health Difficulties
- **MH**: Mental Health
- **MRC**: Medical Research Council
- **OR**: Odds Ratio
- **RCT**: Randomised Controlled Trial
- **RE-AIM**: Evaluation framework (Reach, Effectiveness, Adoption, Implementation and Maintenance domains)
- **RRR**: Relative Risk Ratio
- **SD**: Standard Deviation
- **SMI**: Serious/Severe Mental Illness
- **SPUH**: St Patrick’s University Hospital
- **TILDA**: The Irish Longitudinal Study on Ageing
- **UK**: United Kingdom
- **US**: United States
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Thesis Summary

**Background:** There is a higher prevalence of smoking among individuals with mental health difficulties (MHDs) internationally. This thesis aimed to establish impact of smoking on those with MHDs in Ireland in terms of smoking-related diseases and to evaluate current cessation care in both secondary and community mental health (MH) settings, using three interrelated studies guided by the Medical Research Council framework.

**Methods:** Study 1, a cross-sectional retrospective secondary analysis (n=8,175), established the prevalence of smoking and smoking-related disease in a nationally representative sample of community living adults aged 50 and over. Individuals with evidence of MHDs were compared to their general population counterparts through adjusted regression analyses, including mediation and moderation assessments. In study 2 cessation care in MH settings was explored. A survey of inpatients (n=246) with 3-month follow-up established current levels of care and quit rates in a private inpatient setting. Finally, study 3 involved a qualitative process evaluation of the recent implementation of a community-based smoking cessation service in public adult MH centres, involving interviews with 20 service users and 4 focus groups with 17 facilitators.

**Results:** Older adults with MHDs had increased prevalence of smoking ((25-39%) RRRs 1.84 [1.50 to 2.26] to 4.31 [2.47 to 7.53]) and of smoking-related disease ((53-60%) ORs 1.24 [1.01 to 1.51] to 1.62 [1.00 to 2.62]). Very few psychiatric inpatients report cessation advice from any HCP in the past year (13%), but numbers wanting to quit (75%) and 3-month quit rates (17%) are similar to non-psychiatric inpatient samples. Key enablers and barriers emerged at facilitator and participant levels in community MH centres, which also have implications for other settings.

**Conclusions:** Individuals with MHDs are disproportionately impacted by smoking yet remain undertreated. While cessation care is improving in community settings, a joined-up approach across all sectors of the health service is needed.
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Publications, Presentations and Awards Arising from this Thesis

Publications

Presentations
Burns A, Strawbridge JD, Clancy L, Doyle, F. Inspire Session on Health Inequities: Smoking and Smoking Cessation Care in Individuals with Mental Health Difficulties in Ireland. 47th Annual Psychological Society of Ireland Conference; 2017; Limerick; Nov 10. Oral presentation.

Burns A, Lucey JV, Strawbridge JD, Clancy L, Doyle, F. Provision of Smoking Cessation Care in a Psychiatric Setting in Ireland. European Conference on Tobacco or Health; 2017; Porto; Mar 22. Oral presentation.


Burns A, Webb M, HSE-EVE, Stynes G, O’Brien T, Strawbridge JD, Clancy L, Doyle F. “Beyond the Blue Line”- Preliminary Findings on Women’s perspective on implementing the HSE Tobacco Free Campus policy in adult community mental health day services. 7th World Congress on Women’s Mental Health; 2017; Dublin, Mar 7. Poster presentation.
Burns A, Webb M, HSE-EVE, Stynes G, O’Brien T, Strawbridge JD, Clancy L, Doyle F. Preliminary Results from a Process Evaluation of HSE Tobacco Free Campus policy and a Low Literacy Smoking Cessation programme in adult community mental health day services. 14th Annual Psychology, Health & Medicine Conference; 2017; Dublin, Mar 3. **Poster presentation.**


Burns A, Strawbridge JD, Clancy L, Doyle, F. Exploring smoking, mental health and smoking-related disease in older adults. UK Nicotine & Smoking Cessation Conference; 2016; London; June 9-10th. **Oral presentation.**


Burns A, Clancy L, Strawbridge JD, Doyle F. Exploring smoking, mental health and smoking-related disease in older adults. Research Day; 2016; Royal College of Surgeons in Ireland, Dublin; Feb 25. **Poster presentation.**

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Awards

Royal Academy of Medicine in Ireland Award for best paper in Epidemiology/Public Health 2017 [https://www.rami.ie/event/rami-research-awards-wednesday-29th-nov-2017/](https://www.rami.ie/event/rami-research-awards-wednesday-29th-nov-2017/).

Chapter 1 Introduction to the Thesis

1.1 Introduction

The aims of this thesis are threefold: to explore the impact of smoking on individuals with mental health difficulties (MHDs)\(^1\) in Ireland in terms of smoking-related comorbidities; to assess the quality of cessation support currently provided in a psychiatric setting; and to evaluate the implementation of smoke free policy and cessation support in community mental health services. Each of these aims is addressed in a separate study. Chapter 1 briefly describes the background to this thesis, introduces the aims and specific objectives for each component and briefly discusses the relevance of this thesis in relation to population health and health services research in Ireland.

1.2 Background

1.2.1 Smoking and Smoking-related Diseases

Over 60 years since Doll and Hill provided the first evidence of a causal link between smoking and fatal lung cancer (1), smoking remains the leading global cause of preventable death, killing approximately six million people and causing more than half a trillion dollars of economic damage per year (2).

Harming almost every organ of the body, smoking tobacco has been causally linked to chronic diseases including coronary heart disease, chronic obstructive pulmonary disease, diabetes, tuberculosis, numerous cancers and events such as stroke or cerebrovascular accident. Figure 1.1 overleaf illustrates the list of cancers and chronic diseases which have been causally linked to smoking to date according to the US Surgeon General (3).

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\(^1\) Nomenclature note: The term ‘mental health difficulties’ will be used throughout the thesis unless referring to others’ findings.
Figure 1. Cancers and Chronic Diseases causally linked to smoking

(Source: Adapted from a figure developed by the Centers for Disease Control and Prevention and first published in the 2014 Surgeon General’s Report: The Health Consequences of Smoking—50 Years of Progress (p. 4) (3)

Note: Each condition presented in red text is a new disease that was causally linked to smoking in this report.

1.2.2 Mental Health Difficulties in Ireland and Internationally

Mental and behavioural disorders are common and affect more than 25% of all people at some time during their lives (4). A 2008 report indicated that 389,258 people in the Republic of Ireland are experiencing mild to severe mental health problems at any given point in time. This figure, which equates to 12% of the adult population, is based on GHQ12 scores (a shortened version of the General Health Questionnaire (5), widely used to assess psychological distress in community samples) as well as censuses of inpatients and high support community residents conducted in 2006 (6), and is similar to international estimates, from the World Health Organisation, of 10% of the adult population experiencing a mental or behavioural problem at any given time (4).
In relation to older adults, the WHO report approximately 15% of adults aged 60 and over suffer from a mental disorder (7), while in the US the prevalence of any past-year mood disorder, anxiety disorder and substance use disorder among those aged 55 and over is 6.8%, 11.4% and 3.8% respectively with 14.5% meeting criteria for a personality disorder (8).

1.2.3 Smoking and Mental Health Difficulties

**Current General Population Smoking Prevalence in Ireland and Internationally**

In 2015 worldwide it was estimated that 22.5% of adults were smoking tobacco products (9). In relation to older adults, European data, representing 17 countries, has revealed a current smoking prevalence of 11.5% among those aged 65 and older (10). Among the Irish general population (in those aged 15 years and older) according to the latest figures smoking prevalence has fallen to an all-time low of 17.6% with rates of 18.4% and 8.3% seen in those aged 55-64 and 65 and over respectively (11). The prevalence in Ireland tends to be similar, but slightly higher, to that seen in the UK which saw a prevalence of 16.1% (in those aged 16 and over) in 2016 (12) and the USA where 15.1% (of adults aged 18 and over) were current smokers in 2015 (13). However, these overall prevalence figures mask significant heterogeneity among subgroups, such as those with lower socioeconomic status or those with MHDs.

**Smoking Prevalence among those with Mental Health Difficulties**

Smoking is around twice as common among people with mental disorders (7, 14), and more so in those with more severe mental health problems (14, 15). According to international research, prevalence rates of 40-50% have been found among people with depressive and anxiety disorders while patients with schizophrenia display rates as high as 70% (16).

Precise data on the prevalence of smoking in those with mental illness in Ireland is lacking, but the association between negative mental health and smoking has also been demonstrated here. For example, a nationally representative survey, of adults living in private households demonstrated that in Ireland individuals who smoke were 2-3 times more likely to report psychological distress or to be assessed as having a generalised anxiety disorder (17).
Globally, the prevalence of daily tobacco smoking has decreased by an estimated 25% since 1980 (18). A decline has also been observed in Ireland where prevalence has been reducing over time with general population prevalence in Ireland decreasing by 10.2% since the implementation of a ban on smoking in the workplace in 2004 (19). Those with MHDs have not however experienced the same decreases in smoking rates as the general population. In the UK for instance, while general population prevalence is known to have reduced significantly in the last two decades among those with a mental health condition smoking rates appeared to remain stable at 40% (20). Similarly in the US, in spite of steady general population declines, smoking rates remain high among those with mental illness (15, 21-23).

It seems that while recent public health efforts and tobacco control strategies have successfully decreased smoking in the general population, they have had little impact among those with mental health conditions (15, 20). Factors likely playing a role in this discrepancy include inadequate and less frequent cessation support (24-27) as discussed below, Section 1.2.6) as well as the tendency to have smoke-free policy exemptions in psychiatric settings (21, 28-31). For instance, the above-mentioned 2004 Irish smoking ban all workplaces including educational facilities, public transport, restaurants, bars, entertainment venues and hospitals (32) excluded hotels, prisons, nursing homes and psychiatric units (30, 32), which were all deemed places of residence (33). All in all, given the apparent immunity to public health campaigns, it appears a more targeted approach in relation to smoking in those with MHDs is needed in order to make an impact among this extremely vulnerable population (15, 20).

1.2.4 Impact of Smoking on Physical Health of those with Mental Illness

Given the many harmful effects of smoking (3) and its increased prevalence among those with MHDs (7, 14-16), the well-established association between mental illness and poor physical health (34) is not surprising.

According to a recent meta-analysis of 203 studies across 29 countries and six continents, the annual risk of death for those with mental disorders is more than twice that of the general population and people with serious mental illness die on average 10 years younger (median based on 24 studies) than the general population (35). The greatest
cause of this excess mortality in people with severe mental disorders is not suicide, but rather the high proportion of chronic health conditions or preventable physical diseases they experience (35-37). In a study of public mental health clients in eight states in the US, Colton et al. found the majority of mental health clients died of natural causes similar to the leading causes of death nationwide. These included heart disease, cancer, cerebrovascular and respiratory and lung diseases (38). Cardiovascular disease itself is the most common cause of death overall in individuals with serious or severe mental illness (39, 40).

In the general population, life expectancy for smokers is reduced by at least ten years (3). However, people who have mental illness and are smokers are reported to be dying on average 25 years prematurely in the US (41), with comparable estimates of life years lost reported in Australia, Canada and New Zealand (41, 42). A recent cohort study of 328,110 adults in the US showed current smoking doubled the risk of death among those with serious psychological distress, and overall life expectancy was reduced by 14.9 years in smokers who had serious psychological distress compared to a reduction of just 5.3 years in non-smokers with serious psychological distress (43). This suggests that smoking may account for up to two thirds of the difference in life expectancy seen in those with serious mental illness (43).

Beyond mortality, research has also noted the increased rate of physical comorbidities in those with mental illness during their life course. For instance, serious or severe mental illness including schizophrenia is associated with impaired lung function and increased risk of pneumonia, chronic obstructive pulmonary disease, chronic bronchitis and emphysema (44, 45). Also, Sokal et al. report that in comparison to the general population, adults receiving outpatient psychiatric care are more likely to have comorbid medical illnesses and the odds of diabetes, lung diseases and liver problems in particular are significantly higher (46).

All of these physical illnesses, have, as previously described, been causally linked to smoking (3), giving tobacco its status as the leading preventable cause of death among individuals with mental illness and the single largest contributor to the premature mortality seen in this group (14, 20). In the US, tobacco is estimated to account for
200,000 deaths annually among individuals with mental illness (41). The UK meanwhile report that smoking-related disease among those with mental health conditions cost the Health Service an estimated £719 million in 2009/2010 (20).

However, Irish data in relation to the health impact of smoking on those with MHDs remains lacking and at the initiation of this thesis no population-level study had attempted to assess the impact of smoking on the physical health of individuals in Ireland with MHDs. The present study aimed to address this gap.

1.2.5 Smoking Cessation
According to a recent HIQA report, the average quit rate among control groups in RCTs is 7.8% 12 months later (47). The treatment of tobacco dependence has been established as a clinically effective and highly cost-effective intervention (48). Successfully quitting smoking has been shown to result in an increase in life expectancy of up to 10 years if it occurs early enough (49) and Reid et al. have argued that as a preventive strategy the importance of smoking cessation is beyond comparison (50).

1.2.6 Smoking Cessation in Mental Illness
While smoking prevalences are higher among those with mental illness (7, 14), there is now some good evidence available indicating that they are capable of quitting (51, 52). Furthermore, although in general quit rates in those with mental illnesses are lower than those in general population, rates as high as 38% have been achieved in those with a history of major depression (7) while quit rates of between 10% and 30% have been achieved in those with schizophrenia (53, 54). Hall et al. found that a stepped-care intervention tailored to depressed smokers' readiness to quit resulted in a 25% abstinence rate at 18-month follow-up (55) which mirrored that found in general population unmotivated smokers with use of similar stage-based interventions (56). Treatments that work in the general population have also been shown to work in those with severe mental illness and according to one review are approximately equally effective (52).

Further to the well-established physical benefits of quitting smoking (48-50), evidence suggests that treating patients’ smoking does not harm their mental health recovery (57, 58) and may even enhance it (59, 60). A systematic review on smoking cessation in severe
mental illness found that treating tobacco dependence does not worsen mental state in patients with stable psychiatric conditions (52) and in one RCT, which achieved a 20% quit rate, hospital readmissions were significantly lower in the smoking cessation treatment group, potentially demonstrating significant cost savings for such interventions (59). Moreover, in the UK, a recent study conducted on tailored tobacco dependence support for mental health patients in inpatient and community services found that there was a clear demand from patients themselves for such a service (61).

A systematic review of 26 studies has also shown that cessation is associated with reduced depression, anxiety and stress and improved positive mood and quality of life in those with and without psychiatric disorders (60). Furthermore effect sizes were equal to or greater than those of antidepressant treatment for mood and anxiety disorders (60), indicating cessation is as effective as medication in terms of improving mood.

In spite of this evidence, cessation care provision unfortunately remains poor in health settings in Ireland (27, 62, 63). Just 38% of smokers in the general population report being advised to quit during a visit to their GP (63) and a survey conducted at a general hospital found just 61% of hospitalised patients were asked for their smoking status, while only 44% of smokers recalled receiving cessation advice (62). However, no such similar data is available for psychiatric settings.

In Ireland, tobacco dependence is undertreated in general, but especially among those with mental health issues. Psychiatric hospitals were exempted from the smoke-free regulations (30), while psychiatric facilities rank among the lowest in terms of delivering cessation services (27). A nationwide survey of smoking cessation service providers has revealed the scope and structure of cessation services in psychiatric and other settings (27), but to date patients have not been surveyed in a psychiatric setting in Ireland in relation to smoking cessation services. Data on the degree of cessation care provision therefore remains limited. From a Health Services Research perspective there is a clear need to ascertain the current quality of care for cessation support. A survey of patients in these settings will help to clarify the scope of the problem here and may highlight the need for improved services in this area.
1.2.7 Implementation of Smoking Cessation Services for those with Mental Health Difficulties

As yet little is known about the experiences of people with mental illness in smoking cessation interventions, especially in the case of those with more severe mental illness (64). There have been calls for further research on the motivations for smoking and experiences with smoking cessation among adults with serious mental illness (SMI), including investigations into smoking cessation programmes designed for the general population or for adults with SMI (65). Interviews with staff are also an important component in exploring the implementation of a curriculum (54, 66, 67), and when combined with participant data regarding their experiences with a programme the data generated is argued to be particularly valuable (54). In 2016 the Irish health service (Health Service Executive) commenced implementation of a smoke-free policy and smoking cessation programme in adult community mental health services. The present study aimed to explore the implementation of this programme from both service user and staff perspectives, thus broadening knowledge on experiences of smoking cessation programmes in these settings. In addition to contributing to current knowledge on the experience of individuals with MHDs in smoking cessation programmes, the evaluation will also likely provide valuable data to further inform and shape the further implementation of this programme.

1.3 Relevance to Population Health and Health Services Research in Ireland

The impact of smoking on the health and mortality of those with MHDs in Ireland remains unknown. The last and only study to explore this in Ireland, an investigation of cause of death in patients who had schizophrenia (68), had a sample of only 122 cases and is now over 30 years old. A number of studies have since been conducted elsewhere (69-71), but no studies have attempted to clarify the scope of the problem here. Furthermore studies have tended to focus on individuals with schizophrenia (68, 70, 71) and there is a lack of evidence in relation to the impact of smoking on the physical health of individuals with MHDs beyond schizophrenia. Individuals with MHDs in general are more likely to smoke and therefore impacts on this group as a whole need to be established.

This is a vulnerable population with neglected needs and a lack of research as evidenced by the recent legislation on smoking bans (30) and lack of smoking cessation service.
provision witnessed in psychiatric settings (27). This research helps to clarify the scope of the problem and highlight the need for improved services in this area. It will inform best practice implementation of cessation services by qualitatively exploring and evaluating the implementation of same in community mental health settings in Ireland. This thesis is therefore not only highly relevant to population health and health services research in Ireland, but provides results which are highly useful internationally also.

1.4 Thesis aims and objectives
The over-arching aim of this thesis is, using the MRC framework (72, 73), to explore the impact of smoking and quality of cessation support provided in those with mental health problems in Ireland, and to observe and evaluate the implementation of a strategy to combat this problem via implementation of cessation support in community mental health services. The thesis first establishes the scale of the issue (as per Medical Research Council guidelines (72, 73)), then explores the current provision of care in two separate settings. Study 2, relating to the provision of care, is also evaluated under the RE-AIM evaluation framework (74). An overall thesis summary is as follows:

1.4.1 Study one:
Exploring smoking, mental health and smoking-related disease in a nationally representative sample of older adults in Ireland – a retrospective secondary analysis

Aim
Establish, in the best national sample data available, the prevalence of current smoking and of smoking-related disease in those with MHDs in comparison to the general population.

1.4.2 Study two:
Provision of smoking cessation care in a psychiatric setting in Ireland

Aim
Profile the smoking cessation support currently provided to inpatients in a private psychiatric hospital in Ireland with a nationwide catchment area.
1.4.3 Study three:
The implementation of a smoking cessation programme in adult community mental health day services: a process evaluation.

**Aim**
Conduct a process evaluation of the implementation a smoking cessation programme across centres from both a service user and staff perspective.

1.5 Thesis summary
Chapter 2 provides a review of the literature in which this thesis is based and an overview of the current policy context in Ireland.

In Chapter 3 the Theoretical Framework upon which the thesis is based is evaluated. Justification of the pragmatic approach taken and rationale for the use mixed methods are also outlined.

The results of Study 1 are presented in Chapter 4. This is a secondary analysis of a nationally representative dataset showing the associations between MHDs and smoking and between MHDs and smoking-related disease in older adults in Ireland. Study 2 profiles current cessation care in a psychiatric setting in Ireland and involved a survey of inpatients at a private psychiatric hospital, review of casenotes and follow-up 3-months later. Survey results based on both patient interviews and casenotes reviews are presented in Chapter 5. Study 3 formed the qualitative component to the thesis. Following the implementation of a smoking cessation programme in public community mental health day services, the experiences of both services users and facilitators were explored through in-depth interviews and focus groups and these findings are presented in Chapter 6. Finally, Chapter 7 provides the overall discussion of the thesis findings, how they relate to the existing literature and their implications for population health and health services research and policy, including recommendations for future planning of service provision relating to smoking in those with MHDs. Overall methodological strengths and weaknesses of the thesis are also reflected upon before final conclusions are drawn.
Chapter 2  Literature Review

2.1 Smoking and MHDs - Current policy context in Ireland

As previously mentioned, smoking remains undertreated in Ireland in general but seems especially so among those with MHDs. At a national level government launched a policy in 2013 aiming for the country to be ‘Tobacco free’ by 2025, that is for less than 5% of the population to be smoking at that time (75). Specific action in relation to those with MHDs, a group for whom smoking prevalence is known to be disproportionately high (17), however remains lacking.

Following the implementation of the workplace smoking ban in 2004 which exempted prisons, psychiatric units and other residential settings (30), a HSE National ‘Tobacco Free Campus Policy’ was launched in 2012. Authors again referred to potential exceptional circumstances, referring in this case to service users who are mentally or terminally ill or long term resident on a HSE campus, stating full application of policy may represent “a risk to a patient’s/service user’s wellbeing i.e. where the risk would be disproportionate to any benefit achieved by prohibiting smoking” (76)[p.9]. However, it is unclear how such risks were to be calculated. According to the 2016 update in the 2016 Annual Report on Tobacco Free Ireland implementation rates for Tobacco Free Campus Policy were at 70% for Mental Health Approved Units and 45% Mental Health Residential Services.

‘Best Practice Guidelines for Tobacco Management in the Mental Health Setting’ were published by the Irish Health Service and Health Promoting Hospitals Network in 2008 (77) to assist in providing protection for both workers and residents (75), but appeared to focus much more on protection against exposure to environmental tobacco smoke with limited guidance in relation to cessation care for smokers. The included recommendations advised service providers to treat smoking as a care issue for all clients, and incorporate smoking into care plans with appropriate pharmacological support and management of medications during the quitting process, along with the use of awareness campaigns to bring about cultural change (77). While authors specified that all organisations/services should have a smoking cessation service, or access to a service with a smoking cessation facilitator trained in mental health, the recommendations regarding education and
training of staff were quite tentative - calling for information and training to be ‘offered’
to staff in a seemingly voluntary or opt-in approach. The incorporation of training into
undergraduate education meanwhile, while labelled ideal, was deemed only a potential
future possibility (77).

Since then, according to annual reports, a specialty on-line module on smoking and
mental health was launched in 2014 (78), while 2016 saw the publication of a briefing
document labelled ‘Smoking Cessation and Mental Health - A briefing for front-line staff’,
as a tailored resource for mental health services given ‘the unique challenges arising from
established practices and misconceptions around mental health and smoking’ (79) [p.3].
As of December 2016, 15 HSE staff were reported to be trained in the specialty on-line
module on smoking and mental health (78).

2.2 Associations between MHDs and smoking

As described in Chapter 1, MHDs are associated with increased smoking prevalence.
Various indicators including diagnostic or clinical interview, medical records, current
psychiatric treatment, reported doctor diagnosed conditions or medication use, are
consistently associated with higher smoking prevalences with rates cited ranging from
25.5 to 59% (7, 45, 80-84). Overall smoking is reported to be 2-3 times more prevalent
among those with mental illness compared to the general population as shown by UK, US
and Australian data (7, 14, 41, 84-86). Increased smoking rates are most pronounced in
those with substance use disorders and more severe mental illness (SMI) diagnoses such
as bipolar disorder, schizophrenia or psychosis (7, 15, 82, 87-89). Prochaska et al. report
prevalence is almost fivefold greater for those with schizophrenia, bipolar disorder, post-
traumatic stress disorder and alcohol/illicit drug use disorder diagnoses (41).

In addition to being more likely to smoke, those with MHDs also tend to smoke more
heavily than other smokers (7), display greater nicotine dependence (41) and appear to
be less likely to quit smoking (7, 90, 91). Those with schizophrenia appear to be less likely
to quit smoking (92), and common mental illnesses such as anxiety or depression also
seem to affect quitting behaviour(93). For instance, meta-analyses have shown that in
patients with chronic respiratory conditions or coronary heart disease (CHD) patients with
depressive symptoms are less likely to quit smoking than those without such depressive symptoms (94, 95).

2.3 Health Impacts of Smoking on those with MHDs

As described in Chapter 1, this higher prevalence of smoking has been associated with significant health consequences in people with MHDs and those with mental illness are disproportionately affected by smoking-related morbidity and mortality (41). In the US, Callaghan et al. found significantly heightened patterns of tobacco-related mortality in terms of respiratory disease, smoking-related cancers and cardiovascular disease in patients with schizophrenia (standardised mortality ratio [SMR] 2.45 95%CI 2.41-2.48), bipolar disorder (SMR 1.57 95%CI 1.53-1.62) and depression (SMR 1.95 95%CI 1.93-1.98) (69), while a recent large scale meta-analysis of 92 studies involving over 3 million cases found patients with severe mental illness have significantly increased risk of CVD and CVD-related mortality (96). Earlier studies have also shown increased risk of death from cardiovascular disease (42, 80, 97, 98) and cancer (42, 97) and morbidity studies have shown those with SMI have a significantly higher prevalence of pulmonary illness (44-46, 99-103), cancer (46) and cardiovascular diseases (including stroke, congestive heart failure, angina and myocardial infarction) (46, 99, 100) compared to matched samples or general population counterparts (44, 46, 99-101).

While smoking is thought to account for the majority of morbidity and mortality in these populations, studies have also found associations between mental illness and respiratory disease, cardiovascular disease and risk of death from cardiovascular disease which seems to persist after adjustment for smoking (46, 80, 104). However, the literature is limited by the range of conditions investigated, the measurement of mental health, and the samples used are not always generalizable to other settings or conditions. For example, many of these studies focus on schizophrenia-related disorders and psychosis, though some have also included affective disorder diagnoses (44, 46). Partti et al.’s study of respiratory disease was population-based but only explored psychosis (45), while other studies were based on clinical populations using small samples ranging from 80-100 (44, 46, 100). As previously stated, the last study to address the impact of smoking on the physical health of those with MHDs in Ireland is now over 30 years old, was
specific to schizophrenia and was not population-based (68). More generally, morbidity and mortality studies have tended to rely upon one or two indicators, such as structured clinical interviews, medical records, medical service claims or scale scores, but never more than two indicators when identifying those with MHDs (45, 69, 80, 98, 99, 104, 105). The use of a number of different methods is preferable to enhance the reliability of the findings.

In addition, chronic diseases such as cardiovascular disease and cancers usually occur later in life. Most cancer diagnoses occur in individuals older than 65 years (106), while CHD risk increases in both men and women after age 55 (107). In spite of this, some studies of smoking prevalence in those with MHDs have been limited to younger samples with age ceilings of 54 and 64 (7, 87), and there are almost no studies of smoking or smoking-related morbidity or mortality specific to older populations. To our knowledge only one study exploring excess mortality in those with MHDs concerns those aged 65 and older (98). The impact of smoking on the physical health of older adults with MHDs therefore remains unclear.

In summary, few population studies have explored smoking-related morbidity in older individuals with MHDs and there are no recent studies addressing the health impacts of smoking in those with MHDs in Ireland. The current thesis had two aims in this regard. Firstly, to determine whether there is a higher prevalence of smoking and of smoking-related disease in older adults with mental health problems. Secondly, to assess whether smoking mediates or moderates the relationship between MHDs and smoking-related disease at a population level. Given the absence of diagnostic interviews, Study 1 employed several indicators both individually and in combination to reliably identify those with MHD. It was hypothesized that persons with MHDs would be more likely to have higher levels of smoking-related diseases, which would be explained by a higher rate of smoking.

2.4 Smoking Cessation among those with MHDs

In spite of the increased smoking prevalence, historically tobacco dependence treatment in those with MHDs has been limited (41). A survey of doctors in the US previously revealed that psychiatry was the specialty least likely to address tobacco, with just 23%
reporting they provided smoking cessation assistance (108), while in a UK survey of clinical staff in inpatient mental health units less than half agreed that smoking cessation care was their responsibility as a mental health professional and only half felt they could make time to treat smoking in their working routine (109). In Ireland, tobacco dependence also appears to be particularly undertreated among those with MHDs with psychiatric facilities exempted from smoke free regulations and ranking among the lowest in delivery of cessation services (27, 30).

No data is available in Ireland in relation to smoking cessation among psychiatric patients. Recent inpatient psychiatry studies elsewhere have found current smoking prevalences of 53.6-91.4% (83, 110-115), with average nicotine dependence scores of 4.6-6.4 (110-112, 114, 115), indicating low to high dependence (116). These studies have also shown psychiatric patients are motivated to quit, with 46.9% and 59.4% making at least one quit attempt in the past year (110, 115), and 18.8% making more than one attempt (110). These studies were however often limited by small sample sizes (N ranging from 116-135; 112, 113, 115), low population coverage (28.3%)(110) and response rates (34.2%; 55.6%)(113, 114) and were sometimes restricted to certain age groups (115), to men (115), secure services (114), or emphasized the acutely psychotic in recruitment (115). Additionally, the data provided were cross-sectional only with no subsequent quit rates included (83, 110-115).

2.4.1 Cessation Care in Inpatient Psychiatric Settings
Psychiatric hospitalisations represent an opportunity to address tobacco use and treatment (117). In spite of the high levels of motivation found however, rates of patient-reported and documented cessation advice in psychiatric settings are sub-optimal. Studies conducted in Canada and South Africa, for instance, found that 36.2% and 43.4% of psychiatric inpatients reported receiving smoking cessation advice (111, 115). While no studies have been conducted in psychiatric settings in Ireland, recent studies in general hospital inpatient settings have shown that smoking is still undertreated, with 32% reporting discussion of smoking during admission (118), and 38-44% reporting receipt of advice from any healthcare professional in the past year (62, 119).
Beyond patient report data, reviews of medical records have also revealed low levels of
documented cessation care in psychiatric settings. In a review of psychiatric inpatient
records in the US, Prochaska found despite high smoking prevalence, documented
interventions to treat smoking were rare; and while 56% of smokers were prescribed NRT,
smoking status was not included in treatment planning for any patient (24). Similarly in
Australia Wye at al. have shown recording of any nicotine dependence treatment in a
large psychiatric hospital to be negligible at less than 1%, and pointed to this failure to
diagnose nicotine dependency and document treatment as a failure to conform to clinical
practice guidelines (120). These findings demonstrate that, for whatever reason, smoking
care is deemed a low priority in these settings. In Ireland, evidence in relation to
psychiatric settings once again is lacking.

In summary, current smoking prevalence, attitudes to cessation and rates of cessation
care in psychiatric settings in Ireland remain unknown. Meanwhile International studies
have been limited by small samples (112, 113, 115), low population coverage (110) and
response rates (113, 114) and a focus on recruitment of specific subgroups (114,
115). The longer observation period employed in the current study, together with a
hospital-wide recruitment approach, will allow for a larger, more representative sample
across all adult wards. Furthermore, the inclusion of data from casenotes provides
evidence beyond patient report and allows comparison with general settings in Ireland
(118), as well as psychiatric settings abroad (24, 120). Finally the inclusion of a follow-up
survey allowed the researcher to ascertain 3-month quit rate among psychiatric patients
in the context of usual care. Study 2 therefore sought to fill a gap in national knowledge
while also adding to the evidence internationally in terms of current levels of cessation
care in psychiatric settings, attitudes of psychiatric patients towards quitting and advice,
and actual quitting behaviour among this group.

2.4.2 Barrier to Smoking Cessation and Smoking Cessation Care among those
with MHDs
Reasons for low levels of cessation care provided in secondary care settings, and more
specifically among those with MHDs, are further explored next.
A recent systematic review of clinician-reported barriers to provision of smoking cessation advice in inpatient settings found lack of time, lack of knowledge, lack of perceived patient motivation to quit smoking and lack of support (from colleagues, the hospital and the wider healthcare system) to be the most common barriers reported (121). In relation to mental health professionals in particular, a mixed methods meta-analysis of 38 studies revealed similar barriers, including lack of time, training and confidence, negative attitudes to cessation such as beliefs that patients are not interested in quitting and that cessation interventions are not effective, as well as permissive attitudes towards smoking (122). The authors concluded that, in line with previous research (123), there is a need for greater prioritisation of smoking cessation treatment in mental health care, specialist training in smoking cessation interventions and wider education to address misconceptions about smoking cessation in the context of mental health (122). In Ireland, no published research has explored barriers to cessation treatment among HCPs in mental health settings specifically, but a survey of HCPs in general revealed low levels of delivered advice with lack of time, training and competing work priorities as key barriers, in spite of the majority (94%) feeling they should advise all smokers to quit (124).

Individual-level barriers to cessation among those with mental illness appear to be well established (125, 126). In a systematic review of qualitative and quantitative studies Twyman et al. noted low motivation, symptom management, concerns about ability of cessation services to handle mental health issues, identity and belonging as self-reported barriers to cessation for people with mental illness (60). They called for further research in relation to systems-level changes which may support cessation in people with mental illness (126). This was later echoed by Trainor et al. who called for further qualitative exploration of external barriers to cessation for people with severe mental illness including systemic, health provider and treatment factors (125).

At the level of implementation, Parker et al. provided qualitative data on barriers/facilitators for cessation services in community and inpatient settings in the UK. They concluded that in spite of clear demand from patients, establishing cessation treatment services proves difficult due to complex systemic barriers. In addition to policy, systems and procedural barriers, including the regular facilitation of smoking, themes related to knowledge, skills and attitude and illness-related factors such as attentional,
cognitive and motivational factors emerged (61). Service user perspectives on implementation barriers were omitted from this study and qualitative data was collected through structured recording sheets which were discussed with the project team, rather than a more in-depth approach which may have revealed further and perhaps unexpected barriers.

2.4.3 Smoking Cessation Care in Community Mental Health Settings – A potential solution?

One reason for the lack of cessation care in secondary care settings may relate to the emphasis traditionally placed on GPs as well as primary care settings more generally concerning the delivery of cessation care (79, 127-133), which may lead to the belief that this care is provided routinely there. In reality, however, it is not clear that this is actually the case and delivered rates in primary care settings in actuality appear low (63, 134-140). Furthermore, in relation to those with MHDs specifically, evidence from the UK based on over 30,000 patients with a mental illness has indicated that, on a per consultation basis, primary care professionals are significantly less likely to intervene with smokers with a mental health condition compared to those without (26).

Internationally, the evaluation of smoking cessation programmes in community mental health settings remains understudied (141, 142). While overall few studies have evaluated tobacco treatment programmes in community settings that serve those with MHDs, those that have tend to focus on quantitative methods (141, 143-147), brief or summary outcomes data (141, 145-149), and often have a small sample of fewer than 30 (143, 145, 148).

Studies which have taken a more in-depth approach (64, 150, 151); often included qualitative data for staff only (150, 151), omitting service user views altogether (150), or relying on surveys with no in-depth exploration of their experience included (151). Conversely, Rae et al. provided rich qualitative data of the experience of those with SMI on two smoking cessation interventions, but neglected to include any data, qualitative or otherwise, detailing the views or experiences of those delivering these interventions (64).
The available evidence however suggests that community programs are able to reach a high proportion of smokers and when tailored can be effective for those with mental illness for quitting (141, 147), or reducing smoking (144). In the case of untailored approaches, however, effects can be modest (149), or non-existent compared to controls (148), supporting the notion that existing tobacco treatment approaches may need to be modified for those with mental illness in community settings (147, 148).

Qualitative data from a provider perspective revealed that a tailored tobacco cessation curriculum tested well, was feasible and was well-received in a psychosocial clubhouse environment (151), while interviews with individuals with severe mental illness based on their experiences of a smoking cessation intervention delivered by a community mental health agency, suggested the importance of choice and flexibility, a variety of treatment options and responsivity to the changing needs and preferences of individual service users (64).

Richer accounts of the experiences of both staff and service users are needed to allow us to take full account of the complex issues which can shape the process of programme implementation and of successful quitting at the individual participant level. It was the goal of Study 3 therefore to provide such rich qualitative data, integrating the views and experiences of both service users and facilitators, in relation to the implementation of a smoking cessation programme in community mental health settings. This would inform on experiences in this setting in general in addition to shaping the implementation of this programme going forward.

2.5 Summary

Overall, the Irish policy context has been slow to tackle smoking and mental health with a seeming focus on protection against exposure to environmental tobacco smoke, while at a national level the training of mental health staff in cessation care appears to remain in its early stages. The international literature provides strong evidence of the increased smoking prevalence among those with MHDs, yet there is a lack of evidence in relation to this association in Ireland and moreover in relation to its associated impact on the physical health of those with MHDs. Furthermore in spite of increased smoking rates, internationally cessation care for this group has historically been limited and to date no
study has surveyed psychiatric patients in Ireland in relation to smoking cessation. While barriers such as time and a lack of training persist in secondary settings, the treatment of tobacco dependence in community mental health settings can it seems be effective especially where tailored to this population though evidence remains limited. Therefore, there remains significant gaps in the literature that will be addressed by the current thesis.
Chapter 3  Theoretical and Methodological Rationale of the Thesis

3.1 Introduction
This chapter outlines the theoretical framework adopted within this thesis as well as the rationale for same. Initially, this thesis was planned in line with the Medical Research Council framework for developing complex interventions (72, 152) (i.e. two observational studies leading to the development of a feasibility study of a complex intervention). However, as described later, challenges in obtaining research ethics approval and associated delays led to significant revisions and the use of multiple study settings. The current process involves identification of the evidence base (72, 152) in relation to impact of smoking in Study 1 and in relation to current cessation care in Study 2. RE-AIM (74) was also applied to Study 2 findings to develop a more in-depth understanding of current care. Study 3 was a qualitative process evaluation conducted in line with MRC guidelines for process evaluations of complex interventions (153), as detailed below. Finally in relation to methodology, the adoption of a pragmatic approach employing mixed methods in conducting this research is explained and justified.

3.2 Theoretical Rationale

3.2.1 Originally Proposed Framework
As stated above, this thesis was initially planned within the Medical Research Council (MRC) framework for developing complex interventions (72, 152). Study 1 would help to identify the evidence base in relation to the impact of smoking on those with MHDs in Ireland. Study 2 would survey patients and review casenotes, in a psychiatric hospital setting, in order to identify the evidence base in relation to levels of current smoking cessation care and assess the effectiveness of same in a longitudinal follow-up. Finally Study 3, in the same setting, would consist of implementation and feasibility testing of an intervention developed based on the knowledge gained in Studies 1 and 2. However, as detailed in Chapter 5, there were significant ethical approval complications at the proposed site for Studies 2 and 3, with changes requested which would have compromised the scientific integrity of the studies. These complications eventually led to the transfer of Study 2 to a new setting whereupon ethical approval was secured with no
amendments required. These delays left insufficient time for the development and testing of a bespoke intervention. Study 3 therefore assessed a recently-implemented smoking cessation support service in community mental health settings. Given these changes and the resultant incorporation of two distinct setting types, psychiatric hospital and community mental health day services, it was necessary to re-envision the theoretical framework of the thesis.

3.2.2 Revised framework
Given the inclusion of various settings, rather than building towards designing a single intervention for a particular site as originally planned, the thesis instead employed MRC guidelines as a broad framework to assess overall implementation, impact and overall quality of care, thus providing a comprehensive overview which was representative of both community and secondary care settings.

Identifying the Evidence Base – Impact: Study 1
In this Thesis Study 1 provides the epidemiological context. Epidemiological context shows the distribution of disease or conditions in a population, the attributable burden of disease and reveals key determinants of need (154), in this case evidence of MHDs. Through a secondary analysis of nationally representative data, Study 1 establishes the impact of smoking on older adults with MHDs in Ireland in terms of smoking-related disease (155). Epidemiological context is one of the seven domains of context identified by Pfadenhauer et al. as key areas for reflection when attempting to address context and implementation in an integrated way. Along with ethical and socio-economic issues, these three domains in particular are reported to be rarely considered despite their considerable impact on the uptake, reach and effectiveness of interventions (155).

Identifying the Evidence Base – Care: Study 2
Study 2 identified the evidence base in relation to current care, assessing the current levels of implementation of smoking cessation care in a hospital setting. While guided by the MRC framework, findings were reported according to the RE-AIM evaluation framework (74), to provide a more in-depth understanding of current care.
RE-AIM

RE-AIM is a widely cited evaluation framework which originated in public health and is commonly used to provide a structure for evaluating implementation endeavours (156). It was developed by Glasgow et al. in 1999 (74) who aimed to provide an alternative to clinical trials, which have limited external validity, and allow researchers to evaluate the implementation of interventions in complex, real world settings (74, 157). RE-AIM specifies five implementation aspects that should be evaluated as part of intervention studies referring to Reach, Effectiveness, Adoption, Implementation and Maintenance (74, 156) (see Table 3.1 below). Described by Gaglio et al. as both a planning and an evaluation model (157), its five domains are said to provide a more complete picture of the public health impact of a given intervention (74). It should be noted however that although five dimensions are specified not all studies employing RE-AIM assess all five aspects. A recent systematic review found that just two thirds of studies reported on all five dimensions (157). Similarly, Kessler et al. reported following a content review that the majority of grants use only some elements of the model (less than 10% contained thorough measures across all RE-AIM dimensions) and few cases meet criteria for “fully developed use” of RE-AIM. Indeed the developers themselves stated that it may not be necessary to assess all 5 components in every study (74).

Although not deemed a ‘must have’, recently the use of additional qualitative components to understand domains has also been recommended as has the inclusion of costs (158), however both were unfortunately beyond the scope of the current study.

Application of RE-AIM

Brief smoking cessation advice provided in hospital settings has been shown to be effective for promoting quitting (118, 159-161). It is unknown however to what extent brief advice is effective for patients in a psychiatric setting (162). Study 2 aimed to add to knowledge on smoking cessation care in psychiatric patients by surveying patients and reviewing casenotes and following smokers up 3-months later. Applying the RE-AIM framework, this study addressed the Reach, Effectiveness, Adoption and Implementation aspects. Reach here refers to the prevalence of smoking cessation care i.e. what
proportion of patients who smoke were having status recorded and/or receiving any smoking cessation advice? **Effectiveness** was evaluated in terms of exploring the association between receiving smoking cessation advice and cessation outcomes 3-months later. The **Adoption** aspect of the RE-AIM framework was addressed by assessing which professionals were providing smoking cessation care/advice, while **Implementation** was assessed in terms of the consistency with which staff were capturing smoking status and/or addressing same. Greater detail on Study 2 findings in relation to RE-AIM domains will be provided in Chapter 5.

While the RE-AIM framework was developed to assess key dimensions of an intervention (163), in this case smoking cessation care, Study 2 was concerned with current routine care rather than the evaluation of an intervention designed and implemented by the researcher.
Table 3. 1 RE-AIM domains and application of same in Study 2

<table>
<thead>
<tr>
<th>Dimension</th>
<th>How assessed in Study 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reach</td>
<td>Percentage asked smoking status (self-report). Percentage received smoking cessation care (self-report). Percentage for which smoking status was recorded in casenotes. Percentage for which smoking cessation care was recorded in casenotes.</td>
</tr>
<tr>
<td>Effectiveness</td>
<td>Effectiveness of smoking cessation care in terms of associations with quit rate at 3-month follow-up for self-reported and casenote-recorded cessation advice.</td>
</tr>
<tr>
<td>Adoption</td>
<td>Representation of various HCP groups in delivery of smoking cessation care according to (i) patient self-report and (ii) as documented in casenotes.</td>
</tr>
<tr>
<td>Implementation</td>
<td>Extent to which status was recorded and care was consistently implemented by staff members based on (i) patient self-report and (ii) as documented in casenotes (location in casenotes and frequency).</td>
</tr>
<tr>
<td>Maintenance</td>
<td>Relates to longer-term follow up and was therefore beyond the scope of this thesis.</td>
</tr>
</tbody>
</table>

Source: Left column in above table based on a figure in 2017 review by Forman et al. (163)
Understanding Change Process – Assessing the Implementation of a Potential Solution in a Community Setting: Study 3

Study 3, a qualitative process evaluation, involved the triangulation of service user and staff data collected through focus groups and in-depth interviews. The aim here was to evaluate the implementation of a quit smoking programme across various community adult mental health centres to better inform future practice and policy.

MRC guidance provides a framework for conducting and reporting process evaluation studies. Aims, as defined by Moore et al., include enabling evaluation to inform the development of effective interventions, through understanding their mechanisms and contextual contingencies (153). In other words, how an intervention works in a given setting. Specifically, this study focused on context and explored how it affected implementation of the Quit Smoking Programme and outcomes through identifying key barriers and facilitators at both implementation and participant levels.

It has been argued that the adoption of a methodological theory is not necessary to in order to conduct qualitative research (164), and similar to a recent qualitative process evaluation by Al-HadiHasan et al. the current study applied a pragmatic approach with a focus on answering the research questions and explaining the qualitative data without the restrictions of a particular theory (165).

Both investigation and initial analyses were therefore performed using a largely inductive approach. In relation to data collection this meant that while interview schedules were initially guided by the pre-existing literature, they were reviewed and adapted in light of knowledge gained from initial interviews and thus the research was somewhat shaped by the participants providing the opportunity for services users and facilitators to ‘set the agenda’, and allowing research instruments to be somewhat guided by the findings (166). In line with the realist approach adopted interview guides were not restricted to fit the domains of a given theory or framework (167). The lack of literature in this area also meant that a more deductive approach would currently be somewhat inappropriate. Instead more flexible guides based on the literature and study context allowed for a more
authentic and exploratory approach where unanticipated and unprompted issues were truly allowed to emerge (168, 169). This approach has previously been employed in health services research (169).

Thematic analysis, which is argued by Braun and Clarke to provide an accessible and theoretically flexible approach to analysing qualitative data (170), was then conducted prior to mapping of the emergent themes onto an emergent framework of barriers and facilitators, thus allowing the data to speak and themes to emerge organically.

**Links between studies**

By establishing smoking prevalence and prevalence of smoking-related disease Study 1 set the epidemiological context and evidence base for the thesis. Study 2 went on to assess smoking prevalence and current cessation care in a psychiatric patient population. This allowed the researcher to compare smoking prevalence across populations with MHDs at both a population and clinical level. Study 2 also assessed cessation care provided by healthcare professionals, a theme which was also explored in Study 3 among service users in community mental health day services. More broadly however, Study 3 served to explore whether a community service could be ‘the solution’ to the problem highlighted by Study 1 and Study 2.

More detail on how findings integrate will be provided later within the discussion chapter.

**3.3 Mixed Methods: A Pragmatic Approach**

This thesis took a pragmatic approach, which is to say that the focus was on investigating the factors that have the most impact on the chosen subject matter and deciding the way in which to investigate those factors (171). In general, pragmatism as an approach is deemed beneficial for its redirection towards methodological concerns and proved apt given the need to modify the approach in this thesis, as described above. It is also considered particularly appropriate when combining qualitative and quantitative methods (171), given the specific justification it provides for same (172). In the current programme of research, Studies 1 and 2 were quantitative while Study 3 adopted a qualitative approach.
Pragmatism provides an effective alternative to emphasising the distinctions between purely quantitative and purely qualitative approaches and allows the researcher to transcend the dualism of purely quantitative and purely qualitative approaches (171). Rather than treating the broad tendencies of these methodologies as defining characteristics it allows for a more iterative process in which the researcher is working back and forth between the extremes commonly emphasised by each methodological approach. Table 3.2 below displays the alternative approach offered by pragmatism.

**Table 3.2 Pragmatic approach to methodology**

<table>
<thead>
<tr>
<th></th>
<th>Qualitative Approach</th>
<th>Quantitative Approach</th>
<th>Pragmatic Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection of theory and data</td>
<td>Inductive</td>
<td>Deductive</td>
<td>Abductive</td>
</tr>
<tr>
<td>Inference from data</td>
<td>Context</td>
<td>Generality</td>
<td>Transferability</td>
</tr>
<tr>
<td>Relationship to research process</td>
<td>Subjective</td>
<td>Objective</td>
<td>Intersubjective</td>
</tr>
</tbody>
</table>

(Source: Morgan ((171) p.71))

For instance, in relation to the linking of theory and data, the use of abductive reasoning transcends a purely grounded inductive or purely top-down deductive approach instead moving back and forth between induction and deduction (171, 173). Abductive reasoning involves the logical connection made by researchers between data and theory (174). As Feilzer writes, datasets may be analysed separately at first, then moving back and forth between the datasets with the knowledge produced by each one and then finally bringing them together enables the interpretation of data from a multidimensional perspective where each dataset is informed, questioned and enhanced by the others (173).

Secondly, in relation to inference from data, or the extent to which study results can be inferred to other settings, pragmatism calls for transferability. Rather than in quantitative research where generalisability is a key concern, or qualitative research where results are often considered context specific, Morgan argues that the focus in pragmatism is on what one can do with the knowledge they produce. This is achieved through investigating the
factors that affect whether knowledge can be transferred. For example, assessing whether results from a particular programme evaluation have implications for the implementation of similar programmes in other contexts (171).

Finally, while qualitative and quantitative research are commonly regarded as taking subjective and objective approaches respectively, others argue this is an artificial summary of the relationship between the researcher and the research process and that complete objectivity and complete subjectivity are equally impossible (171). Pragmatism, as a third paradigm, offers an alternative to these arguably unrealistic goals (171, 172). This intersubjective approach asserts ‘both that there is a single “real world” and that all individuals have their own unique interpretations of that world’ ((171)p.72).

3.4 Rationale for mixed methods thesis
While pragmatism offers a legitimate approach to combining qualitative and quantitative methods it is also important to explore why mixed methods are appropriate to the current programme of research in the first place. Justifications offered for the use of mixed methods in Health Services Research include: the need for comprehensiveness and the complexity of health care; the need to focus on processes as well as outcomes and the range of methodological approaches required to do this; as well as ensuring disempowered or marginalised groups in society are given a voice (175).

In relation to complexity, the use of mixed methods by health services researchers is commonly justified on pragmatic grounds given they work in an applied field and study complex issues in complex environments. For instance, employing qualitative components allows researchers to study a range of aspects of an intervention or service (175). In the current programme of research, Study 3 sought to evaluate a complex, changing intervention which was not highly controlled, with implementation varying across centres, thus presenting real world conditions which represented a complexity beyond a quantitative approach. Here pragmatism dictated that a qualitative approach be employed in order to provide richer and more useful data in light of the actual research question and context.
Another argument for mixed methods research lies in the perceived strength of qualitative methods in accessing the views and voices of service users and providers and the importance of same in grounding the research in the real world (175). The need to emancipate marginalised and vulnerable groups in particular has often been presented in justifying the inclusion of a qualitative component within a programme of research (175). Given Study 3 aimed to evaluate a service provided to a vulnerable group (community mental health service users) this was particularly pertinent, not to mention the applied and pragmatic approach taken in the thesis in general which commanded the inclusion of both patient and provider voices.

Overall, in the current thesis a mixed methods approach was taken for its intrinsic value and based upon the researcher’s pragmatic stance which emphasized the centrality of the research question in determining methods employed at all stages (175). This is the pragmatic justification for using mixed methods in Health Services Research i.e. the practical need to use a range of methods and the need to choose most appropriate method to answer the research question while also considering the research context. In the current thesis pragmatism therefore demanded the use of mixed methods (175), while also lending itself to the legitimate combination of qualitative and quantitative methods and allowing for the possibility of working back and forth between the two approaches (171).

3.5 Summary
Overall this thesis broadly adopted MRC guidelines as its theoretical approach. While epidemiological context in relation to impact was set in Study 1, Studies 2 and 3 established the evidence base in relation to care in secondary and community settings. To facilitate a greater understanding of current care, findings from Study 2 and 3 were also mapped onto the RE-AIM and MRC Process Evaluation Frameworks respectively. In relation to stance a pragmatic approach was adopted. Pragmatism emphasizes the centrality of the research question in determining methods employed and offers a legitimate approach to the combination of qualitative and quantitative methods. In this thesis a mixed methods approach was demanded by the research questions, by the
complexity of the field which is commonly the case in health services research and crucially by the need to truly access stakeholder voices and views.
Chapter 4: Secondary Analysis of the Irish Longitudinal Study on Ageing

4.1 Introduction

Study 1 was a secondary analysis of a nationally representative dataset of community living adults aged 50 and over, the Irish Longitudinal Study on Ageing. As described in Chapter 3, it was necessary for this thesis to first set the epidemiological context in relation to the impact of smoking on those with MHDs in order to build the evidence base for health service policy in the Irish context. Smoking prevalence and the impact of smoking in relation to prevalence of smoking-related diseases were therefore established in individuals with MHDs compared to the general population. STROBE guidelines for observational studies were employed in reporting of both methodology and results of this study (176). This study has been published in the Journal of Psychosomatic Research (177).

4.2 Study design

This study was a retrospective secondary analysis of cross-sectional data from a longitudinal cohort study, conducted in an effort to examine the association between MHDs and smoking and between MHDs and smoking-related diseases.

4.3 The Irish Longitudinal Study on Ageing (TILDA)

TILDA is a large-scale, longitudinal study on ageing involving a nationally representative cohort of over 8,000 respondents aged 50 and over and resident in Ireland. The current analysis involved the first wave which was collected between 2009 and 2011. Data collection involved an extensive face-to-face computer assisted home interview, a self-completion questionnaire for data deemed more sensitive and a health assessment. At wave one 5,894 (72.1%) of the 8,175 participants aged 50 and over completed a health assessment. Health assessments were conducted at TILDA Assessment Centres in Dublin and Cork, or for those not willing to travel to TILDA Assessment Centres a shorter assessment carried out in their home by a qualified, trained nurse was offered. At wave one 5,894 (72.1%) of the 8,175 participants aged 50 and over completed a health assessment. All variables included in the current analysis were collected at both health
centre and home assessments. Through the home interview and questionnaires detailed
data on smoking and physical health was collected. Data on medication use and self-
reported doctor diagnosed mental health conditions was also collected as was scale data
relating to anxiety and depression symptoms. Thus TILDA provided the best national
sample data for the establishment of the extent of smoking-induced disease in those with
enduring mental health problems in Ireland.

4.4 Participants
TILDA provides a stratified clustered nationally representative sample of community
dwelling adults aged 50 and over living in Ireland (178). Private residential dwellings were
assigned to clusters stratified by geography and socioeconomic group to produce a
population representative sample of older adults. Across households where it was
possible to make contact to confirm eligibility a response rate of 62% was achieved (179).
Population weighting was employed to counteract bias introduced by differential
nonresponse (179). The main sample was compared to Quarterly National Household
Survey respondents on age, sex and educational attainment and consequent weights
assigned (178). A more detailed description of the study sample and response rates has
been described elsewhere (180). While a nationally representative sample of community
living older adults was achieved the use of private dwellings as a sampling frame means
individuals who were homeless or in residential care are not represented in the data.
Though not recorded in a systematic way the study team have also advised that eligible
participants in community dwellings who were too unwell to participate were excluded.

4.5 Variables

4.5.1 Outcomes
**Smoking status:** Self-reported current smoking status i.e. current, former or never
smoker.

Those who reported ever smoking ‘cigarettes, cigars, cigarillos or a pipe daily for a period
of at least one year’ were defined as ever smokers (lifetime prevalence). Ever smokers
answered further smoking questions and those who answered ‘Yes’ when asked if they
smoked at the present time (including if smoked in past 3 months) were categorised as
current smokers while respondents who answered ‘No’ were defined as former smokers.
This smoking status outcome variable was also assessed as a potential mediator and effect modifier in modelling smoking-related disease.

**Smoking-related disease:** The presence of any one or more smoking-related diseases i.e. respiratory disease, cardiovascular disease and smoking-related cancers.

For the purposes of this analysis smoking-related cancer was defined as answering ‘Yes’ when asked if they were ever told by a doctor that they had cancer in any of the following sites: Lung; Colon or rectum; Stomach; Oesophagus; Bladder; Liver; Cervix; Kidney; Pancreas; Oral cavity; Larynx; Other pharynx (including nasopharynx, oropharynx, laryngopharynx or hypopharynx). These sites were identified based on the 2014 Surgeon General’s report (181). Cancer of the lip, the renal pelvis and acute myeloid leukaemia were not included as these were not specified in the TILDA study.

Respiratory disease was defined as answering ‘Yes’ when asked if they were ever told by a doctor that they had “chronic lung disease such as chronic bronchitis or emphysema”.

Cardiovascular disease was defined as answering ‘Yes’ when asked if they were ever told by a doctor that they had ‘angina’, ‘a heart attack (including myocardial infarction or coronary thrombosis)’, ‘congestive heart failure’, ‘high cholesterol’, ‘a stroke (cerebral vascular disease)’ or ‘Ministroke or TIA’.

For the purposes of this analysis, respiratory disease, cardiovascular disease and smoking-related cancers were combined to indicate having a chronic disease (score=1) or not (score=0) due to low numbers in two categories.

**4.5.3 Exposure variables**

MHDs: A number of variables were taken as indicators of evidence of MHDs and used individually and in combination to model the association between MHDs and smoking and between MHDs and smoking-related disease.

An emotional, nervous or psychiatric problem was defined as answering ‘Yes’ when asked if they were ever told by a doctor that they had “any emotional, nervous or psychiatric problems, such as depression or anxiety”.

51
 Psychiatric medication use: Participants were asked to bring medications to interviewer during face-to-face home interview and all anxiolytics, antipsychotics and anti-depressants were included (ATC codes: N05B; N05A; N06A). Any participant who was taking one of these medications was considered to have MHDs.

Psychometric scales: Standardised z-scores for depression and anxiety scales, as follows.

**CES-D**: The Center for Epidemiologic Studies Depression Scale (CES-D) is a 20-item self-report depression scale designed for epidemiological studies of depression (182). Each item is measured on a 4-point Likert scale reflecting frequency of occurrence and a cutoff score of ≥ 16 is said to indicate clinically significant or severe depressive symptoms. This measure was administered during the face-to-face computer assisted home interview (179) and 8,044 (98.4%) responded to all 20-items.

**HADS-A**: The HADS-A is the 7-item anxiety subscale of the Hospital Anxiety and Depression Scale (183). This self-report measure with a four option Likert-type response format was included in the self-completion questionnaire and returned by 6,635 of the 8,175 (81.2%) TILDA participants aged 50 and over.

**4.5.4 Covariates**

Demographic variables (age, sex, education and marital status) were adjusted for when predicting smoking status. In models predicting smoking-related disease socio-demographic variables (age, sex, education) as well as other known confounders (physical activity, waist circumference, alcohol use and diabetes (self-reported doctor diagnosed)) were included. Age and waist circumference were continuous, while all other covariates were ordinal/categorical. Physical activity was assessed using the short form 8-item version of The International Physical Activity Questionnaire (IPAQ) (184), which estimates time spent performing physical activities (moderate to vigorous) as well as inactivity (time spent sitting) (185). Alcohol problems were identified using the CAGE questionnaire, a widely used and extensively validated screening tool for alcoholism, which was included in the self-completion questionnaire. A CAGE test score of 2 or more is said to identify problem drinkers (185, 186). Waist circumference was measured at the health assessment during wave one and so was only available for participants completing that component.
4.6 Statistical analysis

Key variables and demographic characteristics of the sample were compared according to smoking status using analysis of variance models and chi-square statistics as appropriate. Multinomial regression analysis was performed to investigate the association between MHDs and smoking. The models were weighted and adjusted for age, sex, education and marital status as these were all significantly associated with the outcome smoking status. The *margins* command in Stata provided adjusted prevalence estimates. Multivariate logistic regression models were then employed to explore the association between MHDs and smoking-related disease. These models were weighted and adjusted for potential confounders including socio-demographic characteristics (age, sex, education) and additional known risk factors (physical activity, waist circumference, alcohol use and diabetes (self-reported doctor diagnosed)). These covariates were identified based on the literature.

Baron and Kenny’s four step approach was employed to test for mediation (187). Firstly, as above, regression analyses were run to see if the independent variable, MHDs, predicted the dependent variable smoking-related disease. Secondly, and also already encompassed in aim one, regression analyses were conducted to see if MHDs predicted smoking. Thirdly, it was assessed whether the mediator, smoking status, predicted smoking-related disease even while adjusting for MHDs. Finally, smoking status was added to models predicting smoking-related disease and changes in the association between MHDs and smoking-related disease were observed for any mediational effects. Finally, interaction terms were built and added to models to test for any moderating role of smoking in the association between MHDs and smoking-related illnesses.

Data analysis was performed using Stata 13.0 (188).
4.7 Results
This analysis of TILDA included 8,175 participants aged 50 years and over. As described above, due to missing values related to issues such as health assessment attendance and completion of the HADS-A the analytic sample ranged from 5,024 to 8,158. Sample sizes for each model are included below (Tables 2-4).

4.7.1 Descriptive data
Table 1 summarises the demographic aspects of the sample, by smoking status (current/former/never). Overall self-reported current smoking prevalence was 18.24% while 38.1% were former smokers. Sex, age, education and marital status were all significantly related to current smoking status. Current smokers were younger and prevalence was highest in those with lower levels of education and among those who were separated or divorced. More of the men in the sample were former smokers while more of the women were never smokers.
Table 4: Demographic profile of TILDA respondents aged 50 and over categorised by smoking status at baseline including Anova and Chi-square analyses (n=8,174)

<table>
<thead>
<tr>
<th></th>
<th>Current smoker (n=1,491)</th>
<th>Former smoker (n=3,117)</th>
<th>Never smoker (n=3,566)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>18.2%</td>
<td>38.1%</td>
<td>43.6%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Continuous</th>
<th>Mean</th>
<th>SD</th>
<th>Mean</th>
<th>SD</th>
<th>Mean</th>
<th>SD</th>
<th>F</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>61.3</td>
<td>8.87</td>
<td>64.9</td>
<td>9.82</td>
<td>64.0</td>
<td>9.93</td>
<td>69.7</td>
<td>&lt;.001**</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Categorical</th>
<th>N</th>
<th>%</th>
<th>N</th>
<th>%</th>
<th>N</th>
<th>%</th>
<th>χ²</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women</td>
<td>811</td>
<td>18.3%</td>
<td>1,387</td>
<td>31.3%</td>
<td>2,233</td>
<td>50.4%</td>
<td>220.0</td>
<td>&lt;.001**</td>
</tr>
<tr>
<td>Men</td>
<td>680</td>
<td>18.2%</td>
<td>1,730</td>
<td>46.2%</td>
<td>1,333</td>
<td>35.6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary/None</td>
<td>571</td>
<td>22.8%</td>
<td>990</td>
<td>39.5%</td>
<td>942</td>
<td>37.6%</td>
<td>113.2</td>
<td>&lt;.001**</td>
</tr>
<tr>
<td>Secondary</td>
<td>619</td>
<td>19.0%</td>
<td>1,165</td>
<td>35.7%</td>
<td>1,479</td>
<td>45.3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Third/Higher</td>
<td>300</td>
<td>12.5%</td>
<td>960</td>
<td>39.9%</td>
<td>1,144</td>
<td>47.6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>920</td>
<td>16.3%</td>
<td>2,179</td>
<td>38.7%</td>
<td>2,538</td>
<td>45.0%</td>
<td>110.8</td>
<td>&lt;.001**</td>
</tr>
<tr>
<td>Never married</td>
<td>162</td>
<td>20.5%</td>
<td>311</td>
<td>39.3%</td>
<td>318</td>
<td>40.2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Separated/Divorced</td>
<td>186</td>
<td>33.8%</td>
<td>186</td>
<td>33.8%</td>
<td>179</td>
<td>32.5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Widowed</td>
<td>223</td>
<td>18.7%</td>
<td>441</td>
<td>36.9%</td>
<td>531</td>
<td>44.4%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The prevalence of MHDs ranged from 1.60% (self-reported alcohol or substance use problem) to 9.49% (severe depressive symptoms as per CES-D) based on the various indicator variables. Almost half of respondents (45.9%) had at least one smoking-related disease at baseline. Cardiovascular disease was most prevalent (43.1%), followed by respiratory diseases (4.04%) and finally smoking-related cancers (1.65%). All exposure variables, outcomes (overall and contributing variables) and covariates were significantly associated with current smoking status (Table 1.2). In relation to outcome variables, both overall and in the case of each individual disease variable former smoking was more prevalent than current or never smoking. Those reporting a diagnosed respiratory disease had however also retained a high rate of current smoking (32.4%). Physical activity was less strongly related to current smoking status in comparison to other covariates, though the association was still statistically significant.
Table 4.2 The presence of MHDs (exposure variables), smoking-related illnesses (outcome) and confounding variables by smoking status (n=8,174) including Anova and Chi-square analyses

<table>
<thead>
<tr>
<th>MHDs indicator variables</th>
<th>Current smoker (n=1,491)</th>
<th>Former smoker (n=3,117)</th>
<th>Never smoker (n=3,566)</th>
<th>( \chi^2 )</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emotional, nervous or psychiatric problem (self-reported doctor diagnosed)</td>
<td>190 (27.4%)</td>
<td>254 (36.6%)</td>
<td>249 (35.9%)</td>
<td>45.7</td>
<td>&lt;.001**</td>
</tr>
<tr>
<td>Psychiatric medication use (antidepressant, antipsychotic or anxiolytic)</td>
<td>200 (27.2%)</td>
<td>269 (36.6%)</td>
<td>266 (36.2%)</td>
<td>46.4</td>
<td>&lt;.001**</td>
</tr>
<tr>
<td>Antidepressant</td>
<td>148 (26.4%)</td>
<td>206 (36.8%)</td>
<td>206 (36.8%)</td>
<td>28.8</td>
<td>&lt;.001**</td>
</tr>
<tr>
<td>Antipsychotic</td>
<td>40 (36.0%)</td>
<td>32 (28.8%)</td>
<td>39 (35.1%)</td>
<td>23.9</td>
<td>&lt;.001**</td>
</tr>
<tr>
<td>Anxiolytic</td>
<td>49 (28.6%)</td>
<td>65 (38.0%)</td>
<td>57 (33.3%)</td>
<td>14.6</td>
<td>.001*</td>
</tr>
<tr>
<td></td>
<td>Current smoker (n=1,491)</td>
<td>Former smoker (n=3,117)</td>
<td>Never smoker (n=3,566)</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>18.2%</td>
<td>38.1%</td>
<td>43.6%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>%</th>
<th>N</th>
<th>%</th>
<th>N</th>
<th>%</th>
<th>χ²</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol/substance abuse (self-reported doctor diagnosed)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>57</td>
<td>43.5%</td>
<td>50</td>
<td>38.2%</td>
<td>24</td>
<td>18.3%</td>
<td>66.2</td>
<td>&lt;.001**</td>
</tr>
<tr>
<td>Depression (CES-D) (n=8,044)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None/mild (7 or less)</td>
<td>737</td>
<td>15.2%</td>
<td>1,873</td>
<td>38.7%</td>
<td>2,230</td>
<td>46.1%</td>
<td>129.4</td>
<td>&lt;.001**</td>
</tr>
<tr>
<td>Moderate (8-15)</td>
<td>422</td>
<td>19.0%</td>
<td>856</td>
<td>38.5%</td>
<td>944</td>
<td>42.5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Severe (16+)</td>
<td>296</td>
<td>30.2%</td>
<td>342</td>
<td>34.9%</td>
<td>343</td>
<td>35.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety (HADS-A) (n=6,637)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal (7 or less)</td>
<td>756</td>
<td>15.1%</td>
<td>1,978</td>
<td>39.4%</td>
<td>2,286</td>
<td>45.5%</td>
<td>78.6</td>
<td>&lt;.001**</td>
</tr>
<tr>
<td>Possible (8-10)</td>
<td>199</td>
<td>19.4%</td>
<td>381</td>
<td>37.2%</td>
<td>444</td>
<td>43.4%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Probable (11+)</td>
<td>172</td>
<td>29.0%</td>
<td>201</td>
<td>33.9%</td>
<td>220</td>
<td>37.1%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outcomes</td>
<td>Current smoker (n=1,491)</td>
<td>Former smoker (n=3,117)</td>
<td>Never smoker (n=3,566)</td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>--------------------------</td>
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<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>Any smoking-related disease</td>
<td>648</td>
<td>17.3%</td>
<td>1,573</td>
<td>42.0%</td>
<td>1,526</td>
<td>40.7%</td>
<td>44.0</td>
<td></td>
</tr>
<tr>
<td>Respiratory</td>
<td>107</td>
<td>32.4%</td>
<td>143</td>
<td>43.3%</td>
<td>80</td>
<td>24.2%</td>
<td>70.0</td>
<td></td>
</tr>
<tr>
<td>Smoker-related cancers</td>
<td>26</td>
<td>19.3%</td>
<td>69</td>
<td>51.1%</td>
<td>40</td>
<td>29.6%</td>
<td>12.3</td>
<td>.002*</td>
</tr>
<tr>
<td>CVD</td>
<td>583</td>
<td>16.5%</td>
<td>1,479</td>
<td>42.0%</td>
<td>1,463</td>
<td>41.5%</td>
<td>40.0</td>
<td>&lt;.001**</td>
</tr>
<tr>
<td>Other covariates</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IPAQ (Physical Activity)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>517</td>
<td>19.9%</td>
<td>955</td>
<td>36.8%</td>
<td>1,120</td>
<td>43.2%</td>
<td>11.5</td>
<td>.022*</td>
</tr>
<tr>
<td>Moderate</td>
<td>459</td>
<td>16.5%</td>
<td>1,087</td>
<td>39.0%</td>
<td>1,241</td>
<td>44.5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>500</td>
<td>18.4%</td>
<td>1,044</td>
<td>38.4%</td>
<td>1,173</td>
<td>43.2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alcohol problem (n=6,758)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(CAGE score of 2 or more)</td>
<td>215</td>
<td>26.4%</td>
<td>390</td>
<td>47.8%</td>
<td>210</td>
<td>25.8%</td>
<td>142.9</td>
<td>&lt;.001**</td>
</tr>
<tr>
<td>Diabetes (self-reported doctor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>diagnosed)</td>
<td>110</td>
<td>17.3%</td>
<td>293</td>
<td>46.2%</td>
<td>231</td>
<td>36.4%</td>
<td>20.2</td>
<td>&lt;.001**</td>
</tr>
<tr>
<td>Waist cm (n=5,863)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(mean and (SD))</td>
<td>93.77</td>
<td>(13.9)</td>
<td>97.79</td>
<td>(14.0)</td>
<td>93.95</td>
<td>(13.5)</td>
<td>F=55.9</td>
<td>&lt;.001**</td>
</tr>
</tbody>
</table>

59
4.7.2 Predicting smoking status using MHDs

Multinomial logistic regression was employed to predict smoking status based on evidence of MHDs and adjusting for age, sex, education and marital status. Variables indicating evidence of MHDs were; a self-reported doctor diagnosed emotional nervous or psychiatric problem (Model 1), self-reported psychiatric medication use (Model 2), self-reported doctor diagnosed alcohol/substance abuse (Model 5) and scores on depression (Model 7) and anxiety scales (Model 8) the CES-D and HADS-A respectively. Models combining multiple mental health indicator variables were also employed with the aim of exploring associations with smoking at various levels of evidence. Model 3 combined a self-reported emotional nervous or psychiatric problem and self-reported psychiatric medication use while in Model 4 the predictor variable was the presence of either one of these. Model 6 was the presence of either a self-reported emotional, nervous or psychiatric problem or an alcohol/substance use problem. Decisions regarding the combination of variables within models were made based on both logic and the need to provide a sample size which would provide sufficient power for regression analyses.

As shown in Table 4.3, all models indicating evidence of MHDs were significant predictors of current smoking status. Relative risk ratios for former and current smoking ranged from 1.26 to 1.99 and 1.84 to 4.31 respectively while adjusting for potential confounders. Never smoker was the base category. Across models the adjusted current smoking prevalence ranged from 25-39% and was highest in the alcohol/substance abuse group. This compares to the crude smoking prevalence of 18.24% in the sample overall. Adjusted former smoking prevalence ranged from 38-41% which compares to 38% in the overall sample. The prevalence of never smoking was particularly low in the self-reported doctor diagnosed alcohol/substance abuse group (Model 5) at 22%, albeit from the initially low absolute prevalence of 1.6%.
Table 4. Adjusted multinomial regression models of smoking status (current/past/never) according to various indicators of MHDs for TILDA cohort

<table>
<thead>
<tr>
<th>Model</th>
<th>n</th>
<th>Adjusted prevalence for no MHDs</th>
<th>Adjusted prevalence</th>
<th>Adjusted RRR</th>
<th>95% CI</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Emotional, nervous or psychiatric problem (self-reported doctor diagnosed)</td>
<td>8,154</td>
<td>34%</td>
<td>44%</td>
<td>(base)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Never smoker</td>
<td></td>
<td>39%</td>
<td>37%</td>
<td>1.33</td>
<td>1.10-1.60</td>
</tr>
<tr>
<td></td>
<td>Former smoker</td>
<td></td>
<td>26%</td>
<td>19%</td>
<td>1.84</td>
<td>1.50-2.26</td>
</tr>
<tr>
<td></td>
<td>Current smoker</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Psychiatric medication use (Self-reported)</td>
<td>8,158</td>
<td>35%</td>
<td>44%</td>
<td>(base)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Never smoker</td>
<td></td>
<td>38%</td>
<td>38%</td>
<td>1.26</td>
<td>1.05-1.52</td>
</tr>
<tr>
<td></td>
<td>Former smoker</td>
<td></td>
<td>27%</td>
<td>19%</td>
<td>1.84</td>
<td>1.51-2.25</td>
</tr>
<tr>
<td></td>
<td>Current smoker</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model</td>
<td>n</td>
<td>Adjusted prevalence</td>
<td>Adjusted prevalence for no MHDs</td>
<td>Adjusted RRR</td>
<td>95% CI</td>
<td>P value</td>
</tr>
<tr>
<td>-------</td>
<td>----------</td>
<td>---------------------</td>
<td>---------------------------------</td>
<td>--------------</td>
<td>-----------</td>
<td>---------</td>
</tr>
<tr>
<td>3</td>
<td>8,158</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Self-reported doctor diagnosed emotional, nervous or psychiatric problem <strong>and</strong> self-reported any psychiatric medication</td>
<td>33%</td>
<td>43%</td>
<td>(base)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Never smoker</td>
<td>33%</td>
<td>43%</td>
<td>(base)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Former smoker</td>
<td>41%</td>
<td>38%</td>
<td>1.44</td>
<td>1.11-1.86</td>
<td>.006*</td>
</tr>
<tr>
<td></td>
<td>Current smoker</td>
<td>26%</td>
<td>19%</td>
<td>1.90</td>
<td>1.40-2.55</td>
<td>&lt;.001**</td>
</tr>
<tr>
<td>4</td>
<td>8,158</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Self-reported doctor diagnosed emotional, nervous or psychiatric problem <strong>or</strong> self-reported any psychiatric medication</td>
<td>35%</td>
<td>44%</td>
<td>(base)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Never smoker</td>
<td>35%</td>
<td>44%</td>
<td>(base)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Former smoker</td>
<td>38%</td>
<td>38%</td>
<td>1.26</td>
<td>1.08-1.46</td>
<td>.003*</td>
</tr>
<tr>
<td></td>
<td>Current smoker</td>
<td>26%</td>
<td>18%</td>
<td>1.87</td>
<td>1.58-2.21</td>
<td>&lt;.001**</td>
</tr>
<tr>
<td>5</td>
<td>8,158</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Alcohol/Substance abuse (self-reported doctor diagnosed)</td>
<td>22%</td>
<td>43%</td>
<td>(base)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Never smoker</td>
<td>22%</td>
<td>43%</td>
<td>(base)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Former smoker</td>
<td>38%</td>
<td>38%</td>
<td>1.99</td>
<td>1.19-3.33</td>
<td>.009*</td>
</tr>
<tr>
<td></td>
<td>Current smoker</td>
<td>39%</td>
<td>19%</td>
<td>4.31</td>
<td>2.47-7.53</td>
<td>&lt;.001**</td>
</tr>
<tr>
<td>Model</td>
<td>n</td>
<td>Adjusted prevalence for no MHDs</td>
<td>Adjusted RRR</td>
<td>95% CI</td>
<td>P value</td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>---</td>
<td>---------------------------------</td>
<td>--------------</td>
<td>--------</td>
<td>---------</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>8,158</td>
<td>Alcohol/Substance abuse or Emotional, nervous or psychiatric problem (self-reported doctor diagnosed)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Never smoker</td>
<td>34%</td>
<td>44% (base)</td>
<td>1.33</td>
<td>1.11-1.60</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Former smoker</td>
<td>38%</td>
<td>38%</td>
<td>1.33</td>
<td>1.11-1.60</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Current smoker</td>
<td>28%</td>
<td>18%</td>
<td>2.04</td>
<td>1.68-2.47</td>
</tr>
<tr>
<td>7</td>
<td>8,029</td>
<td>CES-D</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>None/Mild (base)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Never smoker</td>
<td>46% (base)</td>
<td>1.37</td>
<td>1.15-1.63</td>
<td>&lt;.001**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Former smoker</td>
<td>38%</td>
<td>1.37</td>
<td>1.15-1.63</td>
<td>&lt;.001**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Current smoker</td>
<td>26%</td>
<td>2.27</td>
<td>1.88-2.75</td>
<td>&lt;.001**</td>
</tr>
<tr>
<td>Model</td>
<td>( n )</td>
<td>Adjusted prevalence</td>
<td>Adjusted prevalence for no MHDs</td>
<td>Adjusted RRR</td>
<td>95% CI</td>
<td>P value</td>
</tr>
<tr>
<td>--------</td>
<td>--------</td>
<td>---------------------</td>
<td>-----------------------------</td>
<td>---------------</td>
<td>------------</td>
<td>---------</td>
</tr>
<tr>
<td>8</td>
<td>HADS-A</td>
<td>6,626</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Normal**

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Never smoker</td>
<td>45%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Former smoker</td>
<td>38%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current smoker</td>
<td>17%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Possible Anxiety**

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Never smoker</td>
<td>41%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Former smoker</td>
<td>39%</td>
<td></td>
<td>1.12</td>
<td>0.96-1.32</td>
<td>.141</td>
</tr>
<tr>
<td>Current smoker</td>
<td>21%</td>
<td></td>
<td>1.30</td>
<td>1.06-1.60</td>
<td>.011*</td>
</tr>
</tbody>
</table>

**Probable Anxiety**

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Never smoker</td>
<td>36%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Former smoker</td>
<td>38%</td>
<td></td>
<td>1.27</td>
<td>1.02-1.59</td>
<td>.034*</td>
</tr>
<tr>
<td>Current smoker</td>
<td>25%</td>
<td></td>
<td>2.02</td>
<td>1.59-2.56</td>
<td>&lt;.001**</td>
</tr>
</tbody>
</table>

*Weighted and adjusted for age, sex, education and marital status.
4.7.3 Predicting smoking-related illnesses using MHDs

A number of multivariate logistic regression models were conducted to assess the association between various indicators of MHDs and the presence of smoking-related disease. Employing the same eight models used to predict smoking status above, the relevant outcome was the presence of any one or more smoking-related diseases i.e. cardiovascular disease, respiratory disease or smoking-related cancer as detailed above in methods section. Covariates adjusted for were age, sex, education, physical activity (IPAQ), waist circumference, alcohol problem (CAGE) and diabetes.

All models were predictive of presence of smoking-related disease with odds ratios ranging from 1.24 to 1.62 (Table 4.4). The adjusted prevalence of smoking-related disease ranged from 53 to 60% and was highest in those reporting a diagnosed alcohol/substance abuse problem. This compares to a crude prevalence of 46% in the overall sample.
Table 4. Adjusted logistic regression models of any smoking-related disease (respiratory disease, cardiovascular disease or smoking-related cancer) according to various indicators of MHDs for TILDA cohort

<table>
<thead>
<tr>
<th>Model</th>
<th>Indicators</th>
<th>n</th>
<th>Adjusted prevalence smoking-related disease</th>
<th>Adjusted prevalence smoking-related disease for no MHDS</th>
<th>Adjusted OR</th>
<th>95% CI</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Emotional, nervous or psychiatric problem (self-reported doctor diagnosed)</td>
<td>5,176</td>
<td>53%</td>
<td>48%</td>
<td>1.24</td>
<td>1.01-1.51</td>
<td>.036*</td>
</tr>
<tr>
<td>2</td>
<td>Psychiatric medication use (self-reported)</td>
<td>5,176</td>
<td>55%</td>
<td>48%</td>
<td>1.38</td>
<td>1.12-1.70</td>
<td>.002*</td>
</tr>
<tr>
<td>3</td>
<td>Self-reported doctor diagnosed emotional, nervous or psychiatric problem and self-reported any psychiatric medication</td>
<td>5,176</td>
<td>57%</td>
<td>48%</td>
<td>1.46</td>
<td>1.11-1.93</td>
<td>.007*</td>
</tr>
<tr>
<td>4</td>
<td>Self-reported doctor diagnosed emotional, nervous or psychiatric problem or self-reported any psychiatric medication</td>
<td>5,176</td>
<td>53%</td>
<td>47%</td>
<td>1.27</td>
<td>1.07-1.50</td>
<td>.006*</td>
</tr>
<tr>
<td>Model</td>
<td>n</td>
<td>Adjusted prevalence smoking-related disease</td>
<td>Adjusted prevalence smoking-related disease for no MHDS</td>
<td>Adjusted OR</td>
<td>95% CI</td>
<td>P value</td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>---</td>
<td>--------------------------------------------</td>
<td>------------------------------------------------</td>
<td>-------------</td>
<td>-------------</td>
<td>---------</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>5,176</td>
<td>60%</td>
<td>48%</td>
<td>1.62</td>
<td>1.00-2.62</td>
<td>.048</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>5,176</td>
<td>54%</td>
<td>48%</td>
<td>1.30</td>
<td>1.07-1.58</td>
<td>.008*</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>5,114</td>
<td>46%</td>
<td></td>
<td>1.10</td>
<td>0.96-1.26</td>
<td>.160</td>
<td></td>
</tr>
<tr>
<td></td>
<td>None/mild</td>
<td>50%</td>
<td></td>
<td>1.50</td>
<td>1.21-1.85</td>
<td>&lt;.001**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>54%</td>
<td></td>
<td>1.44</td>
<td>1.18-1.75</td>
<td>&lt;.001**</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>5,024</td>
<td>47%</td>
<td></td>
<td>1.10</td>
<td>0.93-1.29</td>
<td>.261</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Possible anxiety</td>
<td>51%</td>
<td></td>
<td>1.50</td>
<td>1.21-1.85</td>
<td>&lt;.001**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Probable anxiety</td>
<td>55%</td>
<td></td>
<td>1.50</td>
<td>1.21-1.85</td>
<td>&lt;.001**</td>
<td></td>
</tr>
</tbody>
</table>

Weighted and adjusted for age, sex, education, physical activity (IPAQ), waist circumference, alcohol problem (CAGE) and diabetes.
4.7.4 Mediation analysis

As per Baron and Kenny’s four steps for mediation, the independent variable, MHDs, therefore predicted the dependent variable smoking-related disease thus fulfilling the first step in Baron and Kenny’s approach (187). As already displayed above in Table 4.3, the independent variable, MHDs, also predicted smoking status thereby fulfilling the second step in Baron and Kenny’s approach to mediation analyses.

In order to assess the third step in Baron and Kenny’s approach (187), further regression analyses were conducted which confirmed that smoking status predicted smoking-related disease, with significant associations for former smoking (step 3).

Lastly smoking status was added to all models predicting smoking-related disease to assess the fourth and final step of Baron and Kenny’s approach to mediation analyses. As shown below in Table 4.5, the addition of smoking status to models had virtually no impact on odds ratios. Changes observed were negligible and therefore failed to fulfil step four indicating that the association between MHDs and smoking-related disease was not mediated by smoking.
Table 4. Adjusted logistic regression models of any smoking-related disease according to various indicators of MHDs for TILDA cohort and with mediational analysis adjusting for smoking status (never/past/current)

<table>
<thead>
<tr>
<th>Model</th>
<th>n</th>
<th>Adjusted prevalence smoking-related disease</th>
<th>Adjusted prevalence smoking-related disease for no MHDS</th>
<th>Adjusted OR</th>
<th>95% CI</th>
<th>P value</th>
<th>Mediation analysis</th>
<th>Adjusted OR</th>
<th>95% CI</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Emotional, nervous or psychiatric problem (self-reported doctor diagnosed)</td>
<td>5,176</td>
<td>53%</td>
<td>48%</td>
<td>1.24</td>
<td>1.01-1.51</td>
<td>.036*</td>
<td>1.23</td>
<td>1.01-1.51</td>
<td>.039*</td>
<td></td>
</tr>
<tr>
<td>2 Psychiatric medication use (self-reported)</td>
<td>5,176</td>
<td>55%</td>
<td>48%</td>
<td>1.38</td>
<td>1.12-1.70</td>
<td>.002*</td>
<td>1.38</td>
<td>1.12-1.70</td>
<td>.002*</td>
<td></td>
</tr>
<tr>
<td>3 Self-reported doctor diagnosed emotional, nervous or psychiatric problem and self-reported any psychiatric medication</td>
<td>5,176</td>
<td>57%</td>
<td>48%</td>
<td>1.46</td>
<td>1.11-1.93</td>
<td>.007*</td>
<td>1.45</td>
<td>1.10-1.92</td>
<td>.008*</td>
<td></td>
</tr>
<tr>
<td>Model</td>
<td>Adjusted prevalence smoking-related disease</td>
<td>Adjusted prevalence smoking-related disease for no MHDS</td>
<td>Adjusted OR</td>
<td>95% CI</td>
<td>P value</td>
<td>Mediation analysis</td>
<td>95% CI</td>
<td>P value</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>--------------------------------------------</td>
<td>-----------------------------------------------------</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Self-reported doctor diagnosed emotional, nervous or psychiatric problem or self-reported any psychiatric medication</td>
<td>5,176</td>
<td>53%</td>
<td>47%</td>
<td>1.27</td>
<td>1.07-1.50</td>
<td>.006*</td>
<td>1.27</td>
<td>1.07-1.50</td>
<td>.006*</td>
</tr>
<tr>
<td>5</td>
<td>Alcohol/Substance abuse (self-reported doctor diagnosed)</td>
<td>5,176</td>
<td>60%</td>
<td>48%</td>
<td>1.62</td>
<td>1.00-2.62</td>
<td>.048</td>
<td>1.63</td>
<td>1.01-2.61</td>
<td>.044*</td>
</tr>
<tr>
<td>6</td>
<td>Alcohol/Substance abuse or Emotional, nervous or psychiatric problem (self-reported doctor diagnosed)</td>
<td>5,176</td>
<td>54%</td>
<td>48%</td>
<td>1.30</td>
<td>1.07-1.58</td>
<td>.008*</td>
<td>1.30</td>
<td>1.07-1.58</td>
<td>.008*</td>
</tr>
<tr>
<td>Model</td>
<td>n</td>
<td>Adjusted prevalence smoking-related disease for no MHDS</td>
<td>Adjusted OR</td>
<td>95% CI</td>
<td>P value</td>
<td>Adjusted OR</td>
<td>95% CI</td>
<td>P value</td>
<td></td>
<td></td>
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<tr>
<td>---------</td>
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<td>--------</td>
<td>---------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 CES-D</td>
<td>5,114</td>
<td>None/mild 46%</td>
<td>1.10</td>
<td>0.96-1.26</td>
<td>.160</td>
<td>1.10</td>
<td>0.96-1.26</td>
<td>.190</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderate 50%</td>
<td>1.10</td>
<td>0.96-1.26</td>
<td>.160</td>
<td>1.10</td>
<td>0.96-1.26</td>
<td>.190</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Severe 54%</td>
<td>1.44</td>
<td>1.18-1.75</td>
<td>&lt;.001**</td>
<td>1.43</td>
<td>1.18-1.74</td>
<td>&lt;.001**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 HADS-A</td>
<td>5,024</td>
<td>Normal 47%</td>
<td>1.10</td>
<td>0.93-1.29</td>
<td>.261</td>
<td>1.10</td>
<td>0.93-1.30</td>
<td>.256</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Possible anxiety 51%</td>
<td>1.10</td>
<td>0.93-1.29</td>
<td>.261</td>
<td>1.10</td>
<td>0.93-1.30</td>
<td>.256</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Probable anxiety 55%</td>
<td>1.50</td>
<td>1.21-1.85</td>
<td>&lt;.001**</td>
<td>1.50</td>
<td>1.21-1.85</td>
<td>&lt;.001**</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4.7.5 Moderation analysis

In order to assess moderation, interaction terms for smoking and MHDs were built. Results from the moderation analysis are presented in Table 4.6 (see Appendix 3 for full models). All smoking and MHDs interaction terms were non-significant when main effects were included in the model, except one. Past smoking appeared to have a negative moderating effect on the association between self-reported doctor diagnosed emotional, nervous or psychiatric problems and smoking-related diseases while current smoking had no significant moderating role, although effect sizes were similar. This would suggest that those who self-reported a doctor diagnosed emotional, nervous or psychiatric problem and were former smokers were less likely to have a smoking-related disease, although the fact that this result was not replicated in any other model suggests this may represent a spurious finding.
Table 4. Moderation analysis: Odds ratios for smoking and MHDs interaction terms for any smoking-related disease (respiratory disease, cardiovascular disease or smoking-related cancer)

<table>
<thead>
<tr>
<th>Model</th>
<th>n</th>
<th>Adjusted OR</th>
<th>95% CI</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Emotional, nervous or psychiatric problem (self-reported doctor diagnosed)</td>
<td>5,176</td>
<td>0.62</td>
<td>0.39-0.98</td>
</tr>
<tr>
<td></td>
<td>( x ) Past Smoking</td>
<td>0.66</td>
<td>0.38-1.15</td>
<td>.142</td>
</tr>
<tr>
<td></td>
<td>( x ) Current Smoking</td>
<td>1.10</td>
<td>0.69-1.74</td>
<td>.699</td>
</tr>
<tr>
<td>2</td>
<td>Psychiatric medication use (self-reported)</td>
<td>5,176</td>
<td>1.14</td>
<td>0.68-1.91</td>
</tr>
<tr>
<td>3</td>
<td>Self-reported doctor diagnosed emotional, nervous or psychiatric problem and self-reported any psychiatric medication</td>
<td>5,176</td>
<td>1.02</td>
<td>0.53-1.96</td>
</tr>
<tr>
<td></td>
<td>( x ) Past Smoking</td>
<td>1.26</td>
<td>0.63-2.55</td>
<td>.513</td>
</tr>
<tr>
<td>Model</td>
<td>Description</td>
<td>n</td>
<td>Adjusted OR</td>
<td>95% CI</td>
</tr>
<tr>
<td>-------</td>
<td>-------------</td>
<td>----</td>
<td>-------------</td>
<td>--------------</td>
</tr>
<tr>
<td>4</td>
<td>Self-reported doctor diagnosed emotional, nervous or psychiatric problem or self-reported any psychiatric medication</td>
<td>5,176</td>
<td>0.76</td>
<td>0.52-1.11</td>
</tr>
<tr>
<td></td>
<td><em>Past Smoking</em></td>
<td></td>
<td>2.08</td>
<td>0.52-8.34</td>
</tr>
<tr>
<td></td>
<td><em>Current Smoking</em></td>
<td></td>
<td>0.83</td>
<td>0.22-3.08</td>
</tr>
<tr>
<td>5</td>
<td>Alcohol/Substance abuse (Self-reported doctor diagnosed)</td>
<td>5,176</td>
<td>0.74</td>
<td>0.47-1.15</td>
</tr>
<tr>
<td></td>
<td><em>Past Smoking</em></td>
<td></td>
<td>0.68</td>
<td>0.41-1.13</td>
</tr>
<tr>
<td>Model</td>
<td>n</td>
<td>Adjusted OR</td>
<td>95% CI</td>
<td>P value</td>
</tr>
<tr>
<td>-------</td>
<td>---</td>
<td>-------------</td>
<td>--------</td>
<td>---------</td>
</tr>
</tbody>
</table>
| CES-D | 5,114 | Moderate <br>

- Past Smoking | 0.93 | 0.70-1.24 | .638 |
- Current Smoking | 0.84 | 0.56-1.25 | .389 |

- Severe <br>

- Past Smoking | 1.03 | 0.67-1.57 | .899 |
- Current Smoking | 1.14 | 0.69-1.88 | .605 |

| HADS-A | 5,024 | Possible Anxiety <br>

- Past Smoking | 1.23 | 0.85-1.77 | .270 |
- Current Smoking | 1.20 | 0.76-1.91 | .437 |

- Probable Anxiety <br>

- Past Smoking | 1.05 | 0.65-1.70 | .834 |
- Current Smoking | 0.86 | 0.50-1.48 | .588 |

*Weighted and adjusted for age, sex, education, physical activity (IPAQ), waist circumference, alcohol problem (CAGE) and diabetes.*
4.8 Discussion
This study revealed a number of important findings in a population-based dataset of older people, using multiple indicators of MHDs to ensure robustness of findings. MHDs, as evidenced by self-reported doctor diagnosed problems, psychiatric medication use and scores on anxiety and depression scales, were associated with smoking status in community living adults aged 50 and over in Ireland. MHDs were also associated with the presence of a smoking-related disease i.e. respiratory disease, cardiovascular disease or a smoking-related cancer in this cohort. Contrary to our hypothesis, respondents’ smoking status did not mediate the association between MHDs and smoking-related disease.
While it was expected that higher rates of smoking would be an important factor in the relationship between MHDs and smoking-related disease, smoking did not fully explain the increased disease prevalence in this population. The various indicators of MHDs revealed similar results. Associations with both current smoking and with smoking-related disease were strongest for self-reported doctor diagnosed alcohol/substance use. This was the first study to examine the burden of smoking on the physical health of those with MHDs in Ireland at a population level.

The first aim of the current study was to establish the prevalence of smoking and the prevalence of smoking-related disease in older adults with MHDs in Ireland. The higher rates of smoking among those with MHDs compared to the general population have already been established in the UK, the US and Australia (7, 14, 84). Between 2009 and 2011 the general population smoking prevalence among those aged 15 and over in Ireland fell from 24.6% to 22.9%(189). In the current study adjusted current smoking prevalences of 25 to 39% were found among those with MHDs while former smoking prevalences were 38 to 41%. This compares to current smoking prevalences of 25.5 to 59% among those with MHDs (7, 45, 80-84) found in previous studies and lifetime prevalences between 55.3 and 81% with higher rates observed in those with psychosis (7, 15, 87).

Increased rates of tobacco-related disease (44-46, 99-102) have also been shown. The adjusted prevalences of smoking-related disease in the current study ranged from 53 to 60%. Previous studies have found prevalences ranging from 0.9 (peripheral vascular
disorder) to 61% (raised cholesterol) for cardiovascular conditions including cardiac
disease and stroke. In relation to respiratory conditions, COPD prevalences of 6.8-45.7%
(44, 45, 99-101) have been reported in previous studies. Cancer morbidity studies
reporting prevalence according to MHDs appear to be rare though a number of mortality
studies have been published.

The second aim of this study was to uncover the impact of smoking on the association
between MHDs and smoking-related disease. However, although the diseases included
were selected by the authors to show the burden of tobacco on the physical health of
those with MHDs in Ireland, in the current study smoking did not mediate this association.
In general, smoking status had no moderating role in the association between MHDs and
smoking-related diseases either. The only exception was a significant negative
moderating effect of past smoking on the association between self-reported doctor
diagnosed emotional, nervous or psychiatric problems and smoking-related diseases.
However given this was present in just one model and not a pattern seen across exposure
variables no strong conclusions can be drawn. Smoking intensity, in terms of pack years,
was also assessed for mediation and moderation effects, given mental illness is associated
with heavier smoking (88), but no effects were found (data not shown). Previous studies
involving psychiatric populations or those with SMI have found elevated odds of
respiratory illness, cardiovascular disease and risk of death from cardiovascular disease
which were not fully explained by smoking (46, 80, 104). Researchers have suggested
antipsychotic medications, diet, exercise (80) smoking intensity (dose-response
relationship), inhaling more deeply (as has been indicated in schizophrenia) (190, 191)
and greater second-hand smoke exposure (46) may form part of the explanation. It
should also be noted that in the current study, cardiovascular disease, which is known to
have risk factors beyond smoking, accounted for the vast majority of smoking-related
disease. High cholesterol was also responsible for a large proportion of this CVD and 66%
of the overall smoking-related disease outcome variable was accounted for by those with
high cholesterol alone. However, only minor changes were present in a few models when
cholesterol was excluded as an outcome, and the overall pattern of results remained (see
Appendix 4). Respiratory disease and smoking-related cancers accounted for just 4% of
the smoking-related disease outcome modelled. Other risk factors for cardiovascular
disease such as physical activity were assessed in this study but may not have been accurate enough to account for all excess risk. For instance, while the IPAQ is said to have reasonable measurement properties for 18-65 year olds (184) its reliability with those aged 65 and over has been questioned (192). It is also possible that other risk factors that were not assessed may be more important.

Overall, individuals with MHDs are known to die younger (38, 42, 193-195) and tobacco-related deaths specifically also seem to occur at an earlier age than in the general population (196). Given that the current study involved those aged 50 and over it is likely that a proportion of those with MHDs are missing from the dataset as they have already died or were terminally ill and therefore not participating. Support for this is provided by the fact that for most MHDs indicators (with the exception of medications) case respondents were significantly younger compared to the rest of the sample (data not shown). Only one of the studies cited above in describing excess morbidity and mortality was limited to an older population and it concerned those aged 65 and older and hospitalised for acute myocardial infarction (98). Another study, linking 1,213 inpatient records to death index data, found cigarette smoking contributed to an increased risk of death in schizophrenia patients particularly in those aged 35-54 years but that in older ages (55-69 years) mortality risk was actually lower for smokers (70). Similarly, Bandiera et al. found persons with MHD, including substance abuse, experience tobacco-related deaths at earlier ages than the general population but that after age 70 this pattern is reversed and tobacco-related deaths occur more often in the general population (196). Although descriptive data indicated that former smokers had higher estimates of smoking-related disease and only former smoking (and not current) was predictive of smoking-related disease, as stated results from the mediation and moderation analysis show that past smoking did not explain the association between MHDs and smoking-related disease. It should be noted that in this older sample 38.1% were former smokers. Furthermore as stated this is a relatively healthy sample, missing those who have already died or were too unwell to participate.
4.8.1 Strengths and Limitations

Strengths of the current study include the large nationally representative sample of older adults. The TILDA study with its robust methodology provides a detailed and rich population weighted dataset and the necessary power to adjust for many confounders. This large representative sample means results can be generalised to the population of older adults (179). This study also included multiple measures of MHDs from self-reported doctor diagnosed conditions to medication use to standardised scales.

This study was limited in that it is representative only of those aged 50 and over who are living in the community. Datasets which do not include younger people or other sectors of society, such as those not living in the community do not provide a full picture and are therefore likely to underestimate disease prevalence, particularly if those excluded tend to experience higher rate of disease and decreased life expectancy as is the case for those with severe mental illness (38). Osborn et al. accessed the UK General Practitioners Research Database and achieved a large nationally representative community sample of people with SMI which included those in long-term care. However, as they acknowledged, homeless people may not be well-represented and as such the estimated risk of CHD death may still be even greater than it appears (80). This is again especially relevant in the case of MHDs given, as noted in the UK, the striking disparity of prevalence of psychiatric disorders in different subsections of the population (197). In addition to these challenges in gaining representative samples of those with SMI the exclusion of those in residential care is also an issue as while this covers only around 2% of those aged 50 and over, it represents a greater proportion of those in older age categories and people in residential care tend to have more chronic disease (198). Future research could look to include surveys of institutions and the homeless in addition to households.

This study also largely relied on self-reported doctor diagnosed conditions and involved an older population introducing issues including under diagnosis of conditions and under-reporting. This older sample in particular may potentially under-report conditions and medications due to memory but also due to stigma and social desirability bias (199), particularly in the case of questions around mental health within the context of a face-to-face interview. A 2007 national survey in Ireland revealed just over half of respondents
agreed with the statement ‘If I was experiencing mental health problems, I wouldn’t want people knowing about it’ (200). Self-report data in relation to smoking has however been shown to be accurate in most studies (201).

In addition to potential underreporting, psychiatric medications such as benzodiazepines can be prescribed for short term conditions such as insomnia or as muscle relaxants for pain and thus would not necessarily indicate MHDs. Furthermore the role which psychiatric medications themselves can play in terms of weight gain and metabolic effects is also a factor (202). Nonetheless the similar pattern of results across models (including those based on self-reported doctor diagnosed MHDs and scale scores) provides reassurance that this alone was not responsible for the increased risk of disease in those with indicated MHDs after controlling for smoking. The use of multiple models was also a limitation however, given multiple testing increases the risk of type I error.

Arguably some models were overfitted due to the inclusion of the CAGE questionnaire (for consistency of models) as a covariate when modelling the presence of smoking-related disease based on self-reported doctor diagnosed alcohol/substance abuse, meaning alcohol was included as confounder while also a component of the exposure variable, however removal had little impact on results (data not shown). As with all observational studies the potential for residual confounding cannot be ruled out. Finally, the fact that it was not possible to include cancers of the lip, the renal pelvis and acute myeloid leukaemia is a further limitation.

4.8.2 Conclusions
Among older community living adults in Ireland indicators of MHDs was associated with a higher prevalence of current smoking and self-reported doctor diagnosed cardiovascular disease, respiratory diseases and smoking-related cancers. This increased risk of smoking-related disease remained even after adjusting for smoking status.
Chapter 5  Survey of Provided Smoking Cessation Care in a Psychiatric Setting

5.1 Introduction
Study 2 assessed current levels of cessation care in a psychiatric setting in Ireland through a survey of service users and review of casenotes. Results were analysed according to the RE-AIM evaluation framework which allows researchers to evaluate the implementation of interventions in complex, real world settings (74, 157). STROBE guidelines for observational studies were employed in reporting of both methodology and results (176).

5.2 Study design
The study used a cross-sectional survey design at baseline, with a longitudinal follow-up at 3 months post-baseline survey for current smokers.

5.3 Setting
5.3.1 St Patrick’s University Hospital
St Patrick’s University Hospital is an independent mental health hospital located in Dublin with a nationwide catchment area. It is Ireland’s largest independent mental health service provider and provides both inpatient and outpatient services. The hospital consists of 241 beds across eight adult wards as well as a 14-bed adolescent unit. Baseline interviews were conducted between January and October 2016 with 3-month follow-up telephone interviews completed from April 2016 to March 2017. While the study was originally planned for two other sites, both private and public, research ethics approval for the same protocol was denied and the project was therefore moved to the St. Patrick’s site (see Appendix 6).

5.3.2 Ethical approval
The research approval and ethics application process began in St. John of God’s sites in February 2015. The committee decision in May requested changes that compromised the integrity of the study and the research was therefore switched to SPUH. Full ethical approval was granted by the St Patrick’s Mental Health Services ethics committee on September 29th 2015 (See Appendix 7 for approval letter) subject to standard conditions and clarification on one query relating to ‘opportunistic sampling’. Following clarification
of this and one or two additional minor amendments to the survey (i.e. the inclusion of electronic cigarettes and the separation of questions regarding asking smoking status versus advising to quit) chair approval was received on 30th November 2015 (see Appendix 8).

5.3.3 Participants
The study cohort comprised inpatients at St Patrick’s University Hospital over the period 13th January – 20th October 2016. A number of outpatients were also surveyed at the request of the medical director of this hospital although this sample ultimately proved too small to be conclusive, so were omitted from the current analysis. This was because there proved to be logistical issues with recruiting outpatients in a similar way to inpatients given the limited opportunities and time constraints (see Appendix 10).

5.4 Procedure
5.4.1 Baseline survey
Patients meeting eligibility criteria on each ward were approached to participate. Eligibility criteria were that they were a current patient and that they provided fully informed consent. Those with dementia or significant intellectual disability were excluded, as were those who were deemed acutely unwell at the time of the study, as advised by clinical staff. All eight wards included were adult only and so all participants were 18 and over. It was also planned to exclude any patients who were non-English speaking, but no such exclusions were required.

Prior to commencing recruitment on each ward the researcher presented the study to staff at multidisciplinary team meetings. Inclusion and exclusion criteria were explained and any patients deemed inappropriate to approach were highlighted. Recruitment then began on that ward and while ongoing the researcher would check in regularly with a member of staff to ensure all patients were still currently suitable to approach. Once common areas had been exhausted the researcher approached patients in bays and bedrooms. The aim was to approach every patient who met eligibility criteria, however due to limited resources and patients transferring to other wards, single night admissions, day leave, spending time off wards or patients not responding to bedroom calls, it was usually not possible to invite every patient to participate. A pragmatic approach was
taken and when the researcher was spending a lot of time waiting to approach only 1-2 remaining patients the study moved on to the next ward. In the case of the Special Care Unit the researcher had to approach patients and conduct surveys accompanied by a member of staff.

Patients were informed of the purpose of the study, provided with an information sheet (Appendix 12), and once written consent (Appendix 13) was provided, participants were interviewed by the researcher. In the case of those not participating reasons for exclusion were recorded e.g. missed, refusal to participate, or due to exclusion criteria, for example, significant dementia.

Participants who were current smokers and completed a baseline interview were also asked to consent to a 3-month follow-up telephone survey, casenote review and a carbon monoxide breath test should they quit in the period between baseline and follow-up surveys. This study was a replication of surveys recently conducted at Beaumont and Connolly hospitals (62, 118, 119) and represented the first application of this type of survey in a psychiatric hospital in Ireland thus allowing comparison of psychiatric and non-psychiatric settings.

Baseline interviews lasted 5-10 minutes and included assessment of demographic details, smoking history, Motivation to quit (Motivation to Stop Scale; (203), cigarette dependence (Fagerstrom Test for Nicotine Dependence; (116), recent quitting history, acceptability of advice, beliefs about quitting and recall of smoking status questions and of smoking cessation advice during the current admission as well as in the past 12 months (Appendix 14: Baseline survey). It was decided to limit questions about advice at baseline to the preceding 12 months due to potential recall bias (204, 205). During interviews the limitations of the survey items became clear. Therefore, data relating to smoking cessation care received was recoded post-data collection, but prior to analysis, in order to create additional variables which were felt to better capture care reported in a more meaningful way (Appendix 15: Data cleaning). These additional variables were created at the data entry stage in order to fully capture all actual reports of smoking interactions by respondents after the original cessation care questions proved limited by interpretation biases and staggered recall/reporting. All available data arising from both responses to
open-ended questions regarding ‘what advice/treatment?’ they had received’ as well as spontaneous reports of cessation interactions were considered in coding participant reports to create these additional variables. Results for these additional recoded variables as well as the original closed questions (which are directly comparable with prior work in non-psychiatric settings (62, 118, 119)) are presented in results.

Those who were current smokers were also asked if their casenotes may be viewed.

5.4.2 Casenote review

Casenote data was collected to assess the documentation of smoking status and of cessation advice as well as to allow comparison with smoking cessation advice self-reported by patients at baseline and follow-up. Where consent was provided the researcher reviewed the casenotes of participants who were current smokers at baseline, abstracting data relating to admission and discharge dates, primary diagnosis at baseline admission (206), medical history, prescribed medications (in order to review the complexity of drug interactions with smoking); smoking status and smoking cessation advice or assistance (including relevant prescriptions [NRT, bupropion, varenicline, etc.]).

Casenotes were paper-based, and recording of smoking status/care, where present, was not always in the same place. All documents within the 12 months preceding baseline interview were therefore reviewed as well as documents relating to the 3 months between baseline and follow-up in the case of respondents for whom a follow-up interview was completed. Where multiple admissions had occurred within the study period historical files were also requested and reviewed. For 3 of the 77 participants, complete casenotes for all admissions within the study period could not be located and so only partial review was possible.

Data relating to smoking cessation care was coded in order to best capture documented reports of delivered cessation care. Coding resulting in the following variables which captured documented instances of:

- Smoking cessation advice
- Advice to cut-down
- Advice to cut-down/quit
- Assessment of readiness
- Need for care noted but no evidence care delivered
- Smoking cessation prescriptions

Medical history data collected were coded for presence of smoking-related disease diagnoses including cardiovascular disease (including hypercholesterolemia, hypertension, stroke and myocardial infarction), respiratory disease (asthma, emphysema, COPD) and smoking-related cancers in line with Study 1 (see chapter 4).

All prescribed medications during the relevant study period were recorded by the researcher. These were then coded by a pharmacist for the presence of: anti-psychotics (excluding prochlorperazine as usually used as an antiemetic); benzodiazepines or z drugs; anti-depressants; and mood stabilizers (where a patient had a diagnosis of epilepsy, the antiepileptic medicines were not classified as mood stabilisers) and coded for presence of any theoretical interactions with smoking or smoking cessation. ‘Medication interactions with smoking and smoking cessation’ from the NSW Government was used as a checklist for interactions which was also validated with cross reference to Stockley’s Drug interactions, the Summary of Product Characteristics as well as recent literature on smoking and drug interactions (207-211). Finally the presence of a prescribed medication which may in particular clinically significantly impact with regard to interaction with smoking or smoking cessation (i.e. Clozapine, Olanzapine, Fluvoxamine, Thioridazine or Agomelatine) was also noted.

5.4.3 Follow-up survey 3-months post baseline

Patients identified as smokers and who consented were contacted 3 months later. This follow-up survey assessed current smoking status, quit attempts since baseline interview, receipt of smoking cessation advice since baseline interview, and planned future quit attempts (Appendix 16: Follow-up survey). Those who reported that they had quit smoking at the 3-month follow-up were asked to provide a breath sample using a carbon monoxide monitor to objectively validate cessation. A small number of respondents were not tested due to logistical issues (see Figure 5.1).
For those consenting to follow-up several attempts were made to make contact in morning, afternoon and evening. For two participants follow-up was completed face-to-face as they were current inpatients at the time and this was preferred while for one participant, who was too unwell to participate, a proxy report of his status was supplied by a spouse.

5.4.4 Measures

Smoking status
Current smokers were those who had smoked 100 cigarettes and reported they were currently smoking ‘some days’ or ‘every day’ when asked if they now smoke. Former smokers had smoked at least 100 cigarettes in their lifetime but reported they were currently smoking ‘not at all’. Participants identified as non-smokers (former and never smokers) were asked to participate anonymously in order to collect comparative data regarding demographics, as per previous research (118, 119). Those who reported seven-day point prevalence abstinence at follow-up were defined as quit.

Motivation to Stop Scale (MTSS)
A single-item measure, the Motivation to Stop Smoking scale (MTSS) aims to provide an ordinal measure of motivation to stop smoking (203) – see Appendix 11.2. The scale consists of one item with 7 response categories which are said to assess all relevant aspects of motivation including intention, desire and belief making it highly cost efficient. It has been shown to have strong predictive validity and accuracy in predicting quit attempts at 6 months in an English sample (203) and also proved externally valid when used to predict quit attempts at 12 months in a Netherlands survey (212) with discriminative accuracy equal to that of a Stages of Change assessment (212).

Fagerstrom test of Nicotine Dependence
The Fagerström Test for Nicotine Dependence (213), now renamed the Fagerström Test for Cigarette Dependence (FTCD)(214), is a 6-item measure widely used for assessing level of physical dependence on nicotine (see Appendix 11.1). The original 8-item FTQ measure (215) was revised to 6-items leading to improved psychometric properties (216) with acceptable levels of internal consistency and scores closely relating to biochemical indices of heaviness of smoking (213).
Possible scores range from 0-10. A score of 1-2 indicates very low dependence; 3-4 low dependence; 5 moderate/medium dependence; 6-7 high dependence; and scores of 8 and over indicate very high dependence. Respondents’ scores are considered to guide the level of intervention/support which may be needed for successful smoking cessation (213). Cronbach’s alpha in the current study was 0.61, which was the same as that found by Heatherton et al. when revising the scale to its current form (213) and indicates moderate internal consistency. This score also falls within the range (0.55 to 0.74) found in a recent systematic review (in which 14 studies cited alpha, English, Spanish, Portuguese) which included three psychiatric samples (217).

Status at baseline (Stage of change)
A single-item measure designed to assess current status in relation to quitting smoking with four response categories provided. These categories are based on the Stages of Change Model (218) and are designed to tap into the precontemplation, contemplation, preparation and action stages. The measure has been used in previous studies in Ireland (118, 219).
5.5 Application of RE-AIM

The RE-AIM framework was used to assess current levels of cessation care as outlined in Table 5.1.

Table 5.1 Application of the RE-AIM framework

<table>
<thead>
<tr>
<th>Dimension</th>
<th>How assessed:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reach</td>
<td>Percentage asked smoking status (self-report). Percentage received smoking cessation care (self-report). Percentage for which smoking status was recorded in casenotes. Percentage for which smoking cessation care was recorded in casenotes.</td>
</tr>
<tr>
<td>Effectiveness</td>
<td>Effectiveness of smoking cessation care in terms of associations with quit rate at 3-month follow-up for self-report and casenotes.</td>
</tr>
<tr>
<td>Adoption</td>
<td>Representation of various HCPs in delivery of smoking cessation care according to (i) patient self-report and (ii) as documented in casenotes.</td>
</tr>
<tr>
<td>Implementation</td>
<td>Extent to which care was consistently implemented by staff members based on patient self-report. Consistency in documentation of status and care in casenotes in relation to location and frequency.</td>
</tr>
<tr>
<td>Maintenance</td>
<td>Relates to longer-term follow up and was therefore beyond the scope of this thesis</td>
</tr>
</tbody>
</table>

5.6 Study size

St. Patrick’s University Hospital had 241 adult beds across eight adult wards. Given the then smoking prevalence in the Irish general population (19.5%) and smoking prevalence in psychiatric inpatient settings based on international evidence (40-70%)(16) a sample of 200 inpatients recruited over 6 months was the initial aim. Taking a conservative estimate of 46% smoking prevalence a sample of 200 would provide a margin of error of ±7.5% which was acceptable given a precise prevalence was not sought. Rather the objective was to demonstrate any potential discrepancy in smoking prevalence and smoking cessation care offered, and to allow comparison with previously published similar work in
non-psychiatric settings (62, 119, 220). The final sample (n=246) was recruited over a period of 9 months and exceeded the initial aim of 200. This larger sample was a result of the researcher approaching as many patients as possible on each ward to ensure representativeness coupled with the low refusal rates.

5.7 Statistical Methods

Analysis
Data entry and analysis was completed on site. Following data cleaning and necessary recoding of variables, data was analysed in Stata 13.0. Descriptive statistics were used to profile the sample in terms of demographics; smoking prevalence; smoking history; quit attempts; attitudes towards advice and quitting. Between-group comparisons were made using chi square and t-tests on the basis of smoking status at baseline. Respondents for whom casenotes were reviewed were also profiled in relation to: psychiatric admissions; diagnosis; medical history; prescribed medications and interactions of same with smoking or smoking cessation.

Crude logistic regression analysis was then performed modelling associations between smoking cessation care variables and smoking status at 3-months follow-up to observe trends and explore potential ‘effectiveness’ in a real world setting. Demographic variables, nicotine dependence, the MTSS and Stage of Change measure were also tested for associations with smoking cessation at 3-months follow-up using chi-square and t-tests. Participants lost to follow-up were treated as missing as were item non-responses where occurred.

5.8 Results

5.8.1 Participants
Across 8 wards (12 consultants), 246 inpatients were interviewed between January and October 2016. Figure 5.1 overleaf illustrates the recruitment process. For access and refusal rates for each ward please see Table located in Appendix 9.
Figure 5.1 Flow diagram of recruitment

*Includes one former smoker who smoked a pipe for 6-7 years.
5.8.2 Descriptive data

Respondents self-reported that they had been in hospital on average 45.8 days (SD 303.0; Median 16 days, IQR 5-35) when interviewed and the timing of baseline interview ranged from on day of admission to several years after admission in the case of a single longstay patient.

Table 5.2 below provides the overall sample profile.

Table 5.2 Demographic profile of sample

<table>
<thead>
<tr>
<th></th>
<th>Overall Sample N=246</th>
<th>Baseline smokers n=84</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Age in years on day of interview (n=244)</td>
<td>49.7</td>
<td>18.5</td>
</tr>
<tr>
<td>Female</td>
<td>n=146</td>
<td>59.4%</td>
</tr>
<tr>
<td>Education (n=245)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary or lower</td>
<td>n=25</td>
<td>10.2%</td>
</tr>
<tr>
<td>(at least some) Secondary</td>
<td>n=108</td>
<td>44.1%</td>
</tr>
<tr>
<td>(at least some) Third level</td>
<td>n=112</td>
<td>45.7%</td>
</tr>
<tr>
<td>Insurance (n=245)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private insurance /Insurance and Medical card /Employer /Spouse Employer</td>
<td>n=243</td>
<td>99.2%</td>
</tr>
<tr>
<td>None / Medical card only</td>
<td>n=2</td>
<td>0.82%</td>
</tr>
<tr>
<td>Employment (n=245)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full-time /Part-time /Self-employed / Sick leave</td>
<td>n=91</td>
<td>37.1%</td>
</tr>
<tr>
<td>Unemployed / Disability benefit / Illness benefit</td>
<td>n=45</td>
<td>18.4%</td>
</tr>
<tr>
<td>Retired including early retirement for medical / disability reasons</td>
<td>n=60</td>
<td>24.5%</td>
</tr>
<tr>
<td>House duties</td>
<td>n=28</td>
<td>11.4%</td>
</tr>
<tr>
<td>Student</td>
<td>n=21</td>
<td>8.57%</td>
</tr>
<tr>
<td>Marital status (n=244)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single (never married)</td>
<td>n=99</td>
<td>40.6%</td>
</tr>
<tr>
<td>Married / Cohabiting</td>
<td>n=108</td>
<td>44.3%</td>
</tr>
<tr>
<td>Separated / Divorced / Widowed</td>
<td>n=37</td>
<td>15.2%</td>
</tr>
<tr>
<td>Lives with a smoker</td>
<td>n=44</td>
<td>17.9%</td>
</tr>
</tbody>
</table>
Current smokers at baseline were younger than non-smokers and more likely to be single. There were no significant differences in relation to self-reported education, employment, gender, private medical insurance or living with a smoker.

5.8.3 Smoking prevalence

Among the 246 respondents, 136 (55.3%) had smoked 100 cigarettes in their lifetime, while one respondent reported having smoked a pipe for several years. Among these 137 ever smokers, 79 (57.7%) reported they were currently smoking every day while 5 (3.65%) reported they were now smoking some days. Overall the current inpatient smoking prevalence was 34% (84/246).

Current smokers reported an average of 23.6 pack years (SD 21.0)(221) while mean FTND score was 5.06 (SD 2.33) indicating medium dependence. Table 5.3 below presents additional detail in relation to attitudes towards advice and quitting among current smokers in the sample.
### Table 5. Attitudes towards advice and quitting among current smokers at baseline (n=84)

<table>
<thead>
<tr>
<th>Attitude / Motivation</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Would like cessation advice while in hospital</td>
<td>40</td>
<td>47.6%</td>
</tr>
<tr>
<td>Made quit attempt in past year</td>
<td>32</td>
<td>38.1%</td>
</tr>
<tr>
<td>More than one attempt in past year</td>
<td>21</td>
<td>25.0%</td>
</tr>
<tr>
<td>Status at baseline (Stage of change) (n=83)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trying to quit (Action)</td>
<td>2</td>
<td>2.41%</td>
</tr>
<tr>
<td>Actively planning to quit (Preparation)</td>
<td>16</td>
<td>19.3%</td>
</tr>
<tr>
<td>Thinking about quitting but not planning to (Contemplation)</td>
<td>34</td>
<td>41.0%</td>
</tr>
<tr>
<td>Not thinking about quitting (Pre-contemplation)</td>
<td>31</td>
<td>37.4%</td>
</tr>
<tr>
<td>Motivation to Stop Scale</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I don't want to stop smoking</td>
<td>7</td>
<td>8.33%</td>
</tr>
<tr>
<td>I think I should stop smoking but don’t really want to</td>
<td>14</td>
<td>16.7%</td>
</tr>
<tr>
<td>I want to stop but haven’t thought about when</td>
<td>11</td>
<td>13.1%</td>
</tr>
<tr>
<td>I REALLY want to stop smoking but I don’t know when I will</td>
<td>21</td>
<td>25.0%</td>
</tr>
<tr>
<td>I want to stop smoking and hope to soon</td>
<td>8</td>
<td>9.52%</td>
</tr>
<tr>
<td>I REALLY want to stop smoking and intend to in the next 3 months</td>
<td>9</td>
<td>10.7%</td>
</tr>
<tr>
<td>I REALLY want to stop smoking and intend to in the next month</td>
<td>13</td>
<td>15.5%</td>
</tr>
<tr>
<td>Don’t know (input as missing)</td>
<td>1</td>
<td>1.19%</td>
</tr>
<tr>
<td>Beliefs about quitting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health would improve in the short-term</td>
<td>73</td>
<td>86.9%</td>
</tr>
<tr>
<td>Health would improve in the long-term</td>
<td>80</td>
<td>95.2%</td>
</tr>
<tr>
<td>Would put on weight</td>
<td>41</td>
<td>48.8%</td>
</tr>
<tr>
<td>Harder to handle stress</td>
<td>51</td>
<td>60.7%</td>
</tr>
<tr>
<td>Would feel done something worthwhile</td>
<td>77</td>
<td>91.7%</td>
</tr>
</tbody>
</table>

### Follow-up data (n=72)

<table>
<thead>
<tr>
<th>Follow-up data</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-report quitter</td>
<td>12</td>
<td>16.7%</td>
</tr>
<tr>
<td>CO validated quitter (100% pass rate)</td>
<td>5</td>
<td>6.94%</td>
</tr>
<tr>
<td>Self-report cut-down</td>
<td>19</td>
<td>26.4%</td>
</tr>
</tbody>
</table>

The majority of current smokers wanted to quit (75%) and almost half reported they would like advice while in hospital. Just 2% however reported they were currently trying to quit at baseline.
Casenotes data

Table 5.4 presents descriptive casenote data relating to the 77 smokers who consented to review.

Table 5.4 Descriptive data abstracted from casenotes for current smokers who consented (n=77)

<table>
<thead>
<tr>
<th>Description</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary diagnosis at baseline admission (ICD-10(206))</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F00-09: Organic, including symptomatic, mental disorders</td>
<td>1</td>
<td>1.30%</td>
</tr>
<tr>
<td>F10-19: Mental and behavioural disorders due to psychoactive substance use</td>
<td>17</td>
<td>22.1%</td>
</tr>
<tr>
<td>F20-29: Schizophrenia, schizotypal and delusional disorders</td>
<td>9</td>
<td>11.7%</td>
</tr>
<tr>
<td>F30-39: Mood [affective] disorders</td>
<td>31</td>
<td>40.3%</td>
</tr>
<tr>
<td>F40-48: Neurotic, stress-related and somatoform disorders</td>
<td>7</td>
<td>9.09%</td>
</tr>
<tr>
<td>F50-59: Behavioural syndromes associated with physiological disturbances and physical factors</td>
<td>1</td>
<td>1.30%</td>
</tr>
<tr>
<td>F60-69: Disorders of adult personality and behaviour</td>
<td>11</td>
<td>14.3%</td>
</tr>
<tr>
<td><strong>Known to have had previous lifetime psychiatric admission(s)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Known to have had previous lifetime psychiatric admission(s)</td>
<td>58</td>
<td>75.3%</td>
</tr>
<tr>
<td>Baseline admission clearly documented as first lifetime psychiatric admission</td>
<td>10</td>
<td>13.0%</td>
</tr>
<tr>
<td>Presence of previous lifetime psychiatric admission(s) unclear</td>
<td>9</td>
<td>11.7%</td>
</tr>
<tr>
<td><strong>First lifetime admission to St Patrick’s University Hospital (SPUH)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First lifetime admission to St Patrick’s University Hospital (SPUH)</td>
<td>22</td>
<td>28.6%</td>
</tr>
<tr>
<td>Multiple admissions to SPUH in study period</td>
<td>29</td>
<td>37.7%</td>
</tr>
<tr>
<td><strong>Smoking-related disease documented in medical history</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smoking-related disease documented in medical history</td>
<td>38</td>
<td>49.4%</td>
</tr>
<tr>
<td><strong>Prescribed medicines during study period</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antipsychotic</td>
<td>63</td>
<td>81.8%</td>
</tr>
<tr>
<td>Mood stabiliser</td>
<td>32</td>
<td>41.6%</td>
</tr>
<tr>
<td>Benzodiazepine / Z-drug</td>
<td>65</td>
<td>84.4%</td>
</tr>
<tr>
<td>Antidepressant</td>
<td>61</td>
<td>79.2%</td>
</tr>
<tr>
<td>Theoretical interaction with smoking and smoking cessation</td>
<td>71</td>
<td>92.2%</td>
</tr>
<tr>
<td>Clinically significant interaction with smoking and smoking cessation</td>
<td>29</td>
<td>37.7%</td>
</tr>
</tbody>
</table>

The majority of participants who consented to casenote review had had a previous psychiatric admission as well as previous admissions to SPUH specifically. Mood disorders were the most common primary diagnosis. Almost half had a smoking-related disease documented in their medical history and over 37% had a prescription for a medication which significantly interacts with smoking or smoking cessation during the study period.
For further detail in relation to all variables please see supplementary results (Appendix 17) and data cleaning sections (Appendix 15).

The main study hypotheses, in terms of quality of cessation care, are explored next, as per the RE-AIM framework.

5.8.4 Smoking cessation care

REACH - Is the intervention reaching the target population?

Asking status

Any HCP in past year

Overall, 52% (n=128) of all respondents recalled being asked their smoking status by a healthcare professional in the previous 12 months or said ‘Yes’ when asked ‘In the past 12 months did a doctor or health professional ask you if you smoke?’ The rate among current smokers was 58.3% - see Table 5.5.

Table 5.5 Asked smoking status by a Healthcare Professional in the past year

<table>
<thead>
<tr>
<th></th>
<th>Current smokers (n=84)</th>
<th>Non-smokers at baseline (n=162)</th>
<th>Total sample (n=246)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>Yes</td>
<td>49</td>
<td>58.3%</td>
<td>79</td>
</tr>
<tr>
<td>No/HCP Already knew</td>
<td>27</td>
<td>32.1%</td>
<td>41</td>
</tr>
<tr>
<td>Unsure</td>
<td>8</td>
<td>9.52%</td>
<td>42</td>
</tr>
</tbody>
</table>

Casenote status

Casenote data for the period between admission date and baseline survey (Mean 54.5 days (SD 198.44; Median 21.5, IQR 9-43.5)) was available for 76 of the 77 current smokers who consented to review. Smoking status was recorded for 97% (n=74) of these including two respondents who were non-smokers at time and documented as same.

The two respondents for whom status was not recorded between baseline admission date and survey had had their status documented at SPUH in the previous 12 months (on previous admissions), while the single respondent for whom baseline admission
casenotes were not available had also had smoking status recorded at SPUH (during a previous admission) in the 12 months prior to baseline survey. Overall smoking status was therefore documented for all 77 participants within the 12 months previous to baseline survey.

**Advising, Assessing, Assisting**
While the majority of current smokers recalled some interaction with a HCP around smoking in the past year (68%), just 23.8% reported an interaction beyond status checking and only 13.1% reported an interaction which involved actual discussion of ways of quitting (including one patient for whom this was attempted but stopped due to patient disinterest). Over 7% of current smokers reported they had actually brought up smoking themselves with a HCP in the past year.

**Table 5. 6 Smoking Cessation Care Reported at Baseline (n=84)**

<table>
<thead>
<tr>
<th>Original closed questions</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asked status by any HCP in past year</td>
<td>49</td>
<td>58.3%</td>
</tr>
<tr>
<td>Said ‘Yes’ to any HCP discussed ways of quitting in past year</td>
<td>11</td>
<td>13.1%</td>
</tr>
<tr>
<td>Said ‘Yes’ to smoking discussed during this admission</td>
<td>9</td>
<td>10.7%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Re-coded reports of actual smoking interactions reported</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Any interaction on smoking including status asking in past year</td>
<td>57</td>
<td>67.9%</td>
</tr>
<tr>
<td>Unsure</td>
<td>8</td>
<td>9.52%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>-reported an interaction around smoking beyond being asked status</th>
<th>20</th>
<th>23.8%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reported actual discussion of ways of quitting</td>
<td>11</td>
<td>13.1%</td>
</tr>
<tr>
<td>Reported bringing up smoking themselves with a HCP in past year</td>
<td>6</td>
<td>7.14%</td>
</tr>
</tbody>
</table>

**Casenote advice**
Reviewing casenotes for participants for the study duration and 12 months prior to baseline survey interview, documented instances of patients being delivered advice to cut-down or quit were found for 13 participants. A smoking cessation-related prescription
(i.e. bupropion, varenicline or NRT) was found for 14 participants with just one of these also having documented smoking cessation advice.

Of the 14 with a smoking cessation prescription, two were prescribed bupropion while the remainder were for NRT. Just 10 of these smoking cessation prescriptions appeared to have started in SPUH of which 3 were known to have been patient requested.

Interactions including advice to cut-down, advice to quit and assessment of readiness were grouped to form a variable indicating any interaction beyond prescription only.

In addition to the variables in Table 5.7, documentation of staff storing cigarettes to limit consumption was also found for two participants both of whom were on a locked acute ward at the time and one of whom had no further documented cessation care including assessing readiness.

Table 5.7 Documented instances of Smoking Cessation Care (n=77)

<table>
<thead>
<tr>
<th>At least one documented occasion of:</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Patient delivered advice to cut-down/quit</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smoking cessation advice</td>
<td>5</td>
<td>6.49%</td>
</tr>
<tr>
<td>Advice to cut-down</td>
<td>5</td>
<td>6.49%</td>
</tr>
<tr>
<td>Advice to cut-down/quit</td>
<td>3</td>
<td>3.90%</td>
</tr>
<tr>
<td><strong>Assessed patient readiness to quit</strong></td>
<td>7</td>
<td>9.09%</td>
</tr>
<tr>
<td><strong>Need to advise noted but no evidence care delivered to patient</strong></td>
<td>7</td>
<td>9.09%</td>
</tr>
<tr>
<td><strong>Smoking cessation related prescription</strong></td>
<td>14</td>
<td>18.2%</td>
</tr>
<tr>
<td><strong>Summary variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient delivered advice to cut-down/quit</td>
<td>13</td>
<td>16.9%</td>
</tr>
<tr>
<td>Any interaction (readiness/advice)</td>
<td>19</td>
<td>24.7%</td>
</tr>
<tr>
<td>Any interaction and smoking cessation prescription</td>
<td>4</td>
<td>5.19%</td>
</tr>
<tr>
<td>Smoking cessation advice and smoking cessation prescription</td>
<td>1</td>
<td>1.30%</td>
</tr>
</tbody>
</table>

Clearly documented instance of smoking cessation advice were found for five patients with a further 5 receiving documented advice to cut-down or to cut-down/quit. Overall, almost a quarter had at least one documented instance of advice or assessment of
readiness and almost 20% had a smoking cessation prescription. Just 5% however had both a documented interaction and a smoking cessation prescription.

EFFECTIVENESS – Intervention effects on targeted outcomes

Original and additional recoded smoking cessation care variables were modelled for association with smoking status at 3-month follow-up using crude logistic regression analyses.

Table 5. 8 Crude logistic regression models predicting quit at 3-months based on Smoking Cessation Care (n=72)

<table>
<thead>
<tr>
<th>Original closed questions</th>
<th>Follow-up Sample N=72</th>
<th>Follow-up Quitters n=12</th>
<th>Odds ratio</th>
<th>CI</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asked status by any HCP in past year</td>
<td>43 59.7%</td>
<td>6 50.0%</td>
<td>0.62</td>
<td>.18-2.16</td>
<td>.454</td>
</tr>
<tr>
<td>Said ‘Yes’ to any HCP discussed ways of quitting in past year</td>
<td>10 13.9%</td>
<td>3 25.0%</td>
<td>2.52</td>
<td>.55-11.6</td>
<td>.234</td>
</tr>
<tr>
<td>Said ‘Yes’ to smoking discussed during this admission</td>
<td>8 11.1%</td>
<td>1 8.33%</td>
<td>0.69</td>
<td>.08-6.17</td>
<td>.739</td>
</tr>
</tbody>
</table>

Re-coded reports of actual smoking interactions reported

| Any interaction on smoking including status asking in past year | 49 68.1%              | 8 66.7%                 | 0.93       | .25-3.46    | .910    |
| Reported an interaction around smoking beyond being asked status | 15 20.8%              | 5 41.7%                 | 3.57       | .94-13.5    | .061    |
| Reported actual discussion of ways of quitting              | 9 12.5%               | 5 41.7%                 | 10.0       | 2.16-46.3   | .003**  |
| Reported bringing up smoking themselves with a HCP in past year | 4 5.56%               | 2 16.7%                 | 5.8        | .73-46.0    | .096    |
Only advice which included actual discussion of ways of quitting was significantly associated with self-reported quitting at 3-months follow-up.

Demographic variables were unrelated to being quit at 3-months as was daily versus non-daily smoking or baseline tobacco dependence as assessed by the Fagerstrom test.

Motivation (MTSS) ($\chi^2 = 14.2, p<.05$), however, and stages of change/reported status at baseline ($\chi^2 = 18.1, p<.001$) were significantly related to being quit at 3-months. All respondents who reported not thinking about quitting (precontemplation) at baseline or not wanting to quit smoking at baseline were still smoking 3 months later.

**Casenotes advice**

Associations between cessation care as per casenotes and quitting are shown in Table 5.9:

<table>
<thead>
<tr>
<th>Smoking Cessation Care Documented in Casenotes (n=66)</th>
<th>Follow-up Sample N=66</th>
<th>Follow-up Quitters n=12</th>
<th>Odds ratio</th>
<th>CIs</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>Smoking cessation prescription</td>
<td>12</td>
<td>18.2%</td>
<td>4</td>
<td>33.3%</td>
<td>2.87</td>
</tr>
<tr>
<td>Any interaction delivered to patient (including assessment of readiness, advice to cut-down, and advice to quit)</td>
<td>16</td>
<td>24.2%</td>
<td>4</td>
<td>33.3%</td>
<td>1.75</td>
</tr>
<tr>
<td>Any interaction and smoking cessation prescription</td>
<td>4</td>
<td>6.06%</td>
<td>1</td>
<td>8.33%</td>
<td>1.54</td>
</tr>
</tbody>
</table>

Smoking cessation prescriptions and documented interactions related to quitting and cutting-down including assessing readiness were all positively, though not significantly, associated with Quitting.

**ADOPTION – Representativeness of participating providers**

Of the 11 respondents who reported advice including actual discussion of ways of quitting, four reported that this advice had come from SPUH staff. Two cases involved
doctors (one consultant, one unspecified,) and two involved nursing staff. Case 3 self-reported that this occurred after he had brought up smoking cessation himself while case 2, for whom smoking cessation interactions occurred during outpatient reviews, was also revealed to have raised the issue herself upon casenote review (See Table 5.10).

Table 5. 10 SPUH adoption of smoking cessation advice including discussion of ways of quitting

<table>
<thead>
<tr>
<th>Case</th>
<th>HCP</th>
<th>Advice</th>
<th>Patient initiated?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SPUH doctor</td>
<td>Mentioned patches</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>SPUH consultant while outpatient</td>
<td>Zyban trial and Patches</td>
<td>✓</td>
</tr>
<tr>
<td>3</td>
<td>SPUH nurse</td>
<td>Try mints/gum</td>
<td>✓</td>
</tr>
<tr>
<td>4</td>
<td>SPUH clinical team nurse</td>
<td>Attempted but patient stopped</td>
<td></td>
</tr>
</tbody>
</table>

Beyond SPUH, four participants reported advice from their own GP, two from non-psychiatric consultants based at other sites both seen privately and one reported advice from both doctors and nurses during an inpatient stay at a large acute hospital. Just one of these interactions was reported to be patient initiated (see Appendix 17: Supplementary Results: Table 9).

Casenotes
There were five documented instances of clearly recorded delivered cessation advice to patients, two by hospital GPs, one by a registrar and two documented during ward rounds where a consultant was present.

IMPLEMENTATION – Extent to which intervention was consistently implemented by staff members
Based on the small number of participants reporting any smoking cessation care while in hospital, smoking cessation care is not currently consistently implemented by staff.

Casenotes
Smoking status was generally documented in the same place in casenotes and was recorded for 97% on baseline admission prior to survey.
Smoking cessation care was not reliably documented in one assigned area of chart and care provided was variable, with some advised to cut-down only and no care documented for many. Smoking cessation prescriptions were not consistently implemented and, as above, several appeared to occur in response to patient request only, while another patient who was noted to have requested NRT following advice to quit was never provided with same.

5.9 Discussion
This study aimed to establish current levels of cessation care among patients in a psychiatric setting through a survey of patients and casenotes and is the first survey of smoking cessation among psychiatric patients in Ireland. Previous studies of smoking cessation care in Ireland involved general inpatient samples and omitted patients on psychiatric wards (62, 118, 119). By replicating these surveys in a psychiatric setting, the current study provides novel data on cessation care quality that can be compared to other inpatient studies.

Smoking prevalence at 34% was higher than both the general population rate (222) and other inpatient samples in Ireland (62, 118, 119). However, importantly, psychiatric patients proved similar to nearby general inpatient samples in relation to quit attempts, acceptability of advice, desire to quit (MTSS) and quit rate at 3-months follow-up suggesting psychiatric patients have a similar level of interest and capability in relation to quitting smoking. Rates of smoking cessation care received were however lower. While psychiatric patients reported smoking status recording at a similar rate (62), just 10.7% reported smoking was discussed on their current admission while 13.1% reported advice from any healthcare professional in the past year. This compares to advice rates of around a third found in non-psychiatric inpatients at nearby teaching hospitals (62, 118, 119). The findings of the current study thus seemingly contrast those of a recent meta-analysis of US and UK studies which revealed similar smoking cessation advice rates for those with and without mental illness (223). Current results are more in line with previous studies which reported that people with severe mental ill health are less likely to receive help in quitting compared to the general population (34, 109), in spite of similar levels of desire to cut down or quit (14).
In contrast to general inpatient samples, psychiatric patients seemed to have more concern regarding impacts of quitting in relation to weight and stress (119) and average nicotine dependence was medium, in contrast to low levels in general inpatient samples (118, 119), again indicating this population may require greater support with quitting. Similarly to the Irish general population (219), just under 40% were not thinking about quitting at baseline (precontemplation). There were however fewer at the action stage with just 2.41% of respondents reporting they were currently trying to quit compared to rates of 11% and 12% in general population and hospital surveys respectively (118, 219), suggesting that a psychiatric inpatient stay is still seen by many as an inappropriate time for quitting. This was also reflected in some of the explanations listed by those who did not want cessation advice while in hospital which included reasons related to timing or acuteness of condition. This barrier remains it seems, in spite of evidence provided by Prochaska et al. (224) and arguments for integrating smoking cessation care with mental health and addiction treatments (126).

Staff in the psychiatric setting did however appear more likely to document both smoking status and care. In the current study, smoking status was documented for all smokers within the past year, and 97% in the period between admission and the baseline survey, compared to just 57% in nearby general inpatient samples (118). Additionally Even though rates of patient-reported cessation advice were lower, casenote documentation of same was more frequent, suggesting psychiatric staff are perhaps more likely to document such advice when given. Overall however documented cessation care was rare and this is in line with previous inpatient psychiatry medical record audits in the US and Australia (24, 120).

The current smoking prevalence found in this study is lower than that found in other recent inpatient psychiatry studies which revealed prevalences of 53.6-91.4% (83, 110-115), though as described in Chapter 2 these studies were often limited by small sample sizes (112, 113, 115), lower response rates (113, 114) or were sometimes restricted to certain age groups (115), to men (115), secure services (114), or emphasized the acutely psychotic in recruitment (115). While prevalence appeared lower, results were similar in relation to nicotine dependence (110-112, 114, 115) as well as belief smoking is harmful to health (113), reported desire to stop (113) and apparent motivation to quit in the form
of past year quit attempts (110, 115) including multiple attempts (110). In relation to care, studies conducted in Canada and South Africa found 36.2% and 43.4% of psychiatric inpatients reported receiving smoking cessation advice (111, 115) about three times the rate found in the current study.

Strong evidence in relation to the effectiveness of smoking cessation advice for people with serious mental illness remains lacking (162). In the current study additional variables were constructed prior to analysis in order to more meaningfully capture varying reports of cessation advice and only advice which included actual discussion of ways of quitting was associated with quitting at 3-month follow-up. In the UK few smokers with a mental health condition are reportedly offered real smoking cessation support in inpatient care. A survey revealed 37% of those with a mental health condition reported advice to stop, but were not always offered help to do so, while among those who were asked about smoking 23% also said they were not always advised to stop (20). This was also reflected in the current study through self-report and casenote reviews, which revealed numerous interactions around smoking which were beyond asking status but still fell short of optimal cessation advice. Among smokers in general, a recent systematic review and meta-analysis has shown that offer of support, in addition to advice to stop, appears to be more effective in generating quit attempts, leading to the recommendation that assistance be offered to all smokers regardless of interest expressed following advice to stop (225). Although not powered to detect significant quit rates, it appears from the current research that such discussions were also effective in prompting quitting here.

Doctors, nurses and hospital GPs were involved in delivery of cessation advice but implementation with the exception of documentation of smoking status was revealed to be minimal/inadequate and inconsistent. A recent mixed methods systematic review and meta-analyses of mental health professionals' attitudes revealed commonly held beliefs such as patients are not interested in quitting and quitting is too much for patients to take on in addition to other barriers including a lack of time, training and confidence (122). Given just 8.33% of participants in the current study did not want to quit, compared to 16% in nearby general inpatient samples (118), coupled with the equivalent quit rate at 3-months (118), the education of staff to address potential attitudinal barriers relating to interest and capability seems critical. Recent reviews and reports on smoking and mental
illness have identified the lack of mental health professional education in treating tobacco use and the history of smoking in mental health services as factors contributing to current levels of cessation care and called for ongoing education and training for health professionals (20, 41), an approach which has proved successful in general settings (226). Other barriers such as lack of time and training are also reported by HCPs in Ireland in general, and point to the need for greater focus on cessation care in training of HCPs as well as at a systems level (124).

Although theoretical medicine interactions were highly prevalent in this sample (92%), interactions which have actually been deemed clinically significant i.e. there have been reports of it causing a problem in practice were much lower at 37.7% (208). The approach taken, in terms of recording all prescribed medications documented at any time in study period and previous 12 months, may also have overestimated true prevalence. In any case the presence of clinically significant interactions represents merely a factor to be managed rather than reason not to offer cessation support especially in view of the observed levels of desire to quit.

This evaluation revealed the current partial and non-systematic implementation of the 5 A’s approach to cessation (ask, advise, assess, assist and arrange follow-up)(127). The Ottawa model, an application of the 5 A’s customised to the hospital setting, has already been shown to work in general hospital settings with increased abstinence rates (50). Coupled with staff education on the desire and ability of psychiatry patients to quit, this may work well in psychiatric hospital settings also.

5.9.1 Strengths & Limitations
This study was strengthened by its high access and participation rates and inclusion of all wards providing a highly representative sample within the setting. The influence of recall bias was tempered by the inclusion of casenote reviews in addition to self-report data. Indeed it was demonstrated that while just 58% of current smokers recalled recording of status in the past year, all for whom casenotes were reviewed (92%) had status documented in the past year. The inclusion of admissions during the study period as well as in the previous 12 months also indicated that barriers beyond timing or reluctance to advise while acutely unwell persist given the low rates of cessation care overall.
The private setting however limits generalisability and furthermore may have underestimated smoking prevalence given its current associations with lower socioeconomic status (222). Further research should seek to establish smoking prevalence, attitudes to cessation and current care in non-private psychiatric settings. Admissions to psychiatric units have also been shown to influence smoking with increases in prevalence and rates of smoking (113, 227, 228). This study may not have sufficiently accounted for the variations in smoking status and level of smoking associated with psychiatric admissions, leading to somewhat artificially inflated cut-down and quit rates at 3-months follow-up. Finally this study was not sufficiently powered for truly assessing outcomes and so used crude models to avoid model overfitting.

5.9.2 Conclusions
This was the first survey of smoking and smoking cessation in psychiatric patients in Ireland and aimed to evaluate current levels of cessation care. Current smoking prevalence was 34%. While all smokers had smoking status recorded in casenotes, just 6.5% had clearly documented smoking cessation advice, while 13% self-reported receipt of advice on ways of quitting from any healthcare professional in the past year. Advice including discussion of ways of quitting was associated with quitting at 3-months. There is a need to implement systematic and consistent high quality cessation support in psychiatric settings.
Chapter 6  Qualitative Process Evaluation of the Implementation of a Quit Smoking Programme in Community Adult Mental Health Services – Staff and Service user Perspectives

6.1 Introduction
This chapter presents the findings of Study 3, which was a process evaluation of the implementation of a smoking cessation programme. In line with the pragmatic approach taken in this thesis as a whole, as described in Chapter 2, methods at each stage were chosen based upon their ability to answer the research question (171). In the case of this study both the research question, assessing implementation of a programme and the multi-centre context/setting, demanded a qualitative approach, which has “an unrivalled capacity to constitute compelling arguments about how things work in particular contexts” ((229)p.1)

6.2 Study design
This study was a qualitative process evaluation designed to review the implementation of a Quit Smoking Programme (QSP) in community adult mental health services. It aimed to identify key enablers and barriers at both participant and staff levels in line with the MRC guidelines for process evaluations of complex interventions (153). A two-phase semi-structured in-depth qualitative design involving interviews for service user participants in phase one and focus groups for facilitators in phase two was chosen.

The triangulation of sources, i.e. combining both service user and staff perspectives and experiences, serves to validate study findings (230), adding credibility and strengthening confidence in the conclusions drawn. The integration of focus group and interview data in particular is said to assist in the identification of both individual and contextual circumstances, thus adding to interpretation and ultimately enhancing trustworthiness of results (231). These two approaches were therefore adopted.

6.2.3 In-depth interviews
Semi-structured in-depth interviews with service users were selected, instead of focus groups, as participant experience, rather than group processes, was the focus in this instance. Barbour argues that focus groups are not the optimum choice when it comes to
eliciting narratives (232). Instead a comprehensive individualised approach employing one-on-one in-depth interviews allowed the researcher to uncover service users’ own experiences and feelings relating to their smoking, quitting and, for those who attended, their own experience of the cessation programme. This approach could therefore uncover factors that might remain hidden when quantitative and less in-depth approaches such as focus groups are used. Legard et al. state that the in-depth format allows the researcher to explore fully all the factors that underpin participants’ answers, be they reasons, feelings, opinions and beliefs (233).

6.2.4 Focus groups
Focus groups have been defined as a group discussion where the researcher is ‘actively encouraging of, and attentive to, the group interaction’ ((234) p.20) and have been used extensively in health services research (232). Focus groups rather than interviews were selected for the second phase of this study, where cessation group facilitators were interviewed, as they allowed the researcher to explore interaction and group process and would therefore be useful in discerning key cross-site barriers to and enablers of the implementation of the 7-week programme. As Lambert and Loiselle relate these group interactions can highlight members’ similarities and differences and provide rich data unveiling the range of perspectives and experiences (231).

6.3 Study context

6.3.4 EVE – A programme in the HSE
EVE, a programme within Ireland’s Health Service Executive (HSE), was established in 1991. It provides community-based recovery-orientated programmes for adults who experience MHDs, intellectual difficulties, Asperger’s Syndrome, and Physical and Sensory disabilities (235). This service is delivered through a network of Vocational, Rehabilitative and Clubhouse services in 21 locations across the HSE Community Healthcare Areas 6, 7 and 9 (see Appendix 19). Seventeen of these twenty-one locations focus exclusively on MHDs and in 2016, the ‘Low Literacy Resources for Smoking Cessation’ Quit Smoking Programme was rolled out in 14 of these centres.
Eligible participants in this qualitative process evaluation were therefore:

Phase one: EVE service users who attended the programme as well as service users who smoke but had not engaged with the Quit Smoking Programme (non-attenders) across these 14 centres.

Phase two: EVE Quit Smoking Programme Facilitators including two service user co-facilitators across these 14 centres.

6.3.5 Quit Smoking Programme (QSP)
Below the programme is described in line with the TiDIE checklist (236):

1. **Brief name:** The resource was named ‘Low Literacy Resources for Smoking Cessation’ while the programme was labelled ‘7-week Quit Smoking Programme’ which abbreviated to QSP.

2. **Why:** The programme, designed by the HSE Health Promotion Service, aimed to provide intensive support service via an accessible resource which sets out a stage-by-stage process to support smokers in their decision to stop smoking and to sustain the attempt.

3. **What (materials):** Facilitators received a binder detailing the 7-week programme and including questionnaires and forms which were distributed to participants. A carbon monoxide monitor was also provided.

4. **What (procedures):** The programme involved 7 group sessions held once weekly where attendees would complete forms detailing their smoking habit and the cost of same as well as fill in forms detailing their individual plan for quitting for instance personal coping strategies. Carbon monoxide monitors were provided for attendees to ascertain their current expired breath carbon monoxide levels. Each week addressed one of 7 stages with the assumption attendees would quit at week 3 following two weeks of preparation and planning. Post quit sessions were focused on support and maintenance of the quit attempt. Namely the 7 sessions were:

   1) Prepare
There were also features and activities common to each session. Each session was introduced with a session aim, objective(s) and a section detailing what the participants will have learned or done ‘by the end of the session’. At the end of each session attendees were given the opportunity to reflect on their progress by marking their position on a ‘weekly feedback’ ladder diagram to indicate progress, relapse or no change as well as emotional state.

5. **Who (provided):** The programme was facilitated by an EVE staff member who had undergone training in brief interventions for smoking cessation as well as in the QSP programme specifically. These facilitators, while working in mental health services, were not healthcare professionals. Two service users were also trained in QSP and acted as co-facilitators at one centre.

6. **How:** The programme was delivered face to face in a group setting with the exception of one location where a single service user was recruited and thus it was provided individually. While beyond the scope of the programme as designed, it emerged from the study that a number of centres also added on individual support (see later for results). Group sessions were specified to last approximately 90 minutes according to the QSP manual but adaptation of the programme in line with client pace or readiness was also noted to be possible.

7. **Where:** The programme was run at centres in a designated room.

8. **When and how much:** The programme as designed ran for 7 once-weekly sessions although as the evaluation revealed this did vary in reality and at
times took longer or delivery stopped before all 7 sessions were completed. See later for results.

9. **Planned Tailoring:** While not planned tailoring did occur as subsequently revealed by this evaluation and described in the results section.

10. **Modifications:** No modifications occurred at the study level.

11. **How well (planned):** See No. 12 below.

12. **How well (actual):** The planning and delivery were considered in this research and are described in the results.

**6.3.6 Sample**
This study adopted a purposive sampling strategy. Efforts were made to include a range of service user participants, across all eligible centres, in terms of age, gender and service use (full-time/part-time) but also, as stated above, in terms of level of engagement with the quit smoking programme thus ensuring all key constituencies of relevance were covered and that sufficient diversity was included (237). This was however dependent upon both staff and service user availability given the role of staff as gatekeepers and recruiters and upon the provision of informed consent. In relation to recruitment of facilitators efforts were made to ensure service user co-facilitators were included in addition to staff facilitators ensuring any differences in perspectives could be explored (237), once again dependent upon availability and informed consent.

**6.4 Ethical approval**
The study received chair approval from the Tallaght Hospital / St. James’s Hospital Joint Research Ethics Committee on 28th April 2016 (Appendix 20).

**6.5 Data Collection Instruments/tools**

**6.5.1 Interview guides and Focus group theme sheet**
Interview schedules for service users who attended the smoking cessation programme, service users who did not attend, and for facilitator focus groups were developed by the researcher based on the research questions, the literature reviewed and background knowledge relating to the service itself and the Tobacco Free policy and Quit Smoking
Programme (Appendices 29 and 31). While informed by the literature, interview guides were also discussed with qualitative researchers and with researchers experienced in working with vulnerable populations, including those with MHDs, as well as management staff at the EVE service. The final interview guides were piloted through two mock interviews before service user interviews commenced, with no changes made based on these interviews. In line with the inductive approach taken, the interview guide was reviewed in light of the knowledge gained from the initial round of interviews and some minor adaptations were made, with a revised guide used for the remaining 18 interviews (Appendix 30). The focus group theme sheet was also discussed with qualitative researchers and again underwent minor revisions following completion of service user interviews (Appendix 32).

6.5.2 Audio recorders
Audio recorders were used throughout the study. For the initial two interviews a single recorder only was used and this failed 5 minutes into the second interview resulting in a partial recording. In the case of the 18 remaining interviews and all 4 focus groups a primary and back-up recorder were used.

6.6 Procedure
6.6.1 Phase one- Service user interviews
Recruitment of service user participants was conducted through EVE staff, who were briefed on the evaluation and asked to recruit service users who smoke or who had recently quit smoking. To allow time to consider their participation service users were informed of the study and presented with information sheets (Appendix 21 and 23) one week prior to engaging with the informed consent process (Appendix 22 and 24). The information presented included details regarding the purpose of the in-depth interview, right to decline to take part, and right to withdraw at any stage. One week after being informed of the study those who consented were invited to participate in an interview with the researcher. This study was presented alongside a quantitative component which is therefore also described in information and consent forms. Data are however unavailable due to incomplete implementation of this quantitative component across centres.
Interviews with service users focused on their experience of the programme and their feelings toward smoking. At the start of the interview service users were asked for basic demographic information (age and gender), followed by questions about smoking and their smoking history. Following this they were asked about pros and cons of smoking and not smoking, and barriers to and enablers of abstinence, their feelings on the smoke free policy and their experience of the smoking cessation programme. Service users who smoke but did not attend the smoking cessation programme were asked to talk about their decision not to attend and what if anything might have encouraged them to attend in addition to discussing their smoking history. Before all interviews the researcher reminded participants of the confidential nature of their participation as well as her neutral stance in relation to both the service and the topics to be discussed.

Ultimately, 20 interviews across 10 of the 14 sites were conducted from October 2016 to January 2017. Participants were a range of service users including QSP attendees (current and former smokers) and service users who were current smokers but had not attended the QSP. Some of the attendees interviewed were in the midst of a programme, some were about to restart a programme and others had attended a programme in the last few months but were no longer attending at time of interview. Interviews lasted between 15 and 50 minutes and were held in a private room at the centre attended.

6.6.2 Phase Two – Facilitator Focus Groups

Once all service user interviews were complete, phase two commenced, involving facilitators of the quit smoking programme based in centres dealing exclusively with mental health. All staff and both service users trained in QSP were invited to participate in a focus group. Staff had previously been informed about this phase of the study at service user recruitment briefings and information sheets were distributed once again in the follow-up email invitation (Appendix 25). The participant consent form (Appendix 26) was attached to this email and had to be completed prior to participation. As above, this study was presented alongside a quantitative component (an online survey in this case which was also open to centre managers).

Four focus groups were held in a training room at the Brú Chaoimhin Campus from February 2017 – March 2017. Due to non-attendance on the day the first focus group
went ahead with just two members. Overall focus groups ranged in size from two to six members and lasted around an hour (49 minutes – 1 hour 22 minutes) (see Table 6.1). The late arrival of one participant at Focus group 3 led to an extension add-on interview at the end with her of 14 minutes. Following the exclusion of three staff members who had retired, gone on career break and gone on maternity leave respectively, 19 eligible trained facilitators remained and 17 of these participated in a focus group. One additional member of staff who did not have QSP training volunteered to be part of one of the focus groups following miscommunication within the service, and contributed with general insights.

<table>
<thead>
<tr>
<th>Focus Group</th>
<th>n</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus Group 1</td>
<td>2</td>
<td>1h 3m</td>
</tr>
<tr>
<td>Focus Group 2</td>
<td>6</td>
<td>53m</td>
</tr>
<tr>
<td>Focus Group 3</td>
<td>4</td>
<td>49m</td>
</tr>
<tr>
<td>Focus Group 4</td>
<td>6</td>
<td>1h 22m</td>
</tr>
</tbody>
</table>

Facilitators were asked to discuss the smoke free policy; smoking in relation to those with MHDs and health service approach to same; the quit smoking programme in relation to their training, the resource itself and their facilitation experience as well as initial and ongoing barriers and enablers to starting and running the programme at their centres. Participants were reminded at the start of the focus group that all data would be de-identified and that the researcher was neutral in relation to the service and in relation to the topics to be discussed.

6.7 Data analysis

All interviews and focus groups were digitally recorded and transcribed verbatim for analysis with transcripts checked against recordings for accuracy. Transcripts were then anonymised with all names and identifying data removed and pseudonyms assigned where necessary. Data analysis was supported with Nvivo10 data management software. Thematic analysis was used for data from interviews and focus groups (170).

Following an extensive familiarisation process involving several close readings of transcripts initial codes were generated. Once all data had been coded the researcher
searched for major themes among these codes and developed an initial framework of themes and sub-themes representing key barriers and enablers. This framework was then discussed with a member of the supervisory team before the researcher went on to review and refine these themes to ensure, firstly, each theme was based on coded data which formed a coherent pattern including exploration of deviant cases where present, and, secondly, and more broadly, to ensure the key emergent themes were valid in their reflection of the dataset as a whole (170). A subset of transcripts was read by an additional coder to confirm that transcripts were coded consistently and that the key findings of the study were supported. The final coding framework is presented in Figures 6.1 and 6.2 below
Figure 6.1 Enablers – Final coding framework
Figure 6.2 Barriers – Final coding framework
6.8 Results

6.8.1 Enablers

1. Smoke-free campus policy
The recently introduced tobacco free campus policy emerged as an enabler leading members to often find smoking more awkward and as a result for some to find themselves smoking less:

“it has been a little bit awkward so they’ve cut down... when the weather is bad in particular you’d need to really want your cigarette to go out” [Focus Group 3 M]

“I cut down a bit because you have to go outside. You have to go outside anyway but eh we weren’t allowed smoke outside the building.” [Interview D1]

The policy also prompted replacements for smoking breaks in some centres with fruit and tea breaks offered to smokers or all members and thus serving as a distraction for smokers:

“when the smoke-free came in we changed that to a coffee break so people now instead of going out could come in and have a cup of coffee and tea and their bit of fruit and whatever and it’s a distraction” [Focus Group 3 G]

“we introduced a tea break for smokers... and we would have tea and biscuits or tea and whatever... so there would be at the moment now there would be an average of 12 or 13 people going in for the tea and a biscuit or whatever and about 2 to 3 going out for a smoke maybe only 2 going out for a smoke...so that was incentivising [agreement]...and it was like you know especially when the weather would be a bit bad or anything and they see a cup of tea and a biscuit” [Focus Group 4 EA]

2. Resourcefulness of Programme Facilitators
The resourcefulness of staff facilitating the quit smoking programme in general also emerged as an important enabler for implementation. This was revealed in extra-curricular efforts including the provision of additional individual support where required;
“we’re doing it you know step by step seeing what stage they’re at and working with each person then we do a group and then we just have a slot [for] an individual” [Focus Group 4 N]

“but I know the person who gave up was struggling hugely when he gave up so I linked in with him every day… just to keep the momentum going and so far he’s at around six weeks now off” [Focus Group 3 M]

and the building of individual work into group sessions to deal with some service users catching up on missed weeks;

“so we kinda go through it and then whether someone’s on week 2 or week 3 I’d give them maybe ten minutes and if you’re week 2 you get the week 2 little pack and if you’re the week 3 and then you do your own little personal bit of writing” [Focus Group 3 L]

Some facilitators used quit.ie and the national quit line as an additional resource in classes as well as during individual support sessions;

“I go to like the quit smoking website before the class so that I have stuff that I can kinda talk about some kinda like tips or whatever and then so we kinda go through it” [Focus Group 3 L]

“eh that [quit.ie ‘I can quit’ wristband] was in the pack that they got in ‘Centre X’ and each person got an envelope full of stuff…. Two of us have it on. ‘I can quit’, but don’t say don’t ask me when (Laughs).” [Interview D1]

some had members who are former smokers come in to share advice:

“I was just asked and I said I’ll just go along. I know it sound soppy but I thought maybe I could give back something” [Interview G2]

while Gavin made use of the technology available in his centre to support and empower attendees with low literacy:

“I have a device in Centre A and it’s the Dragon software …because some of the lads wouldn’t be able to type or write …open up a word for them and all of a
sudden you go talk in I’m gonna ask you questions and you just answer them here and they’re getting all the information down and they’re walking out beaming. Now I know it’s about the smoking and it’s not about…, but all of a sudden that confidence translates” [Focus Group 1 G]

Several Facilitators discussed running general support groups alongside the programme as a potential approach to dealing with missed weeks and attendees getting stuck at certain stages

“we’ll just be a smoking cessation support group until such time as at least some of us can set a quit date” [Focus Group 1 M]

and in X’s case because for some a week is too long to retain focus without ongoing support

“sometimes the week is too long and then you know stuff pops up the middle of the week and you can’t focus on it so what we’re doing is there’s every morning or every lunchtime we’ll meet just as a smoking group for 10 minutes” [Focus Group 1 G]

In another centre J elected to run a stress management group in between courses:

“in between rather than kind of doing you know the same thing all over again the em tsh just you know the way I did one week about em you know managing stress and whatever I just did a relaxation group like” [Focus Group 2 M]

A number of staff contacted HSE programme developers for support:

“I asked [a programme developer] from [name of place] to come down to [Centre G] just to see was I doing it right” [Focus Group 2 D]

while those at Centre D linked in with local services

“we got her to give talks and to work with the group as well you know to come in somebody different, we linked up with the local doctors for prescriptions and things like that we linked up with the local chemist as well to provide you know
3. An active, open and engaged recruitment approach

A more active approach to recruitment versus a simple noticeboard approach alone seems to have helped get the programme up and running at centres:

“talking about it really like every time someone new started kinda saying well we have you know are you a smoker and then if they say yeah ok well we have this would you be interested” [Focus Group 3 L]

Facilitators mentioned the need to ‘sell’ the programme a little and to encourage participation:

“having an initial chat with somebody what you don’t want is to just put up a list and say you know ‘stick your name down there if you wanna do a quit smoking programme alright’ .. I think this needs to be sold for want of a better word quite rigorously... we are pushing it a little bit and I think if we’re not pushing a little bit we’re not doing our job ... ask another one or two questions and you and if you still tell me to go bug*er off fair enough but we’re just kind of asking a couple more questions maybe just planting that little seed” [Focus Group 1 M]

Several service users discussed attending due to curiosity or just to hear the advice on offer:

“I thought, you know, it’s not that I thought about stopping but, em, I thought it’s good to sit down and listen to it and who knows if it gets me down on cigarettes, that’s, why not, you know” [Interview D2]

Unsurprisingly opening the programme up to those not ready to quit led to greater uptake:

“people think they have to quit that’s what I found em cus like that I’ve been trying to get this going here in December and nobody and again even January we kind of thought maybe new year’s resolutions and stuff like that would but it was kinda February before people kinda started kinda committing to me and I had to
kind of phrase it in such a way like it’s only just a conversation you know there’s no expectation” [Focus Group 3 L]

Importantly however it also appeared to spur on later quit attempts and personal goals:

“we’d a couple of people who were still smoking coming to the group and no intention of giving up but then, it’s like overnight something happens and they come in ‘oh yeah I stopped last week’” [Focus Group 3 M]

“and then once they started on it they started making goals for themselves” [Focus Group 3 L]

Some attended simply to cut-down but were highly committed in this:

“yeah I had one lady though that she would complete the course with me ... but she never actually gave up cigarettes but she said she just wasn’t at the right time to do it ... but she wanted to keep going with the course for the education and it was encouraging her to cut down she just wasn’t ready to give up ... she sat in throughout the whole 3 courses ... and she just felt that it kept her you know instead of smoking 20 a day she was smoking 10” [Focus Group 2 D]

and cutting down alone made a difference to them

“for this lady it was a big thing though...because she was able to manage then to get her hair done every week and everything saving cigarettes financially so it was a very big thing I have to say” [Focus Group 2 D]

In general however it seemed that while opening up the programme to those not necessarily ready to quit can work, it is best if these attendees have formed meaningful personal goals in advance or are at least somewhat self-motivated to attend. Forced or disengaged attendance may lead to frustration or affect overall atmosphere in the group:

“I think not anybody of the group wants to stop. (Laughs). It’s a bit tough you know..... in here with the programme I don’t know anybody who wants to quit no” [Interview D2]
At Centre X, where attendance by smokers was required given the inability to implement a tobacco free campus at this site the facilitator reported feeling frustrated with how the programme had gone:

“feel a bit a bit frustrated really you know like you’re just sort of on the I mean has anybody had any success like with it?” [Focus Group 2 M]

and described members expressing protestations in group

“I’d two people em that, one who was just like really forcibly letting it be known that the only reason they were there was because people were told they had to be there whatever and like you know and I’d be kinda trying to you know maybe you know when you’re talking about the health benefits and the whatever like and she’d say ‘Martin I’m just not giving up there’s no point in talking to me just I’m only here because people told me so just I don’t want to hear any more of it‘ you know” [Focus Group 2 M]

Pushing members to attend without goals often does not seem worthwhile:

“I did everything I mean nicely to get one or two in, I remember getting them in and then sure it was just like they just did not want to be there, it was a waste of my time their time and everyone else in the room they didn’t you know em....after session one they were gone that was it yeah” [Focus Group 4 B]

This again came across in the report of Michael who mentioned joining to boost numbers and perhaps unsurprisingly came across as not too engaged with the process:

“They asked me to go on it....I’m sitting in on one.... you don’t, eh I don’t really, you know, spend much time thinking about it” [Interview D1]

As described above it would seem that a better approach may be to recruit those already motivated or at least help attendees to form a meaningful personal goal as a seat filling approach may lead to an atmosphere of nobody really wanting to quit.
4. Grouping with other and broader health initiatives

Facilitators also mentioned grouping smoking cessation in with other and broader mental and physical health initiatives and some seemed to feel this could be an effective approach:

“part of the whole conversation with the tobacco free campus as well as the quit smoking programme is to say you know just to get that message out there consistently to everybody to say we are a HSE location and the HSE are part of the healthy Ireland programme and and and the framework and you know that we’re, you know many of our centres now are doing healthy eating more often, they’re doing mindfulness and quit smoking is just one of those things” [Focus Group 1 M]

“If you can make them feel more well then they’d be more inclined when they feeling well to maybe want to attend something as well so it’s working on their their own general wellness might bring about a change in other areas” [Focus Group 2 F]

In some centres service users themselves seemed to naturally start making goals in other areas and link cutting down on smoking with healthier eating or exercise goals:

“[Staff member] in our centre is doing the operation transformation with everybody and em some of the people have linked in smoking with that everybody’s setting their goals from one week to the next or whatever could be to go for a walk or eat less sugar or whatever but some of them actually putting in to smoke less cigarettes” [Focus Group 2 M]

Mark also felt that a broader approach to health might trickle down to those less motivated to quit smoking currently:

“you know talk about the benefits of a healthy lifestyle in general and then I think if that’s kind of a consistent message that’s coming across in the service every day you know when we’re not having trips every other day you know we’re not having biscuits available you know we’re going out for walks or doing a bit of mindfulness we’re doing a bit of exercise we’re encouraging people to join gyms all of that
together might eventually trickle down to those who don’t want to give up” [Focus Group 1 M]

5. Resource itself
(a) Easy to use, flows, colourful, good information, enjoyable

Facilitators found the resource helpful, with reports that it was easy to use, colourful, flowed well, had good information and was enjoyable:

“what I liked about the document itself the low literacy it’s you know if I put that down today and I went back and I read this in two months’ time you’d get into it very very quickly and that’s what is, it has to have a nice flow about it and it em so if there’s sections that you wouldn’t be sure of you’d get into it very very quickly and I do find it good from that point of view” [Focus Group 2 I]

“it is very good cus it’s not threatening and there’s not too much jargon and it’s not theorised based it’s very simple and I love the simplicity of it……I was pleasantly surprised how em easy that booklet makes it that that that 7 weekly parts makes the whole process it’s not frightening for the facilitator and it’s not frightening for the person you know which is great” [Focus Group 3 P]

“and found that[QSP folder] very good very helpful straight to the point each week and you could introduce a bit of fun” [Focus Group 4 N]

One facilitator said it should be condensed while another said more background information was needed but these seemed to be minority views and overall the resource was well-received by staff.

Among service users information/knowledge in relation to: the effects of smoking; how to quit; and their own habit emerged as an important aspect of the programme. This knowledge was gained through leaflets and illustrations, teaching and filling in of their own information.

“the fact that they told me that smoking was bad for your health” [Interview G1]

“There was very good knowledge. I mean it was about the carbon monoxide, and about your breathing and about the habit and eh there was leaflets about if you
give up smoking, em, when you get the craving for a cigarette, how do you distract yourself from doing that, from having a cigarette, you know, do you listen to music, or have a meal or go for a walk, or bring the dog for a walk, or you know...I thought it was a good idea. Yeah it was very good knowing that. It was very good being taught that” [Interview B1]

(b) Useful tools: Questionnaires, ‘the ladder’ and Carbon Monoxide Monitor

Attendees and Facilitators referred specifically to the questionnaires that attendees filled in;

“they have all these leaflets which is related to smoking and smoking cessation and giving up the smoking and the leaflets were very good. They were very explanatory. They were very helpful. They were very enlightening, okay, so that was an excellent thing” [Interview B1]

and their usefulness in revealing habits to the attendee and facilitator;

“There’s questionnaires and there’s little leaflets you can fill in and then it really points you too how much you smoke and why you smoke, and I think it’s really good to understand why you smoke, you know” [Interview D2]

“you could see the increase in cigarettes during the times when she was on her own d’you know? Like there was a time in the evening maybe from five until she went to bed at ten and she’d be smoking nearly double during that time than she was at other times” [Focus Group 4 EA]

and also in highlighting the actual cost of their habit:

“we looked over the financial amount of money they were spending on cigarettes per week you know and they were surprised like you know that’d be one way of be doing with it like some members could be paying up to 60 or maybe more depending what it was a week and we were saying to them if they could cut back they could get themselves some clothes or do something different with that money you save up for a holiday” [Focus Group 4 W]
“you know we all, everybody filled it out and was like oh god oh jesus I could do with, what I could do with that money” [Focus Group 4 N]

“the part where you see how much you spend, that was useful, it was a shock to a lot of people how much they actually spent on cigarettes” [Focus Group 3 G]

There was also some indication however that this form at times highlighted cheaper options such as Roll Your Own and even counterfeit cigarettes:

“you’d be doing your plan they say ah well no I’m getting a pouch and it lasts me half a week and I pay twelve euro for my pouch and someone else saying oh I only pay 8 euro on Moore street” [Focus Group 4 B]

“Yeah they were asking how many you smoked and what kind of cigarettes did you smoke, and I was tobacco...It’s only four euro a packet...Roll your own...So I was saving thirty odd euros a week by smoking the roll-ups” [Interview E2]

Finally the self-reflective ‘ladder’ diagram was also pointed out to be useful:

“I think actually that picture there of where am I on the ladder [agreement] and doing that every week I think they kinda liked seeing oh well hang on where was I last week which guy was I or whatever and then”[Focus Group 3 L]

“you know diagrams and the ladder, going up the ladder, and coming down the ladder and all that. Really interesting yeah” [Interview B2]

**Carbon monoxide monitor**

Another form of information, the carbon monoxide monitor in particular seemed to stand out for attendees:

“Oh it’s nice, you know, especially when you have the monitor, when you have to blow into it. That really is a wake-up call when you see your levels of nicotine or tar or whatever, em, I find that that’s a good help. Then you can see well, you know, this is what you’re doing to your lungs or to your body” [Interview D2]

and was also noted by several facilitators to be particularly useful:
“the lads really enjoyed the smokalyser [carbon monoxide monitor] that seems to be a big thing....the carbon monoxide thing yeah that seemed to be ...and even now for the guys who’ve given up love actually blowing in and seeing you know there’s nothing there or whatever” [Focus Group 3 M]

“the Carbon Monoxide, they all loved that, that was a real buzz thing cus it was something real tangible they could actually really see ok this is what my smoking is doing, I’m at 28, I remember there was 2 brothers and one of them was up at high 20s and one of them was only at 14 or 15, he was a light smoker, em and there was kind of bantering about that and it just but it just kind of there was a real sense of buzz and a few of them really were like ok knuckling down after seeing that, they were like aw I want to set my, I wouldn’t go setting your date just yet we’re going to get to that, we need to, we still have to do a bit of groundwork, em yeah I think stuff like that that are real touchy feely hands on” [Focus Group 4 B]

It appeared to be an eye-opener and generated efforts from attendees while also reinforcing quitters. There was also however some indication that the carbon monoxide monitor vindicated the e-cigarette for people:

“then some people moved on to an e-cigarette, that was another and then taking the carbon monoxide of course there was no carbon they thought this was great!” [Focus Group 4 N]

“You get your carbon monoxide levels tested, and mine were the same as a non-smoker....Which I felt vindicated the electric cigarette” [Interview G2]

(c) Doing it as a group – togetherness

Finally the communal aspect also emerged as helpful for several attendees:

“It was good to have a group of people that were going through the same thing as yourself, you know” [Interview G1]

while facilitators also noted it to be an advantage in terms of attracting attendees;

“you know I think ours was, there’s only a few of us at the group, so they’ve enjoyed the the chat I think at it and that” [Focus Group 3 M]
as well as during the programme;

“...I love the class I love the interactions in it” [Focus Group 1 G]

6. Health and Money as motivators for participants

Physical health appeared to be the main motivation for quitting smoking among service users in general:

“I want to see my two granddaughters married. I want to be here” [Interview E1]

F2: For my health....More money to afford for my family. It’s getting too expensive, you know.
I: ...and when you say your health what do you mean?
F2: My breathing. I have asthma and all

“Just my own health. I’m getting pains in my chest sometimes and other things, you know” [Interview H3]

and also emerged as an important motivator for attendees to join this programme specifically:

“You know the physical health is suffering you know because em I don’t have any breath, and I get out of breath. I get very tired, I get very tired and I get breathless very quickly and very easily you know..... that’s what’s motivating me to go on the programme, and try and see if I can do something about it” [Interview B1]

“health is the big one, health is the biggest motivator even over the financial one em health has been and I seen it with people who have tried to as well the only way they stopped is because of it em but it just seems to be health is definitely number one” [Focus Group 3 M]

Among younger members physical health was also a motivator but more in relation to fitness and ability to exercise:

“with the group I’m with at the moment are younger em so I see them kind of a lot at the gym, we’ve gym membership on a Tuesday, and like that again I wouldn’t
necessarily know it cus they’re the ones telling me like [intake] aw they’re gasping and that’s kinda part of the reason why they’re doing the programme” [Focus Group 3 L]

Overall while health was the primary motivator money also emerged but was usually secondary:

“and then definitely financial it adds to it as in somebody has more money then to go and treat themselves or to do something nice or to put it away or whatever” [Focus Group 3 M]

“it’s bad for your health first of all and secondly it’s money that I could use somewhere else” [Interview F1]

“Health and you know finances” [Interview D2]

though notably for some the financial aspect was in fact primary:

“Eh Money (Laughs). Quit smoking have more money in my wallet. I wasn’t too concerned with my health eh but now I am so” [Interview G3]

“I had 2 people in Centre G that did quit on the course but it was mainly for money they were saving the money up every week 72.50” [Focus Group 2 D]
6.8.2 Barriers

1. Implementation of smoke-free campus policy

Ongoing facilitation of smoking

Evidence of differential tobacco free campus policy implementation across settings pointed towards the ongoing facilitation of smoking at some centres. For instance, at one centre a service user described the erection of a smoking shelter in a designated spot while at Centre J, Pat described the nomination of an alternative sheltered smoking spot for wet days;

“We used to smoke at the door. We have to go over to the assembly point. You might have seen it when you were coming in…There’s blue shed there….Yeah and that’s where we smoke now. We’re allowed to smoke there.” [Interview G1]

“Barry doesn’t want me getting a cold, and he said to me you can smoke in the in the orchard [sheltered spot]….on wet, wet days we can go into the orchard to smoke in there. And on dry days or alright days we smoke outside the wall” [Interview J1]

while at centre H smoking did not appear to have moved location at all:

I: and what about where you smoke, has that changed as well?

H1: No.

I: So it’s the same area.

H1: Same area, yeah.

Clubhouse structure and centre culture in general also seemed to play a role in the impact, if any, of the tobacco free campus policy. At Centre Q the culture meant that the policy involved only a change in location and there were no limits to when service users could smoke which led to a constant congregation of smokers:

“people leave our gates walk across the road and there’s a big congregation of people there em almost constantly…there’s a lot of people who aren’t engaged you know and em they just come in and out constantly you know and that’s the
way the centre was historically like it’s very kind of family orientated environment very easy going and we don’t tend to kind of do parent child stuff” [Focus Group 3 P]

while at centre E, a service user discussed the clubhouse structure at his centre and how this meant members could still smoke at any time:

E1: Well it doesn’t really bother us because we’re out the back smoking

I: …and does it mean that you can’t smoke as much? Has it made any differences in that way? Is it more awkward? Do you know what I mean?

E1: No, there’s no rules or regulations here, you know. No one forces you even to be here. Like you can come and go as you please…..It’s not that we’re set at any job or anything like that. If you want to go out and have a smoke, you can go out and have a smoke”

The ongoing facilitation of smoking at some centres and implementation barriers such as shared campuses have, it seems, in some cases been a barrier to service users trying to cut down or quit smoking. At one centre the ongoing facilitation of smoking within the industrial estate (moved from door to end of building) meant that one attendee who quit needed to time his breaks to avoid seeing smokers:

“he’d sorta change his breaks then cus he’d see the lads going out having a cigarette so he’d sorta keep working and he’d have his break different….. people could still, they smoked at the end of the clubhouse and it was still in the industrial estate” [Focus Group 2 D]

while at Centre K, despite being based on a HSE campus, Emma noted service users had to observe others using their old smoking shelter until it was zoned off:

“when it was brought in for the members as well that they were seeing people coming over to use the smoking shelter yet they had to go out to the front gate so we had to take action and get that zoned off” [Focus Group 4 E]
Associated forced/herded attendance at QSP

At Centre F the ongoing facilitation of smoking was more apparent as tobacco free campus policy was not implemented there at all due to feasibility issues relating to location and traffic. Instead a derogation was granted with the trade-off that attendance at the quit smoking programme was compulsory for all smokers:

“well there was a derogation in our centre em it was an issue, going out onto the road would be dangerous like with that but it’s also very far away but em we’d a derogation that we could still use the smoking shelter em if on the condition that everybody did the programme” [Focus Group 2 M]

While attendance was not compulsory at any other centre, others also felt that the timing in relation to the quit smoking programme following the policy may have had a negative effect on morale:

“when the ban came in it was like the two were at the one go you’re trying to force me to stop smoking and you’re trying to make me do this course to get me off... yeah it was kinda just because the two of them did happen at the same time ...just gave it a negative slant...and because of the smoking ban then as well it became more of a situation a little bit of a situation of trying to herd people into the smoking cessation group rather than it being something that people really wanted you know wanted to have a go on or wanted to do you know and nice and relaxed and you know just they didn’t feel the same way about it” [Focus Group 4 EA]

“reactive kind of yeah, I I think if we had you know had it up and running maybe I don’t know 12 months might have been realistic but I don’t know if we had it up and running as part of a realistic programme before the actual smoking ban or policy kinda came into place I know in an ideal world these things you know” [Focus Group 4 B]
2. **Structure of service, scheduling and attendance issues and gaps in availability**

**Scheduling**

Scheduling barriers emerged around finding the right start date and day for the programme.

**Finding day**

Facilitators discussed difficulty around finding the right day that will suit everyone when working around the fact that members do not all attend 5 days a week:

“Oh that’s on a Friday, no no I miss out on that because I’m not here on Fridays” [Interview H3]

“initially I had a group of 4 but they were all coming in on different days so it was hard to get the 4 to actually come in for the day that you were so from that point of view it was a bit more difficult tricky” [Focus Group 2 I]

Holding the programme on two different days was not an option due to staffing issues

“even if you could do it over 2 days em maybe have different groups, just to get different people em but staffing has been our big thing…” [Focus Group 3 M]

and facilitators instead reported a strategy of playing around with the day in an effort to find best option

“there’s people attending 3 days and there’s people attending 2 days, and there’s people attending 4 days and whatever and to try and find the spot where you were trying to get as many like I changed the timetable recently... there was only 3 people the last last week you know only people so it just... I’ll have to look at the timetable again but it’s very hard” [Focus Group 4 EA]

“Thursday was working well and then we said we’d change it to try and encourage other people to a Tuesday and then Tuesday doesn’t seem to be working so we’re back to Thursday” [Focus Group 3 M]

One reported selecting a day specifically based on those who had signed up:
“so it’s to see who’s interested so we generally would advertise it and see who’s interested in coming to it and then we’ll just try and see is there a common day for everybody” [Focus Group 3 M]

Clubhouse – when to start?
Facilitators also commented on the clubhouse structure (which permits flexible attendance) and felt that this in particular meant it was difficult to know when to start a programme as attendance can be irregular in general:

“clubhouse is em kinda different to some of the other services in that eh em participants members don’t have to come into you know a specific session or programme they can you know you know they might be in one week they mightn’t be in the next week and you know it’s just trying to get commitment and you know as much as you advertise you know this is a seven week and you know we’d like to have a little bit of commitment it was diffic [Focus Group 2 S]

“yeah it’s not knowing who was going to be in the date exact to start and that’s what happened with us” [Focus Group 2 L]

“I know [other trained facilitator] had it in our centre the same issue that there was people starting the programme and maybe not being there, ours is clubhouse as well you see so” [Focus Group 2 F]

However interestingly, while Deirdre was also at a clubhouse, she did not encounter this barrier, with attendance only arising as an issue during a bus strike:

“I have to say when I did it out in Bray, and that’s a clubhouse, it was fine the only problem was I did one of the courses when the bus strike was on and it just was a no-goer we just had to stop it basically and restart” [Focus Group 2 D]

Contractual obligations
Contractual obligations and the ‘work order day’ mean smoking cessation groups have to be run in the afternoon when attendance is lower than in the morning;

“in clubhouse because you’re doing stuff to the work order day so a lot of the time anything’s that outside of that would be done in the afternoons and what you
might find then is the membership starts to drop off or tail off as the afternoon comes along so that can be a little bit of a barrier as well” [Focus Group 2 F]

and smoking cessation is less of a priority in general meaning that it is also the ‘first thing that will go’:

“that was the biggest thing for ourselves it was just em although it’s part of policy and now the actual quitting smoking but facilitating it is the first thing that will, I’ll be honest in our centre, if something’s to go in the timetable it’ll be the first thing that will go …like I have to deliver on and we’re under contract I have to deliver my communication, my word processing for my level 5 modules, customer service, they have to be delivered … for contract, obligations, unfortunately that that’s the first thing if somethings getting moved or juggled or I’ll tell you what we’ll put that session off till the next [coughing] February, we’ll timetable that in in February….,

a staff member rings in sick [coughing] it’s pushed, like we shoulda ran 5 or 6 sessions when we started, we ran 3. ... do you know what I mean? And em it just it slides” [Focus Group 4 B]

Staff sickness, leave or moves leading to gaps in availability

As reported above, staff shortages, sickness and other leave were often the reasons something had ‘to go’ in the timetable and facilitators discussed how sickness or leave often meant the programme simply did not happen in their absence leading to gaps in availability for members:

B: Timetabling, time yeah like I was off I’d 3 weeks em paternity and then I took a leave and it wasn’t ran because the other staff member is since gone and even when I came back trying to get it timetabled back in was just proving difficult took a few weeks now to find a slot to get it back going

M: we’d be the same

I: Timetabling an issue?

M: Timetabling yes

N: Staff

M: No staff
“I suppose with us just staffing has been so really up in the air .... staffing has been our big thing as we’re you know if something, staff isn’t in or you don’t know what’s happening you’re generally pulled out to do other stuff...... staffing is the big thing you know because you’re pulled away for a couple of people you’re em you’re off the floor if you like” [Focus Group 3 M]

Service users also noted these gaps in availability of support:

“there was a few stops in it. One of the, the person that was giving it mightn’t be in that day or on holidays or sick or something” [Interview G1]

“Just that it’s not so often given the smoking cessation group. I wish it was a bit more often.... I have only had two weeks. But like, from the first one to the second one it took a, a while in between” [Interview D2]

“They haven’t been here since, the staff is getting, there’s new people coming in now you now” [Interview E2]

which again seemed to down to factors including staffing changes and leave. In one centre however it seemed the programme was no longer available as having run it twice the facilitator felt it had been covered:

“Well two [courses] he feels is enough” [Interview F1]

3. Inconsistencies and the need for a joined-up approach

Lack of HCP advice

Smoking cessation did not emerge as strongly addressed by healthcare professionals. In fact several service users and staff reported a complete lack of smoking cessation advice.

I: Do you think do service users get asked about smoking much? You know not by yourselves I mean by other you know people, other healthcare professionals maybe do you think it comes up much?

EA: it doesn’t come across that it does anyway, I mean [coughing]
B: nah I think [whispering to each other] I did specifically ask one of my keyworkers about that, he’d been to his nurse for his injection and ah I just happened to say cus I think it came up in something I can’t remember I was reading something that you know across the health service and I just said, it wasn’t, it wasn’t a kind of accusation I just said aw did your nurse ever mention your smoking or does your psychiatrist you know, he only sees him every 2 or 3 months now, no no it’s never mentioned. That was just one, that’s just one example

EA: they never mention it. When we were doing the smoking cessation like no one would mention it they were oh yeah my such and such doctor is telling me to give up this or to give up that... [Focus Group 4]

This was also supported by the reports of both service user co-facilitators in Focus Group 4;

W: When you go to a psychiatrist, they never ask them questions, I went up and down now to a clinic there and they only ask you the same questions every time like you know are you well in yourself are you suicidal and all that, you have a certain kind of, smoke never comes up or whatever, never ask

M: No, not either [Focus Group 4]

as well as in several service user interviews:

I: Okay, and then I was going to ask as well about health professionals, or doctors outside of you know this service discussing smoking with you. Has that happened?

C1: No.

I: Okay. Not at all.

C1: Not at all.

“it never happened” [Interview J2]
I: no ok or have you ever been sort of asked about smoking by anybody, sort of doctor or health professional or anyone like that?

A1: [thoughtful] No

The clear exception to this was two service users who reported their GP had continually brought up smoking.

Inadequate HCP advice
Some of the interactions around smoking that did occur were revealed to be ill-informed in relation to inaccurate advice as recounted by one facilitator;

“some were told by their doctors and I know this is wrong information that they couldn’t use any of the smoking, giving up smoking aids because it would affect their medication” [Focus Group 3 G]

or ill-advised approaches in terms of a seeming focus on restriction of access to cigarettes rather than offer of person-centred support to quit:

“Actually one of the last times I was in [specialised neuro-psychiatric hospital], just to be noted they said we’re going to have to take your e-cigarette off you. I said why? We’re putting everyone on the patches. I said really. They said yeah, and I said you know how can you do that, and when I woke up they they couldn’t get people off the cigarettes. They were trying to get everyone in the hospital on patches but to do that would be impossible” [Interview G3]

Pat recounted the restriction of cigarettes for a resident in his high support hostel who had had a stroke was not well received:

“He’s dissatisfied because they won’t give him any more than ten cigarettes a day. They give him five twice a day, and it’s not enough for him. He was smoking up to thirty” [Interview J1]
Several service users reported bringing up smoking and NRT themselves:

“I went asking for it [patches] and one of the girls they gave it to us” [Interview F2]

“Yeah, no he [GP] didn’t suggest it [patches]. No I did” [Interview E2]

while many HCPs seemed to take an overly soft approach avoiding actual recommendations of quitting. These ranged from vague almost neutral references to smoking;

“They just ask me am I still smoking?” [Interview D1]

“He says, “Watch your weight and your smoking”. He just says that” [Interview C2]

“I always said I’d give them up if the doctor told me to...But he never did. He’d say, ‘You’re still smoking’ [Interview E2]

advice to cut-down rather than advice to quit, as in case of H3;

“you’d want to cut down’ he said” [Interview H3]

and G1 who seems to have been dissuaded from quitting altogether by her psychiatrist;

“I go to a psychiatrist and I told him that I’m trying to give up the cigarettes, and he told me to cut down [Interview G1]

and told by her GP to cut down slowly while given no advice on patches or other aids:

“.....she’s told me to cut down slowly and try and get off them...but she never said anything about you can use something to help you with it like the patches or anything like that you know?” [Interview G1]

In one case a service user was simply advised that she did not need to quit

“Yeah my doctor discussed it one day and he asked me and I said I have a few, and he said that’s no harm, he said...He said don’t mind have a few if you want to yeah” [Interview H1]
**HCP advice motivating**

HCP advice however it seems can be motivating when it occurs and has led to QSP engagement;

> “she’s been told by the doctor she better do something about it so that’s encouraging her to try for the first time you know so em unfortunately some people have to wait till that happens before they take action” [Focus Group 3 P]

as well as other quit attempts, for example in the case of Peter whose GP continually brought up smoking:

> “Aw yeah yeah, eventually the penny dropped. Nearly every surgery, “Do you know Peter did you ever think of giving up the smokes like especially you with your condition”, and you know, then one day I I I flabbergasted him, says I, “[GP first name] I’m giving up. Can you help me give up the smokes?” [Interview E1]

and Michael who quit for ten weeks after a general hospital stay where he was signed up to a quit smoking helpline:

> “They used to ring me up and say how are you doing? It went alright for ten weeks” [Interview D1]

Some others who were yet to receive HCP advice also reported they would not mind and felt it may have an effect for them also:

I: So how would you feel if they did talk to you about it?

F2: aw I’d listen.

> “I always said I’d give them up if the doctor told me to...But he never did” [Interview E2]

Lack of a joined-up approach to cessation support

There were calls from for a more joined-up approach
“if everybody does a little bit and they’re all going in the same direction, they don’t all have to be singing on the same page but if everybody’s going the same direction you’re planting seeds as you go along” [Focus Group 1 G]

and the need for smoking cessation support to be brought into hostels

“you’re in hostel there you have access to medicines and stuff maybe someone, is there someone there gonna give a commitment that they’ll make sure that this person has a patch on them every Monday morning when they’re getting up” [Focus Group 4 EA]

and hospitals

“Help with quitting. Not just shut down completely like. I mean just introducing as much as they can into hospitals and there might be like half the patients might want to quit, half of them might not want to and at least give people a chance, you know” [Interview G3]

Although others felt an inpatient stay was ‘not the right time’.

Eamon used the example of the person-centred plan which is made for each service user at meetings including doctors, nurses and hostel staff and queried why smoking could not be addressed here when weight already is:

EA: when you’re doing a person-centred plan for someone and the hostel staff are there the doctor’s there or the CPN is there or whoever, that the health, if a person had weight issues that would be to the fore at every single meeting, how’s it going now you know are we watching, there’s someone in the centre might be em the chef might be told you know this person can you do something extra for them something a bit different to help them with the weight, but if we do that for weight well why not do that for smoking [agreement] it’s the same thing d’you know so you should be, it should be, like I think smoking and if it, it is affecting a person’s health, you can’t say if it is affecting the health, it should be in that PCP

B: it can’t be just passed off on, on EVE if you like [Focus Group 4]
while Ben noted that this joined-up approach should be at policy level as given under-
resourcing and lack of staff services are unlikely to ‘opt in’.

The lack of a current joined-up approach also meant that for service users due to leave
EVE the availability of continued smoking cessation support is a grey area, an uncertainty
which emerged in several service user interviews.

**NRT support needed?**

Recommendations around a joined-up approach to NRT were perhaps particularly
pertinent given service user interviews revealed issues such as incorrect usage;

“He did give me packets, the demister [NRT spray], the only problem with that was
‘take that’ and I missed every so often but I think it’s six tablets a day or something
you’re allowed take but they were only lasting a day-and-a-half because we were
taking them all the time” [Interview D1]

and smoking while using NRT:

“I stuck one on and then after about a half an hour I was smoking with it on, you
know, and I took it off and I didn’t continue on with it” [Interview F1]

“I was buying the patches as well and they didn’t work. I overdosed because I
smoked as well” [Interview H3]

though in most cases this misuse seemed deliberate or due to ‘lack of willpower’ rather
than a lack of awareness.

Exemptions and Inconsistencies in relation to smoke-free policies

In addition to a frequent lack of advice and joined-up cessation support there were also
inconsistencies in relation to smoking policies in hostels;

N: ...it’s like inconsistency, that’s hard
B: yeah like if you’re going from, just yeah, from a service where like ours
where you can’t either smoke or it’s isolated and then they’re going to a
hostel or an area where they’ve got a smoking section or yard or a you
know [Focus Group 4]

psychiatric hospital inpatient;
“I was in a smoke free hospital...But [the] psychiatric unit had their own yard...And it wasn’t advertised but we had our... There’s a smoking shed. There’s everything. So it is a smoke free campus to the public but the people that know the likes of me a patient knows that down there you smoke” [Interview E1]

and outpatient settings;

“there was a smoking area out the back garden” [Interview G3]

and the maintenance of smoking as a social activity in these settings seems to lead to service users increasing consumption and even relapsing to smoking at times:

“if she went out for a cigarette she’d have someone to talk to outside so she found when she came out of [acute mental health unit] and into here she was after increasing about 20 on top of what she was smoking” [Focus Group 4 N]

“From six o’clock in the morning till they closed the door at twelve o’clock at midnight....Oh I’d say I smoked at least three large packets of tobacco a week” [Interview E1]

“I was meeting loads of new people and I felt oh God I can’t I need something to take the edge off so I started smoking again because everyone was out there talking and chatting and I was saying awe me sitting in here. I want to be out with them, you know...Yeah, I went back on them” [Interview G3]

Facilitators need to be linked

Within EVE itself the lack of a linked-up approach to QSP was a barrier as an opportunity for facilitators to collaborate and share knowledge was lacking.

G: Great idea, a support group for facilitators...so you’re not on the boat on your own paddle and you don’t know where you’re going sometimes...it’s everybody together or a phone call

M: maybe the organisation would be happy enough to to okay us to meet up once or twice a year to kind of get together and share experiences and share feedback ....everybody who, you have everybody’s number and you say oh well that’s you know Dave in New Horizon, X is doing it here, X is

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4. *Literacy issues for some participants and need to add technology component in general*

Literacy was an issue for some facilitators:

“I know we’d a few people with kind of em literacy issues and stuff like that” [Focus Group 3 M]

“there can be a gap sometimes in comprehension and literacy... I had one or two had troubles with literacy and I was trying to support them” [Focus Group 4 B]

and could cause difficulties with engagement and pacing:

“so you could have someone on a level 3 ability if you like and someone on a level 5 and they could be polar, apart like em so just in terms of the pace of the programme and trying to keep it the pace that you’re keeping certain individuals engaged but you’re not ...other people aren’t being left behind” [Focus Group 4 B]

while Deirdre found the questionnaires involved and group format meant she felt she was effectively outing any literacy issues:

“one of my problems as well when I was doing it in Bray was I’d 2 people that couldn’t read write or spell and that was very difficult now I have to say because I was more or less filling it out for them and I don’t know if I felt uncomfortable because you know it was sort of em you were letting the rest of the group know that they couldn’t read or spell and that you know I just felt it was awkward maybe looking back on it should I have took them two people separate or do you know what I mean but that was eh I found that very difficult” [Focus Group 2 D]

Technology could help

As mentioned previously one facilitator made use of technology (dragon software) to assist and empower attendees with low literacy and there was suggestion from several that additional use of technology could not only help with literacy issues;
“those with low literacy skills and low reading abilities can you know can maybe click on stuff like that you know and look at videos... just having the option of both you know... it’s an extra level of support” [Focus Group 1 M]

but also to overcome issues like missing questionnaires leading to enhanced ownership and empowerment with service users perhaps even able to log in at home:

“well what I found awkward was you know you’re meant to give out the sheets every week but what I found was like if I gave it to somebody like you know Joe, Joe wasn’t bringing it back to following week so I kept them in the centre in an envelope everybody had their own envelope but that’s not the right way to do it you’re meant to have the ownership of your own manual ......For me it was the you’re meant to get ownership of your manual and for me it was like nobody wanted to take their stuff home and nobody wanted to bring it back either and I just found that difficult I don’t know would it be an easier way like to do it on the computer or something d’ya know people could have their own [agreement] yeah and have their own access to it on the computer I just thought maybe that might be an easier way” [Focus Group 2 D]

B: if it was available to actually log on and actually we could use it in our computer room, I could book a session and the actual guys just log on and complete the resources and they could access it they could log on and access it from their laptop at home or tablet or something, I think that would be fantastic, cus one or two guys they brought it home to finish one of the sessions and they didn’t have it then the next week and then I was giving them a new one then and you know, now they’re only small things but they’re just little things that do kind of [agreement]

EA: continuity [Focus Group 4]

The point was made that many of the resources in terms of computers and equipment are already in place:
“even you know forms that could be done on computer em rather than just you know fill it in by hand and then you got a record of them if you want them and all because most of our centres now are fairly technology savvy... we have smartboards in most locations and that kind of stuff..... lots of locations have the technology ...most of our centres have wifi you know let’s use that resource let’s use that other tool if its wanted or if its needed it might not suit everybody but eh certainly you know use it if we can” [Focus Group 1 M]

In addition to an online component, a DVD, involving actual members rather than actors, was also suggested by one or two facilitators as this approach was said to have previously worked well in a centre as a tool for demonstrating administrative tasks.

Name unnecessary and unhelpful
What was not deemed helpful in addressing literacy issues was naming the resource ‘Low Literacy Resources for Smoking Cessation’ which was described as both insulting and unnecessary:

“by the way get rid of low literacy off that it’s some people actually found it quite insulting... very creative in fairness that they just call it low lit I think everybody literally saw it they went [intake of breath]” [Focus Group 1 M]

“there's no need for it... it doesn’t make any sense you don’t need it it’s not relevant” [Focus Group 1 G]

For some facilitators this unfortunately became the default shortened name used to discuss the programme, as witnessed in Focus group 2, which means it may have become the default name at these centres too even though clearly not the focus and furthermore seems disempowering:

“I started the low literacy and... when I was starting the literacy” [Focus Group 2 D]

“what I liked about the document itself the low literacy it’s...” [Focus Group 2 I]

5. MHDs
An explicit association between MHDs and smoking emerged among service users, in relation to both their own and others’ smoking:
“There was eight of us in the family, and I’m the only smoker and I put it down to my anxiety” [Interview C1]

“People with mental health problems like smoking. I think it takes them back, you know, it gives them...I won’t say em, It keeps them happy to an extent” [Interview B2]

It was reported as a specific reason for starting;

“It was just out of nerves” [Interview A1]

“I became unwell [developed psychosis and depression], em, and I went on medication and I started smoking regularly then everyday” [Interview G2]

for relapsing;

“I went back on the cigarettes because I had a mental illness” [Interview C2]

and at times described as the reason for becoming a smoker despite wishes not to be, seemingly taking the choice out of their hands somewhat:

“when I became a teenager I said to myself I’m not going to ever smoke, and I’m not, I want to be fit and keep myself fit and healthy, you know, and em it didn’t happen that way. With the illness [schizophrenia] I had it just didn’t materialise like that” [Interview G1]

“Now some people smoked just because I wouldn’t say that they wanted to smoke but there’s problems within their lives and that, and obviously it was mostly eh people with mental health problems” [Interview B2 (describing smoking stories shared by service users at the programme)]

Although a few facilitators felt that quitting smoking was no different for those with an MHD;

“I just think there the same as everybody else I don’t think because of the MHD it’s any harder to to quit” [Focus Group 3 M]
“it’s the same thing to say well why should it be any different for you than it was for me it was difficult for me to give up smoking I’m sure it’s going to be difficult for you but it doesn’t have to be any more difficult” [Focus Group 1 G]

many felt that it can indeed be more difficult for this group;

“there’s no doubt it is, it is far more difficult for them to give it up” [Focus Group 2 I]

“I think it’s difficult, a bit more difficult in some ways, cus not in all cases but in some cases their circumstances can be quite different than say maybe one of ourselves” [Focus Group 4 EA]

A number of factors were felt to contribute to this:

(i) Coping mechanism
Smoking emerged strongly as a coping mechanism from the perspectives of both facilitators;

“It’s a safety net isn’t it yeah” [Focus Group 2 F]

EA: And like the cigarettes are just such a big crutch, and crutch is the word because that’s exactly what they are so in that sense it could be harder for, for them

N: yeah I would agree with that [Focus Group 4]

and service users themselves;

“just a way of coping” [Interview A1]

“I thought a cigarette was just helping me along. It was, it was like [being] boxed into a corner. If I had a cigarette, I’ll be more content” [Interview B2]

“It helps me calm down... it helps, em, I’d have a cigarette when I’m stressed or anxious, and I’d have a cigarette and I’d feel grand then for a long, for a few hours...it makes me feel better.... it helps me relax. It helps me to, you know, get my bearings sometimes” [Interview C2]
Coping mechanism for Stress

Its role as a coping mechanism for stress was evidenced when initiation, increases and relapses were described in the context of acute stressors in the past. These acute stressors included health scares, family members falling ill and bereavements:

“The first time ever because my father actually gave me bad news at the time. My mother was in hospital and she was in a bad way in hospital” [Interviewee J2 on starting smoking]

“I tried the vaper cigarette and I was going brilliant guns on that. I was five months on that, and then I had a shock with the wife... I went straight for Brady’s garage to buy twenty cigarettes. I was just shaking, and I went back on them” [Interviewee E2 on relapsing when his wife was hospitalised after previously relapsing when his mother was dying]

“Aw I found a lump” [Interviewee A1 on relapsing following a health scare]

In addition to acute stressors, smoking was also used to cope with the everyday stresses of life;

“What doesn’t help me quit smoking, em day-to-day living, you know, being caught in traffic jams, or you know, being short changed in a shop or dogs barking at me, or if it’s gale-force winds and pouring rain, and I’m after forgetting my umbrella, and you know, things like that. Just day-to-day living, you know, that would make it difficult to stop smoking” [Interview B1]

“I suppose like in moments of stress it’s kinda like the thing that they tend to reach for you know” [Focus Group 2 F]

and again seemed to increase on days with increased stress;

“it depends on my stress levels, you know, I will smoke... Sometimes I smoke a packet a day. That’s rare, you know, but then I know oh I’m stressed, and then I know that yeah” [Interview D2]
Coping mechanism for MHDs

It’s role as a coping mechanism also emerged specifically in relation to MHDs such as anxiety;

“If I’m anyway anxious I, I tend to unfortunately, and I used to be real confident and I’m losing my confidence a bit again, em, but if I’m worried about anything, (whispers) oh God I need a cigarette, and then I’d be grand for a while, you know” [Interview C1]

“I think it’s a coping mechanism if they were shown other ways of learning how to cope, manage their anxiety a little bit better than kinda turning to that to make them feel calmer or you know some other sort of programme” [Focus Group 2 L] and schizophrenia or psychosis;

“[smoke] to keep me calm…. Well [pause] there’s mood changes. People with schizophrenia have mood, mood changes, and em eh a cigarette calms it down a little bit. You’d you’d enjoy because it just calms you down, you know” [Interview G1]

“I’ve psychosis…It [smoking] makes me feel easy, and em it kind of [pause] it kind of relaxes me that bit even though I’m still angry. It still, to me, it’s I’m getting em, what would you say? I’m getting a bit of adrenaline out of it. I’m just, brings me down slowly even though I’m still angry” [Interview E1]

with a dose response relationship again seemingly emerging for some;

“she said like when I’m very unwell I smoke extra” [Focus Group 4 N]

“I probably would have become more anxious in the last few years...So I think that would be the cause of it” [becoming heavier smoker] [Interview C1]

Effectiveness as a coping mechanism

Many service users, as well as both service user co-facilitators, strongly believed in smoking’s effectiveness in relieving and calming stress and symptoms related to MHDs:

“They help to relieve stress” [Interview H1]
“it does relax people” [Focus Group 4 W (service user co-facilitator)]

“it calms them down, a cigarette calms them down” [Focus Group 4 M (service user co-facilitator and former smoker)]

Some facilitators and service users however expressed doubts regarding its effectiveness as a coping mechanism;

“It wouldn’t make any difference. I still have to face her [boss] the next day you know. (Laughs)” [for interviewee G1 smoking provides only a temporary solution to work-related stress]

“you know it doesn’t help, it’s never, there’s no actual evidence to say it supports your stress levels” [Focus Group 4 B]

“I don’t think it makes a difference” [Interviewee E2 (who here contradicted her earlier report that smoking helps with depression caused by her husband)]

and thought rather than help it could be an added source of stress or anxiety;

“I don’t believe that em smoking, even having smoked, I think you can delude yourself that it does em when you’re smoking, I don’t believe that smoking helps you with stress... if I’d no cigarettes ..then you have a stress on top of the stress” [Focus Group 4 EA]

“of more recent times, the smoking causes my anxiety...Because it makes me think I’m going to get cancer or I’m going to take a heart attack or I’m going to take a brain haemorrhage or something”[Interview B1]

and overall, even if effective, the trade off in terms of physical health perhaps outweighs any benefit:

“I just think it’s a general mind-set change of saying you know the easy thing to do is say look carry on smoking because otherwise you’re going to be mentally distressed or whatever it is and you know there might be an element of truth to that but longer term you’re going to you know one in two of them are going to die and the take up rate because it’s double that of the general population so it’s still 40% you know and every little message that we send, I mean look at it this way if
mental distress and ill health and trauma and anxiety understood but there’s nothing more final than illness and death you know and ultimately I think that’s where we are changing our mind-set” [Focus Group 1 M]

“They help to relieve stress, you know...Yeah, de-stress but I found you know just as I was saying over the last couple of years I’d say that ah overall you know, that they probably weren’t, they’re probably having a bit of a negative effect on me. Well because my overall health would have, would have changed. Like my metabolism as I got a bit older like, you know, I wasn’t as well able to be on, up and doing things as I was. You know, I wasn’t as physically active as I was a couple of years ago you know. So, I suppose, the smoking doesn’t help that, you know. It could help to to solve stress a bit, you know, but physically it probably isn’t such a great stress helper” [Interview H1]

Perceived as ‘Need’

In a couple of cases the notion that smoking is a coping mechanism or crutch for this group went a step further and it was labelled a need. This occurred at service user, co-facilitator and family levels.

For instance F2 described his own ‘need’;

“I need it for my mental health” [Interview F2]

while E1 discussed a need for smoking among psychiatric patients and his belief that to deny this need would be dangerous;

“They couldn’t keep smoking away from psychiatric patients...Because you’d get them lighting up in the units, and in the bed and in the toilets and everywhere. It causes health and safety. Like if you try and take cigarettes off a bipolar you try, I’ve seen it... I can understand where they’re coming from, and why that facility is there” [Interview E1]

Among facilitators Greg felt that this perceived need was changing at the health service level;
“this is the first time that the HSE, the health authority have done anything so proactive have looked at that group and said ok well we have to include this group before that they would have been a stereotypical maybe view that oh people with MHD need their smokes certainly I heard that when I came in” [Focus Group 3 G] though Ben felt it persisted still at both a healthcare and a societal level;

“but I think society there’s still that kind of thing as a society not just as a healthcare [service] as overall society that kind of oh well it’s ok you know Johnny suffers with his nerves or he suffers with depression or whatever the case, he needs his cigarettes you know and I just think of that that whole picture needs to change that that whole” [Focus Group 4 B]

A couple of service user interviews also revealed the existence of this ‘need’ belief among their family members;

“My parents didn’t like it but they thought you know if you need it... My mom always said if you need it you need it but I made so many attempts to try and quit that she felt that I was I was getting so wound up and lying in bed cold turkey symptoms. She didn’t like it. She said just if you need them, you need them... She just said, you know, you’ve got mental health problems and if they take the edge off and make you relaxed and they get rid of, they help your confidence then then keep them but then I felt, you know, what’s the point, you know...What’s the point of keeping them? You might as well just quit like...might as well at least try, you know.” [Interview G3]

which actually led to a relapse to smoking for J1:

“I was off them for years and years...Then my mother knew I was bored after my dad died, and she knew I, she thought I needed something so she bought me cigarettes...My mother knew I needed something. According to her I was depressed...She wasn’t far out....It all has something to do with depression alright. One kind or another...So she bought me cigarettes......I had been in the hospital maybe little while before she gave me them. She just considered it and I was
depressed...[missing out on a full-time job] left me depressed that morning, and I was depressed for a long-time after that” [Interview J1]

(ii) Lacking self-belief/Self-esteem
Another barrier which emerged among both facilitators and service users related to a lack of self-esteem or self-belief among service users. Several facilitators described this lack of self-belief;

“I suppose the belief, like some people’s self-esteem and their belief in themselves wouldn’t be at a high point so you’d be trying to encourage and that they can you know so that that might be a barrier with some of the mental health” [Focus Group 4 B]

“and some of them again when they say I don’t want to give up or I’m happy smoking they might even be saying do you know what I’d love to give up but I’m just not able to, you know I’m not able to do that.... we had a guy who em is gone now but he had I think it was emphysema ...he was an older man so he’d probably been smoking since he was 12 or 13 or 14 maybe you know so he had absolutely no belief that he could give up whatsoever you know” [Focus Group 3 G]

with one strategy around small steps emerging as a way of dealing with this:

“to emphasize that it’s small steps sometimes you know they think it’s such that it’s a huge wall to get over that if you kind of look take it just the one day at a time lets work on the little things and it is about working on the little things and they’ll get, the confidence will come from that and I think that’s maybe where the emphasis needs to be” [Focus Group 2 I]

Lack of perceived ability also emerged in some service user interviews:

“I knew deep down that I wouldn’t be able to..... Will I try? Will I be able to try?” [Interview C1]

“I don’t like it because you can’t stop it” [Interview F2]
For F1 who now uses an e-cigarette exclusively this inability was in relation to his desire to give up the e-cigarette;

“I find it very difficult to live without it, you know” [Interview F1]

while for G2 his e-cigarette was the one thing that worked for him and enabled him to finally stop smoking:

“I felt it was hopeless. I couldn’t I tried everything and the only thing that worked was the electric cigarette...Not even the first one. The VIP didn’t work. The second, the one I have now worked. That was the only thing that worked” [Interview G2]

For others a lack of self-belief did not emerge and one or two were in fact particularly clear on their ability to quit but simply not ready at the moment. In both cases this self-belief seemed to be the result of previous quitting:

“the thirty years smoking is with pockets of not smoking, em, I just quit. I don’t need any patches or any gum or the electric cigarettes. If I stop, I just stop, em, so I can do that. If I want to I really stop, yeah....I feel I can do it...But I don’t want to do it yet. (Laughs)...It’s a double feeling like I can but I just need it still for a while” [Interview D2]

“I’d love to be able to give them up, and I know that I can because I was there before. It’s just getting the mind-set to actually go and do it... I know I’ve done it, and I know I can do it. So there’s nothing to stop me from doing it again” [Interview E1]

(iii) Lack of consistent determination/willpower
There was some suggestion from facilitators and service users that those with MHD experience a barrier to quitting in the form of an associated lack of determination or consistent motivation:

“you have to be motivated and motivation is always a kind of a critical factor as well and while the, person may be motivated one week, you know 2 or 3 weeks in
they may not feel so good and then that’s their downfall then that it falls it falls you know it doesn’t necessarily work for them” [Focus Group 2 I]

“It’s a weakness of the mind...It’s having a weak mind. It’s not having the strength. It’s not having the willpower to stop doing something that’s very bad for you... if you have a mental health problem it’s harder to give up smoking because I just haven’t got the mind, I haven’t got the willpower and I’m not able to make a decision to say I’m going to quit, and then just quit. I can’t, I find that difficult to do” [Interview B1]

While not an issue for E1 he again seemed to associate mental illness more generally with decreased strength or determination:

“I am a very strong minded person even though I have mental illness and all...I’m very strong minded in the sense if I say I’m starting Monday, no smoking. I will start Monday and there’ll be no smoking” [Interview E1]

and seemed to need the assistance of the programme less with a clear focus on his own plan and preparation. This contrasted with B1 and D2 whose reports suggested they wanted or needed more external pressure to quit or set a date:

“people like that facilitators need to give me a good boot in the backside, and say, “I get in there and buy them patches” [Interview B1]

“I would have like that they pinpoint a bit more out on stop the smoking. It’s to stop smoking and they don’t do that either there, you know, they are very careful with not to say that [you have to stop smoking], you know....and I find that amazing that they don’t even a cessation group they don’t do that either, you know. I think I need that. I think I need that somebody says to me you stop smoking now” [Interview D2]

D2 did go on to state however that she would prefer to be given a quit date in the future rather than told to stop straight away:

I’d rather have a date in the future so that I can get used to it, you know” [Interview D2]
(iv) Smoking among peers and past culture

The prevalence of smoking among people with MHDs may also represent a barrier given the culture of smoking this creates among peers:

“there’s such a large group of them that do smoke as well you know so like your peers as well I know obviously if everyone got on the band wagon it would be great but when you’re constantly walking past the big group that you’ve seen day in day out and there still smoking I’m sure it would be quite difficult to do you know?” [Focus Group 2 F]

“just about everybody I know in the psychiatric services, service users, people with mental health, people with mental illness, they all smoke” [Interview B1]

I’ve been around smoking in a lot of times in my life, you know. I was up [mental health day care centre attended previously] and we were smoking inside and we all smoked [Interview G1]

There was also some evidence of this increased prevalence and a culture of smoking at EVE centres:

“the prevalence of smoking [at centre] like compared to, cus 18 out of 42 if you walked into any business or any factory or anywhere it’d be a huge high percentage. So, and in a mental health service it did seem to be a high” [Focus Group 4 EA]

“you get shanghaied into going out for a cigarette...Ah no there’s, there’s one or two that smoke here and if they go outside they’ll give you a cigarette and you have one” [Interview D1]

“here in the clubhouse I have contact with smokers, and we all go together for our smoke if we can especially the women, you know, who smoke and they get it together. That’s in a way nice. It’s chatty you know. Yeah.” [Interview D2]

C1 appeared to have become a more regular smoker after attending the centre, though she did not wish to ‘blame’ the centre and rather put it down to a simultaneous increase in anxiety as described above in relation to coping mechanism:
“when I came here first I didn’t smoke much ...Well I suppose having smoke breaks in the Centre. Like I come in early in the morning because my husband was working. He’s now retired, and I’d go down to the courtyard and I’d have a smoke, and I’d come up and have tea, and then I’d go down and have another cigarette before I started the day” [Interview C1]

Centres also experience issues such as a culture of money lending and borrowing to buy cigarettes;

“One other thing em came up there just thinking em people who smoke like that financially they don’t have as much money, so that, there was a knock on effect so they wouldn’t have as much money and like PA said they’d do anything to get a cigarette so borrowing became an issue... and as a result there’s problems then people are not giving back the monies so there was huge knock on effects from that” [Focus Group 4 N]

which also occurred in hostel settings;

“I share a room with a smoker, and you go to bed at night. Now it doesn’t always happen but some nights you’d go into him and say, “Do you have a cigarette?” He’d say, “I’ll give you one in the mornin’.” So we get up at seven o’clock in the morning, he’s got cigarettes. He’s on a certain amount everyday and he’s giving them to you to smoke which means when you get over here he wants them back. (Laughs). It’s difficult...It’s a vicious circle” [Interview D1]

as well as trading of counterfeit cigarettes occurring at the centre;

“And then the dodgy ones as well a guy going in [to town] buying them, and I’ve seen it in centres, coming in on Monday with like 200 cigarettes and doling them out” [Focus Group 4 EA]

Other reports however contradicted this and overall there was a sense the culture of smoking was waning:

“Smoking has kind of died down here” [Interview G3]
“I do [smoke] but not everyone in Centre C does but it’s a smoke free campus too... a lot of people in here smoke the e-cigarettes, and they did smoke cigarettes prior but as soon as the ban came in for the smoking they went on the e-cigarettes” [Interview C2]

“I think it was a lot higher when I first started. This is even well before smoking cessation and now it’s, I’d say we’re twenty, twenty percent maybe smoking twenty-five maybe” [Focus Group 4 B]

Facilitators commented on the lower prevalence among younger service users

“there was a culture of go and have a cigarette I think going back but that’s definitely not the case with the younger people coming in I don’t think we have as many smokers definitely with the younger em variety” [Focus Group 3 M]

and, as described by Emma below, the role of changes in relation to the health service in general:

“I think the younger ones don’t smoke as much [agreement] I think that’s down to more culture, like it was culture, I remember when I was 16 I was working in St Nolan’s Hospital and em the, there was a smoke room, there was a cigarette room sorry a room where cigarettes were held and people went around all day looking for cigarettes then they went down to the cigarette room and smoked their brains out like over the day but that’s not done anymore that’s not socially acceptable anymore to do that [agreement] in a mental health ward” [Focus Group 4 E]

For some the past culture of smoking also seemed to serve as an extra motivator to provide support now:

“we have a responsibility to address this I believe because our services have condoned this for so long and the medical community probably exacerbated it over the years made it worse so we have a responsibility to kind of maybe be a little more of campaigners about it” [Focus Group 1 M]
“If we continue to change the culture maybe a few people will say well that’s the best thing that the health authority did for me is to help me and support me to give up smoking because I didn’t think I could” [Focus Group 3 P]

(v) Lifestyle: lack of structure/activities

Inactivity, lack of structure and time spent alone emerged as particular barriers for service users from both facilitators and service user perspectives. Service users discussed inactivity, boredom and filling a vacuum as prompts to smoke:

I: And if I was to ask you why did you smoke, what would you say?

G2: Em, I’d say the vacuum after I got sick, and being off work, having that time on my hands.

“Well it fills it fills gaps I suppose” [Interview H1]

“A lot of it was to do with like boredom” [Interview C2]

while H1 also noted that she would smoke more while spending time alone and being less active;

“I could smoke less in a place if I was if it was more active, and eh when I’m on my own now where I’m staying I I smoke a bit” [Interview H1]

this was mirrored in the accounts of several facilitators who also noted a lack of structure and time alone as key barriers for individuals with MHDs:

“there would be a number of the people that would attend Centre H they generally wouldn’t do much from the time they go home in the evening till, they might watch a bit of telly or that, they kind of live from meal to meal when is the dinner, the dinner’s at one, when is the next meal? The meal is at six and so on and that and it’s just they don’t feel that they have a lot to replace it with” [Focus Group 4 EA]

“a lot of people maybe you know at weekends or in the evening times wouldn’t do very much like whatever you know [agreement] em you know you’d go encourage them you know to that’s part of or programme is to encourage people to have a
more active social life or whatever you know to join clubs or whatever but it doesn’t always work like with people or whatever they still em and they actually said it to me like whatever you know aw yeah when I’m in the flat on my own at the weekends that’s when I tend to smoke a lot like or whatever like you know [agreement]” [Focus Group 2 M]

EA also recounted his realisation that one service user did the majority of her smoking when alone in the evenings watching television:

“I have one particular girl and she lived on her own in an apartment and eh you could see the increase in cigarettes during the times when she was on her own d’you know? Like there was a time in the evening maybe from five until she went to bed at ten and she’d be smoking nearly double during that time than she was at other times” [Focus Group 4 EA]

Hobbies, work and being otherwise busy often emerged as distractions;

“There are places I smoke less. Yeah. When I’m doing something I get it done, you know” [Interview G1]

C2 referred to the years when he stopped smoking as partially down to being busy with work:

“Well I was working away like and there was no point to be smoking while you were working, you know, I’d be stopping every five minutes if I had of been smoking at the time, so it helped me as regards work as well” [Interview C2]

while E1 described how his hobby serves as a powerful distraction;

“I smoke an awful lot less when I’m gigging the guitar...An awful lot. I could go, I could go maybe four/five hours. It wouldn’t bother me...but as soon as it’s finished I have to get out and get the smoke” [Interview E1]

One service user who vapes exclusively described attending EVE itself as a distraction in this way in that it gave him a ‘break’ from smoking his e-cigarette.

“it’s between nine till till em three o’clock, and so it gives me a break from the e-cigarette, you know” [Interview F1]
Although notably, simply being occupied was not always the answer as for others smoking was at times, as described earlier, reported as a coping mechanism for work-related stress.

There were calls from service users and facilitators for more activities:

“...I think someone mentioned it just in terms or structure I think structure is, if a person’s day can be filled and it doesn’t matter whether it’s you know within the centre outside the centre in terms of leisure activities and social activities, that’s obviously going to help in in a big way” [Focus Group 2 I]

“...sometimes you find your sort of at a loose end but sure [pause] maybe introduce more things to do, more activities”[Interview H1]

and some felt there was a need in particular for specific replacement activities though particular suggestions were limited:

“...what to do when they do give up cigarettes I found like, I started doing myself knitting and reading more and doing things like that I think something like that could be put into the book, what to do, [murmuring] ideas and suggestions ... I feel what we need to do is encourage people to change their lifestyle I think that would help an awful lot” [Focus Group 4 M (service user co-facilitator and former smoker)]

I: What would help people with MHDs to quit do you think? Is there anything in particular?
G1: Well they they could find out something to do with their hands, you know, knitting or sewing or something like that...But my my hands shake so it’s very difficult for me to to do things...

In addition to daily life, some service users also described a lack of structure or activities in the psychiatric hospital setting itself and this can it seems lead to increased smoking there:

“I think when you go into a psychiatric hospital, into a mental hospital we’ll say there’s nothing to do in there. You sit around looking at four walls and you go out in the garden and smoke, you know?” [Interview D1]
“Well you see the cutbacks too. Like there was maybe one or two evenings a week you would do arts and crafts...Or you’d do Tai Chi or you might do, em, painting...You know...The cutbacks. They were only doing it once or twice a week. They hadn’t got the staff number one...You know....So your day basically in the psychiatric unit was that you’d get up in the morning. Six o’clock they opened the doors to the yard. First thing you’d do is go out to smoke. You’d be out there ‘till maybe eight o’clock, half eight til the dining hall opened. Go in and have your breakfast. Back out into the yard and smoke. Back in for you meds at nine or half nine, and your blood pressure and all that and then the rest of the day unless a doctor wanted to see you out in the yard smoking all day....Cause there was nothing else to do.” [Interview E1]

This lack of alternative activities or structure may also explain the huge place smoking can have in the lives or service users;

“Smoking is everything to me...Because cigarettes sometimes is better than a friend...If I have two or three packets of cigarettes then I don’t need anybody. If it’s just me, a cup of tea, and a fag then the whole world can just go away, once I have a smoke” [Interview B1]

“That’s all I have too in life yeah” [Interview H3]

even when the same individuals would actually like to quit;

“I’ve tried to quit smoking a few times” [Interview B1]

“I’d like to give up smoking you know I don’t really like it” [Interview H3]

(vii) MHDs as an excuse rather than actual barrier themselves

There was also some suggestion that in some cases MHDs can act as an excuse at the individual level rather than a barrier in terms of actual ability. This is perhaps unsurprising given the past culture discussed above.

“but I think that it’s a [pause] it’s also used as a fear kinda like you know aw I have me MHDs as an excuse that you know I’ve MHDs and I can’t because I’ve like whether you’ve a MHD or not I think they can, they’re no different than anybody else it’s that’s just that’s just that’s just an extra thing that they’ve going on........ I
don’t think there’s any difference when in relaying the course material ... to a adult with a MHD or not. Em I think depending on the groups sometimes the ones with the MHD will use it as a tool to not move forward and they’ll kind it use it as a as you know an excuse almost but I think when you dig down deeper I don’t see any difference” [Focus Group 1 G]

“the flip side, and I wouldn’t say this with everyone but I think there can be some people who might use their their mental health as an excuse, they might hide behind it you know they might have got things, they might be in a system where they might have a nurse or a key worker who is facilitating and done a lot for them and now they’re signed up to a smoking cessation programme but now it’s them that has to do it nobody else is going to quit for them it’s them that’s going to have to do it d’you know that sorta way? I’m not saying that’s all the cases I’m just trying to say there is a couple of individuals that find you know” [Focus Group 4 B]

Gavin addressed this by highlighting the equality between service users and staff;

“I’ve used me as an example in my groups ‘so you’re different to me because you have a MHD? Nah you’re no different to me you’re able to do loads of things I can’t do ...so if you I think if we hit it at that level and then all of a sudden they’re looking at you and they start laughing they know straight away they’re like alright I’m not gonna use that” [Focus Group 1 G]

which is also central to the structure and ethos of the service more generally.

(vi) Timing
While many felt MHDs can indeed make quitting harder facilitators felt timing can be a really important factor, as a barrier to attending the programme at all;

“I think sometimes they don’t want to give up or there’s other things going on in their lives that do you know what like I, this will sound terrible, this is kinda, but we have one lad in our centre that is a smoker that is not ready to give up but I wouldn’t be encouraging him to give up yet and I know that sounds, goes probably against everything we’re talking about... but for his particular situation what he’s in, I’m his keyworker, and what he’s going through at the minute, there’s no way
that he’s ready or there’s no way he wants to yet but that’s not saying down the line so that comes into preparation so preparation again we’ll still offer it to him that you know you can sign up if you like and you know you’re still working on it in the meantime but he’d nowhere near... MHD em personal stuff em all combined into one and like it just there’s no way he’d be ready and he’d say that like he’s not ready he’d openly say he’s not ready” [Focus Group 1 G]

“the interesting thing about the first session was that the person, it was Christmas time it was the wrong time and they found by, I think we got to week 5, they found that week 5 they had to stop because their cigarette smoking had increased! Because of Christmas and stresses and all that kinda thing and all so” [Focus Group 3 P]

but also to actual quitting in those that did attend;

“I did the course 3 times in Bray and she sat on each one of them but she had something going on in her life that she just wasn’t ready and ...it was a bit her mental health was a bit unstable at the time yeah and she had family issues she had to get sorted out and she just felt she needed that cigarette” [Focus Group 2 D]

“I think the forum of having that that time and space to sit down and talk about, and to talk about the struggles people are having or you know just things are going on for them and it’s not a good time to do it this thing, but overall they’ve come back and kept saying but I have cut down and going through when they have a cigarette and when their last one is so in that way it has been successful there so” [Focus Group 3 M]

though they did manage to cut down.

6. QSP too quick at 7 weeks and assumes a very serial/logical process
Some facilitators felt the 7-week programme assumed a very swift, logical and serial process that was perhaps unrealistic;
“like I’m being honest like some of the, like one of the programmes took nearly ten, eleven weeks to get through like it wasn’t being done over five six week period [agreement] like it just it wasn’t feasible” [Focus Group 4 B]

particularly perhaps among those with MHDS;

“Well mental health, the area of mental health you know and against a person without MHDs deciding to give up and go to the finish line in a serial way... I think for our people it may not go, sometimes you get that success but I doubt all the time whether it will go as as as planned you know I think eh mental health timetables in day services have to take that into consideration like eh” [Focus Group 3 P]

“Just again because it’s a mental health profile or whatever em people with mental health issues you know they aren’t necessarily good at managing their lives you know or whatever like and maybe just you know cus the programme is all very kinda logical it’s all about you know if you take exercise it will counteract putting on the weight you know if you em if you do such and such it will distract you from your cigarettes and whatever like eh it’s all very kinda logical and you know whatever like and a lot of people with mental health problems their, their brain doesn’t work that way [agreement] like or whatever kind of you know they just have difficulty with that kind of approach” [Focus Group 2 M]

Getting stuck
In reality service users were not always ready to quit or even to set a quit date on the designated week;

“Yeah, we didn’t get past week 3 I would say yeah no we didn’t em, again so we get, so we started first we had a good first week if you like, and the second week was fine and then the third week we’d no one setting dates” [Focus Group 3 M]

and at times facilitators were left feeling stuck and unsure what to do as described by lan;
I: The difficulty I would have had was we had reached that point where people were supposed to quit and the following week when they had that question right how did you find, it turned out that nobody had quit

M: oh yeah yeah same with me

I: and so then I kinda felt where am I gonna go now? I’ve you know all the questions here are about quitting how have you found it, nobody’s quit... so like there was no kind of return to god lets go back, let’s go back... let’s go back to week one and start again do you know [agreement/several or all talking over eachother] [Focus Group 2]

and Gavin:

“it’s hard doing, doing the [taps folder] materials with some of the lads because they just they get stuck on a stage and how [do] you move them forward?” [Focus Group 1 G (who ran into this issue especially upon running the programme for the third time when perhaps those needing more support remained)]

Several service users also discussed the expectation to quit by week 7 and not managing to do so:

F2: They want you to stop after seven weeks. I wouldn’t be able to.

I: Okay, okay.

F2: The plan of the smoking cessation is to stop at seven weeks, so you’d be off them, so you know.

I: So you weren’t ready?

F2: Yeah yeah.

There was a seeming lack of clarity on how to move forward when these issues arose in this real world setting:

“it would be helpful within this [taps folder] or whether EVE kind of have an addendum to this saying what to do if you if this scenario happens you get stuck at week 3” [Focus Group 1 M]

“they’re moving forward they’ve cut down dramatically but just getting to that next stage and then I’m not too sure as a facilitator whether I should be going ok
let’s push it now you know because you don’t want to push it because I know when I was giving up that it has to be your plan” [Focus Group 1 G]

and while some felt they had to stop, other facilitators made the decision to keep going:

we’ve a couple of people stuck at week three say is that the give up week but we just keep doing it [Focus Group 3 M]

D: I kept going
M: No I kept going yeah
D: ...I think the manual does say though that at week three if the person isn’t ready to quit you’re meant to just stop but the lady I was dealing with [SU] did ask me to carry on with her so I did [Focus Group 2]

Some centres also seemed to make conscious efforts to tailor the programme so that it was at individuals own pace:

“we did not complete the full five weeks, we’re doing it you know step by step seeing what stage they’re at and working with each person” [Focus Group 4 N]

“I’m like well when you’re ready and at your own time and you know we can help here and there and that but sometimes so it’s it’s just what works, sometimes” [Focus Group 3 M]

For instance, J1 (who later quit) described his facilitator as happy to see any progress:

“Marie she’s good at her job, em, and em she’s happy enough to see any progress at all” [Interview J1]

including him cutting out just one cigarette:

I: you don’t have a cigarette on the way to Centra now..
J1: Yeah.
I: So it’s had a little effect for you in that way?
J1: Yeah it has, yeah. Marie is happy with how I’m kind of progressing as I said to you.

Re-attending

Several service users also opted to re-attend the programme again demonstrating this can be a longer process for some;

“Yeah well there’s a couple of them in here that [want to quit], we, that’s why we said we’d do it a third time so hopefully, you come up with another method so we can, get off them” [Interview A1]

F1: I went to two groups yeah
I: ...and did a lot of the same people go to the two groups?
F1: Yeah

however the very real world nature was perhaps best demonstrated by Gavin explaining the pressure at time to ‘finish’ and provide statistics for programme completers when in reality this approach oversimplified a complex and at times circular process which involves re-attending and having to go at service users’ own pace at times:

“it’s all about statistics it’s all about numbers it’s all about this it’s all about that and with emails or phone calls and it’s in the you know how are you getting on who are you doing it with what week are you at and there’s a certain pressure there that is on staff ... to complete it, ‘ok give us your numbers’ even if there off them for the first week oh no they’re off them give us that number they’re off them they’re off them and lets run with them lets run with them lets run with them statistics whereas I think when you actually take a step back outside the bubble and have a look in that it’s you know you could have the same people doing the 7 week programme or the 7, the 7 modules on the quit smoking you could have them doing them over the course of 2 years.” [Focus Group 1 G]
6.9 Discussion
This study aimed to identify key barriers to and enablers of the implementation of a quit smoking programme in community adult mental health services and was the first study to do so in Ireland. By evaluating an ongoing smoking cessation intervention in a real world mental health setting and exploring staff experiences of its implementation this study filled an important gap in knowledge. A number of key enablers and barriers were identified, which should be of use to programme evaluators going forward.

Key enablers which emerged included the dedication and resourcefulness of facilitators; an open and engaged recruitment approach; service user motivations relating to health and money and finally cessation programme tools emphasizing these such as questionnaires and the use of a carbon monoxide monitor. The emergence of health and money as important motivators is consistent with previous research in relation to the enablers of smoking cessation among individuals with severe mental illness (123, 125), and is similar to other populations (238-240). The use of carbon monoxide monitors was also useful as a motivational tool to spur cessation efforts as well as reinforcement for those already quit. This is biofeedback, which is arguably one of the most powerful behaviour change techniques (241), and appears to be a powerful, and appropriate, aspect of this programme also. Interestingly however the monitor also appeared to vindicate the use of e-cigarettes in service user’s eyes, presumably an unintended consequence given the HSE have not endorsed e-cigarettes as a cessation aid (242).

The emergence of staff resourcefulness, and tailoring of the programme by facilitators to individuals’ needs as an enabler is consistent with Parker et al.’s finding that a ‘flexible, responsive approach to patients’ needs was an enabler to the implementation of a tailored tobacco dependence service in mental health settings (61). An active, open and engaged recruitment approach seemed to work best as opening up to those not ready to quit, but interested in attending, sometimes led to unexpected wins by spurring on later quit attempts. Non-voluntary attendance without personal goals however appeared to lead to disengagement as well as frustration for both service users and the facilitator as well as potentially affecting overall atmosphere.
The recently introduced smoke-free campus policy emerged as both an enabler and barrier to programme implementation and participant quitting. The moving of smoking to a designated spot which was usually unsheltered led to downstream effects in relation to cutting-down for some service users, while the replacement of smoking breaks at some centres with tea/fruit-breaks provided a distraction and replacement activity for smokers. The partial nature of the ban (i.e. provision of designated smoking areas within campuses) however as well as its varying implementation, led to the ongoing facilitation of smoking at some centres and thus served as a barrier. This supports other studies which show partial smoke-free policies are less successful than total smoke-free policies and create additional problems, the most significant of which is their limited impact on the staff and patient culture of smoking (243). Moreover the timing of implementing cessation support, following or alongside the introduction of a smoke-free campus policy, seems may have negatively affected morale.

Other key barriers revealed by this study included structure of service; inconsistencies and the need for a joined-up approach across the health service; mental health related barriers; literacy issues and some service users requiring a slower or less serial approach. At the service level other contractual obligations and a lack of substitutes to cover staff moves, leave and sickness led to gaps in availability of the programme while the nature of the service and associated irregular attendance also led to scheduling uncertainties for some facilitators. Conflicting priorities and a lack of prioritising smoking cessation support as part of staff workload has previously emerged as a barrier, among HCPs in Ireland (124, 244); and in relation to mental health more specifically especially in the context of outpatient settings (123). Literacy, while an important factor for some which needs to be taken into account in relation to materials and modes of delivery - for instance the current lack of any technology-based elements despite available resources, at present is addressed only in name ‘Low Literacy Resources for Smoking Cessation’ which at times became shorthand for the entire programme, a rather imprecise and potentially disempowering title.

The emergence of the current lack of a joined-up approach as a barrier producing inconsistencies in relation to lack of cessation supports and also in relation to exemptions from smoke free policies echoed the conclusions of a recent review of qualitative studies
which called for cessation to be addressed at all levels (systemic, health provider and individual) among people with severe mental illness (125). A frequent lack of any apparent HCP advice emerged while some of the interactions around smoking that did occur appeared to be patient initiated, overly tentative, or even erroneous. Although there is a lack of evidence relating to the effectiveness of advice for those with serious or severe mental illness (162, 245), the motivational impact of HCP advice, where it did occur, were perhaps unsurprising given prompts from health professionals have been shown to be an important driver in quit attempts among smokers in general (246-248).

In line with previous research, barriers relating to MHDs including smoking as a coping mechanism (61, 67, 126, 249, 250); lack of self-belief (64, 67, 249); lack of consistent motivation (61, 123); prevalence of smoking among peers and the culture within mental health settings (61, 125, 251); and lack of structure or alternative activities (252-254), also emerged from the data. Timing was also perceived to be an important factor by facilitators and some service users felt an inpatient stay was the wrong time for cessation. Evidence is still however lacking in this area due to the ongoing tendency for smoking cessation studies to recruit from psychiatrically stable rather than acutely unwell populations (52, 245).

**6.9.1 Implications/Recommendations**

There is now good evidence that those with MHDs are capable of quitting smoking (51, 245). Furthermore quitting does not appear to harm mental health recovery (57, 58), and may even enhance it (59, 60, 144), whereas nicotine, in spite of commonly held beliefs regarding therapeutic function, can, it seems, actually increase anxiety (51). There was some evidence in the current study of knowledge among service users and staff of the ineffectiveness of smoking as a coping mechanism and the ability of those with MHDs to quit. Overall however, findings suggest that integrating education on the proven ability of people with MHDs to quit smoking, and the seeming benefits of quitting for mental health, into facilitator training and resources for service users could be beneficial in building confidence. It is also crucial that the service continue to present this opportunity to quit on an ongoing basis especially given the accounts of non-attenders who also expressed the wish that this service remain as they may use it in future.
A stronger focus on replacement coping mechanisms and activities may be needed. It is important however to ensure these replacements are healthy. Given the increased physical health risks in general seen among those with MHDs (177, 255), the introduction of well-intentioned replacements such as biscuit breaks seem ill-advised. Rather a focus on overall wellness and the grouping of smoking cessation with broader health initiatives, a proven enabler, should continue. As should the open recruitment of those not ready to quit but interested in attending and perhaps cutting down. In light of the potential changing levels of motivation among those with MHDs, which were also reported in the current study, Williams and Ziedonis have previously recommended reduction towards abstinence as a method of harm reduction (256). Smoking cessation support should also ideally be in place in advance of the introduction of any new smoke-free policies.

Finally attending the cessation programme and attempting to quit turned out to be a longer and more circular process than anticipated for some, providing support for the idea that some individuals with MHDs may require more intensive, modified or tailored cessation support (125, 148, 257). It is important to note however that some service users in the current study needed little support to quit particularly in the early stages of implementation. Perhaps the introduction of new smoking policies and a support programme produce quick initial gains or ‘low-hanging fruit’ in terms of the quitting of more motivated and less dependent smokers after which those more dependent smokers, needing greater support, remain. Regardless there was a clear need to sufficiently equip facilitators, through enhanced training, guidelines or a nominated support contact, for attendees or groups getting ‘stuck’ in order to avoid feelings of uncertainty and frustration. In addition to a support person, a forum for facilitator communication and collaboration could also be beneficial in sharing knowledge and approaches to obstacles.

Future research may wish to explore how the addition of evidence in relation to smoking cessation in those with MHDs, as well as a greater focus on replacement coping mechanisms and activities, might enhance a smoking cessation programme for this population. Studies which include exploration of experience of use at both participant and provider levels in addition to outcomes would be particularly useful.
6.9.2 Strengths and Limitations

This study was strengthened by the participation of a high number of service users across a large number of the eligible centres as well as the inclusion of almost all trained facilitators, meaning results should have good external validity. Including the 16 various sites meant contextual factors were well accounted for and barriers and enablers that emerged were truly cross-site. Previous qualitative studies of smoking cessation and other lifestyle interventions in individuals with serious or severe mental illness have at times involved very small samples (n=5-8) of service users (258, 259), while others have failed to include the service user voice at all, only collecting data from staff or facilitators (61, 123).

Beyond the inclusion of both voices, the triangulation of sources, combining both service user and staff perspectives and experiences, also serves to validate study findings (230), adds credibility and strengthens confidence in the conclusions drawn (260). Lambert et al. have also found that the integration of focus group and interview data in particular assists in the identification of individual and contextual circumstances thus adding to interpretation and ultimately enhancing trustworthiness of results (231). The two-phase sequential design also allowed for the refinement of the facilitator focus group interview guide and thus allowed service users to set the agenda somewhat by shaping this refinement before facilitator data collection commenced.

As this was qualitative study findings are not generalisable beyond the study population and conclusions drawn refer to the sample itself (261). Practical issues around staff availability led to pragmatic decisions including conducting a focus group with just two members and allowing a facilitator to join another focus group late. The recruitment of service users through staff may have meant they did not believe the researcher was truly neutral and interview data confidential, although this was restated at the beginning of each interview, it is unclear if this affected findings. Similarly the assistance of EVE administrative staff in recruiting facilitators to focus groups may have led to confidentiality concerns. However prior to this assistance recruitment rates were too low to render focus groups feasible and participants again responded well to reassurances regarding de-identification of data prior to communication of findings to service management. While the inclusion of service users who smoke but did not attend was a
strength, only three non-attenders were included which arguably limits saturation and generalisability meaning this study may not have tapped into further themes behind non-engagement by current smokers. Finally, as it had been several months since programme attendance for some service users it is possible that recollections may be subject to recall bias.

6.9.3 Conclusions
A group-based smoking cessation programme with an open recruitment approach and the provision of individual support, where possible, appeared to work well in community mental health services. More tailored training and the addition of mental health specific components, focusing on evidence relating to smoking cessation in those with MHDs, replacement activities and coping strategies may be beneficial in overcoming the barriers outlined here. More broadly a joined-up approach across the health service is required to address ongoing inconsistencies and support those with MHDs in their efforts to quit.
Chapter 7 Discussion

7.1 Overview
Informed by the MRC framework, this thesis aimed to explore the impact of smoking and quality of cessation support provided in those with MHDs in Ireland, and to observe and evaluate the implementation of a cessation support programme in community mental health services. This was addressed employing a mixed methods approach over three inter-connected studies. This chapter summarises the key findings of these studies and illustrates how the findings from each study generated additional questions which were addressed in subsequent studies in the thesis. This chapter also integrates the findings which emerged across studies and discusses how these emergent linkages inform the overall thesis, before reflecting on the impact of these findings for research, policy, service and society (262). Finally, strengths and weakness of the thesis as a whole are discussed as well as recommendations for future research.

7.2 Summary of thesis findings

Study 1: Retrospective secondary analysis exploring smoking, smoking-related disease and mental health in a nationally representative sample of community living adults aged 50 and over

Prior to this thesis, the epidemiology of the impact of smoking on the health of those with MHDs in Ireland was unknown. This was addressed in Study 1 (Chapter 4). For the purposes of this analysis, smoking-related disease was defined as the presence of respiratory disease, cardiovascular disease (including hypertension or hypercholesterolemia) or a smoking-related cancer in line with the latest evidence provided by the US Surgeon General (181). Evidence of MHDs was based on a range of indicator variables, including self-reported doctor diagnosed conditions, medication use and psychometric scales, which were modelled both individually and in combination.

Modelling across all indicators this analysis found increased prevalence of current smoking and of smoking-related diseases in those with mental health difficulties. Individuals with MHDs were more likely to be current smokers and more likely to have at least one smoking-related disease compared to the general population. This was in line
with international literature which has shown increased rates of smoking (7, 45, 80-84) and of smoking-related disease (44-46, 99-102) among this group. Contrary to expectations, however, further analyses revealed that in the current study smoking did not moderate or mediate the associations found between MHDs and smoking-related disease. While unexpected, this followed a number of previous studies which found elevated odds of respiratory illness, cardiovascular disease and risk of death from cardiovascular disease which were not fully explained by smoking (46, 80, 104) and referred to antipsychotic medications, diet, exercise (80) and increased second-hand smoke exposure (46) as potential explanations. In the current thesis, it is thought measurement in relation to reliance on self-report and sampling issues in relation the exclusion of non-community dwelling adults, those under 50 and those who have already died may have contributed to the lack of mediation or moderation found as well as the presence of other unmeasured lifestyle risk factors, such as diet, especially given the dominance of cardiovascular disease in the outcome variable.

This data, for the first time, established the epidemiological context of smoking, mental and physical health in Ireland, demonstrating the increased prevalence of smoking and associated diseases in this population, which provided impetus to explore this further in the subsequent studies. This occurred firstly through the assessment of prevalence of smoking and smoking-related disease in an inpatient sample in Study 2. While Study 3 qualitatively explored the relationship between MHDs and smoking as well as the role of physical health in relation to the implementation of a quit smoking programme.

**Study 2: Evaluation of current cessation care in a psychiatric inpatient setting**

This study aimed to establish the quality of cessation care delivered to psychiatric patients in an inpatient mental health setting, as again, no such Irish data existed. This was addressed through adopting the methodology of recent surveys from secondary health settings (62, 118, 119). In addition, this study aimed to evaluate the quality of cessation support employing the RE-AIM framework. While smoking prevalence was higher in the mental health setting in comparison to the inpatient settings (34% v 21-23.4%), rates of advice reported were lower (10.7-13.1% vs 32-44%; (62, 118, 119)). In spite of similar levels of motivation, patient reported quit attempts in past year and desire for advice while in hospital as well as the consistent documentation of smoking status in
hospital casenotes, just 13% reported that a healthcare professional discussed ways of quitting with them in the past year. These results were in line with previous studies which have reported that people with severe mental ill health are less likely to receive help in quitting compared to the general population (34, 109), in spite of similar levels of desire to cut down or quit (14), although these findings are contrasted by a recent meta-analysis of US and UK studies which concluded that smoking cessation advice rates were similar for those with and without mental illness (223). Irish data were however not included in this synthesis, suggesting that its findings are of less relevance to Irish healthcare and moreover one of the 7 studies analysed employed a sample hospitalised for a myocardial infarction which may be more likely to receive cessation advice following this acute event regardless of mental health difficulties.

In terms of inpatient surveys specifically, previous studies conducted in Canada and South Africa found 36.2% and 43.4% of psychiatric inpatients reported receiving smoking cessation advice (111, 115), which like that found in the nearby non-psychiatric teaching hospital studies described above, was about three times higher than advice rates reported in the current study. Respondents in these psychiatric studies also had much higher smoking prevalences, at 55% (111) and 91% (115), compared to 34% in the current study although this may have been impacted by the private setting and inclusion of patients on all wards in the current study, compared to the gender and age restricted psychiatric inpatient sample provided by Du Plooy (115).

The quit rate at 3-months follow-up in the current study (16%) was equivalent to that found in nearby non-psychiatric inpatient samples in Ireland (118), which arguably suggests a similar ability to quit even in the context of rare advice. Globally few studies have assessed smoking cessation in psychiatric inpatients but the current quit rate exceeded that found in a US RCT of psychiatric inpatients evaluating motivational tobacco cessation treatment which led to a 3-month abstinence rate of 13.9% in the intervention group (224). This study was however conducted on a locked acute psychiatric unit and therefore likely provides a sample quite different to that produced by hospital-wide recruitment approach in the current study. Though 6 and 12 months quit/abstinence rates are more commonly reported, other studies involving those with chronic mental illness have found rates ranging from 4 to 55% at 3-months (263-268) with the highest
rate achieved in a sample of just 22 (268). The current study therefore added to the evidence indicating those with mental health difficulties, and psychiatric inpatients specifically, are capable of quitting even in the context of usual care or no treatment.

Based on variables formed post data collection, but pre-analysis, to fully capture and code all reported cessation interactions, cessation advice which included at least some discussion of ways to quit seemed effective, though this is tentative data that requires replication. Such advice was implemented for few, while numerous interactions around smoking which were beyond status checking, but still fell short of optimal cessation advice with no real assistance offered, were noted. In line with reports of smoker with mental health conditions in the UK, it seems few are offered ‘real support’ in inpatient care (20).

These findings, relating to infrequent and inadequate smoking cessation advice from healthcare professionals, led to the qualitative exploration of healthcare professional advice in Study 3 where the emergence of the current lack of a joined-up approach across the health service also emerged strongly as a key barrier to the implementation of a smoking cessation programme in community mental health services. Unlike the majority of Ireland’s hospitals, SPUH has yet to adopt a tobacco free campus, and while there is no smoking indoors, designated smoking areas remain off each ward and in the form of a shelter by the entrance. The impact of a smoke free policy was therefore also explored in Study 3 given this was a key contextual difference between the private and public settings.

**Study 3: Qualitative process evaluation of the implementation of a smoking cessation programme in adult community mental health day services**

While study 1 provided the epidemiological context, and study 2 described current care, little is known about the experience of people with MHDs in smoking cessation interventions (64). In Study 3 a qualitative process evaluation of a smoking cessation programme being newly implemented in community mental health services was conducted, again providing the first such data in Ireland. Internationally, the evaluation of smoking cessation programmes in community mental health also remains understudied (141, 142), though available data suggests implementation is feasible and well received (269). MRC guidance provides a framework for conducting and reporting process
evaluation studies and was used to guide this study (153). This framework aims to capture what is delivered in practice and also considers the role of context at both implementation and outcome levels (153), making it particularly relevant in this case given the study evaluated implementation across 16 centres. Data from service user interviews and facilitator focus groups was integrated and a number of key enablers and barriers emerged at both implementation and participant levels.

Enablers included resourcefulness of facilitators, an open yet engaged recruitment approach, motivators such as physical health and money and tools such as the carbon monoxide monitor (i.e. biofeedback). The smoke-free campus policy emerged as both an enabler and barrier given its partial nature and varying implementation, while other barriers included inconsistencies in available cessation support and different smoking policies across the health service, literacy issues, service structure, an assumed logical and serial process to completing the programme and quitting and issues perceived to be more directly related to MHDs such as use of smoking as a coping mechanism and a lack of self-belief or alternative activities.

Key emergent barriers and enablers in Study 3 are discussed in the context of the literature and findings from Study 1 and 2 in the next section.

7.3 Integrated findings
While the specifics of each study have already been discussed in the relevant chapters, a number of important linkages across the three studies deserve further comment.

The association between MHDs and smoking is well established in the literature (7, 45, 80-84). General population smoking prevalence is at an all-time low in Ireland at 17.6% (11) and a similar steady decline in prevalence has been witnessed globally (18). Studies from the UK and US have, however, shown that this decline is not evident among those with mental health difficulties, with smoking prevalence among those with a mental health condition remaining steady in the UK at 40% (247), while rates among those with mental illness in the US also remain high (15, 21-23). The results of Study 1, which demonstrated ongoing increased prevalence among those with MHDs (25-39%), compared to the sample overall (18.2%), suggest that similar trends may be evident here in Ireland. Study 3 also highlighted the strong perceived associations between smoking
and MHDs with several service users explicitly stating they smoke and or initiated smoking because they have mental health difficulties. Beyond MHDs as a direct explanation or motivation for their smoking, related themes of smoking among peers, past culture in mental health settings and smoking as a coping mechanism for MHDs also emerged in Study 3, which again shows the strong links between smoking and mental health also seen in other literature (41, 51, 84, 270).

The impact of smoking on physical health (i.e. cardiovascular disease, respiratory disease and smoking-related cancers) was clearly demonstrated in Study 1, while casenote reviews in Study 2 also demonstrated that almost half (49.4%) of respondents had at least one of these conditions. These findings are in accordance with previous research which has revealed high rates of tobacco-related morbidity in those with MHDs (44-46, 99-102). In Study 3, presence of physical health impacts of smoking were noted by both service users and staff, with physical health emerging as a primary motivator for quitting among service users. This is in line with previous research (123, 125), and can thus be seen as a key enabler for provision of smoking cessation care. Importantly the finding that smoking did not mediate or moderate associations in Study 1 means other risk factors cannot be disregarded and care must be taken to not replace smoking with other unhealthy alternatives such as biscuit breaks, such as was seen in some sites.

Study 2 revealed high levels of general motivation to quit smoking in psychiatric patients, with the proportion who did not want to quit at baseline (8.33%) actually lower than that found in recent nearby general inpatient samples (16%) (118). This high level of motivation was perhaps surprising within the context of the ongoing increased prevalence in those with MHDs but is supported by previous research showing no difference in motivation to quit between those with severe mental illness and the general population (271). It may however be that consistent motivation is the issue rather than the absence of any desire to quit full stop. Indeed, a lack of consistent determination or willpower emerged as a barrier identified as related to those with MHDs in Study 3 and is also supported by the literature (61, 123). Further quantitative research could enlighten this issue.
Further explanation of the ongoing increased smoking prevalence comes when observing the variation in cessation care rates. Previously, Currie et al. have shown that psychiatric facilities ranked among the lowest in Ireland in delivering cessation services (27). This was echoed by the current thesis which highlighted low rates of healthcare professional-provided cessation care among service users in both hospital and community mental health services. The advice rates of 10.7-13% found in Study 2 compare to rates of around a third (32-44%) found in non-psychiatric inpatients samples in Dublin (62, 118, 119), adding to previous research suggesting that those with severe mental ill health are less likely to receive help in quitting (34, 109). Although, as previously stated, it should be noted this contrasts with a recent meta-analysis which showed similar smoking cessation advice rates for those with and without mental illness (223). As described above this synthesis did not include Irish data and included a sample hospitalised for myocardial infarction which may be more likely to receive cessation advice irrespective of MHDs.

Where healthcare professional advice to quit did occur it appeared to be motivating. All interactions beyond status checking were positively associated with quitting in Study 2 and where advice included discussion of ways of quitting this association was statistically significant, albeit this should be interpreted with caution given the formation of these variables post-data collection (based on best capture of all reported cessation interactions, accounting for interpretation/definitional biases as well as staggered recall/reporting to provide meaningful coding). Similarly, in Study 3, healthcare professional advice repeatedly emerged as a motivator for both engagement in the smoking cessation programme and actual quit attempts, providing further evidence of its importance.

In addition to the frequent lack of any cessation support from healthcare professionals, both studies also revealed that often the advice which does occur can be inadequate. Both casenotes and service user reports revealed service users initiating smoking and NRT conversations; soft approaches including advice to cut-down only, as well as seeming dissuasion from quitting at times; and occasional occurrences of restrictions placed on access to tobacco in the absence of any cessation support. These overly tentative or soft approaches to smoking cessation in those with MHDs have also been highlighted in the UK (20). However, this is perhaps unsurprising given many mental health professionals
believe patients with mental illness are disinterested in quitting and that quitting is too stressful for them (122), while some also express fears of damaging relationships (67). Similar staff beliefs have been reported in non-psychiatric settings (121), and highlight the need for a comprehensive approach for any future implementation of cessation services (121).

Timing as an important factor in relation to quitting among those with MHDs emerged strongly in Study 3. Facilitators referred to timing in relation to personal life and current mental health state as a barrier to both attending the programme and to quitting in those that did attend. Service users too mentioned timing, for instance some reporting an inpatient stay was the wrong time. This also emerged in Study 2, in the accounts of those specifying why they would not like cessation advice at present, with reasons offered referring to timing and acuteness of condition. While clearly present at both provider and service user levels the timing barrier alone does not explain the low rates of cessation care delivered. This was evidenced by the low rates of reported and/or documented cessation care in spite of the inclusion of the twelve months prior to baseline in as well as the 3-month follow-up period. If timing was indeed the key barrier, cessation support could be consistently offered to smokers at discharge or during outpatient reviews, but this does not appear to be the case. Furthermore the literature has shown that smokers can quit as inpatients (224, 272), and that quitting smoking in general does not seem to harm mental health recovery (57, 58), and may even enhance it (59, 60).

A recent meta-analysis of smokers showed that offer of support in addition to advice to stop is effective in generating quit attempts and led to the recommendation that assistance be offered to all smokers regardless of interest expressed upon advice to stop (225). This was supported by the findings of Study 3, where an open recruitment approach which encouraged those not yet ready to quit to join the cessation programme, at times led to unexpected wins by prompting later quit attempts. Further evidence of readiness to quit as a pertinent barrier was seen in Study 2. While 75% of respondents expressed that they wanted to quit and over 40% were contemplating it, just 2% were at the action stage and currently trying. Feeling ready therefore seemed to be an important barrier for service users in general and as such an approach whereby encouragement and assistance is offered to all is needed. The current findings support previous research
which argued that smoking cessation care should be provided by mental health staff routinely and systematically to all rather than selectively based on staff perceptions (110, 273, 274). Actual quitting behaviour, such as quit attempts in the past year, may be more indicative of interest in quitting than perceived patient receptivity to care (110).

While inpatient tobacco dependence treatment has been shown to be effective in psychiatric settings its usefulness in achieving prolonged abstinence is less certain (272). McFall et al., in an RCT involving veterans with PTSD, found that the integration of smoking cessation treatment into outpatient mental health care was more effective for prolonged abstinence compared to referral to a smoking cessation clinic (275). This points to the potential role of outpatient and community services which seem well placed to provide continued support. Services like EVE and outpatient follow-up may present a unique opportunity to maintain quit attempts and achieve longer term smoking cessation as currently this, it seems, is where integrated inpatient interventions can fail, even with integrated telephone follow-up support (272).

In addition to providing inpatient and community samples Studies 2 and 3 also offered contrast in relation to smoking policies. As found in Study 3, a smoke-free policy, while helpful in assisting some service users to cut-down and providing distractions from smoking (e.g. in the form of replacement breaks implemented by some centres in response to policy), can also serve as a barrier when partial bans and partial implementation lead to the ongoing facilitation of smoking. Previous research has shown that partial bans have limited impact on staff and patient culture of smoking (243). Even where this new policy was fully and successfully implemented in EVE settings, inconsistencies across the health service as a whole presented ongoing difficulty.

Further explanation as to why those with MHDs continue to smoke and have not quit at the same rate as the general population as shown in Study 1, may be related to their need for cessation support beyond that which has proven effective with the general population. It has previously been argued that those with MHDs may require more intensive, modified or tailored cessation support to quit (54, 125, 127, 148, 257, 275, 276) and Study 3 provided further evidence that some smokers with MHDs may require more intensive support. While some service users were able to quit early on or right away, the
choice by some service users to re-attend the 7-week programme multiple times highlighted that even when motivated this can be a longer process for some, although quitting is also difficult for non-psychiatric samples. Facilitators also at times described needing to tailor this programme, which was designed for smokers in general, and to go at service users own pace at times as well as building in additional individual support where needed. The finding in Study 2, that 37.7% of inpatient smokers had been prescribed a medication which has a clinically significant interaction with smoking again shows that quitting can for some with MHDs be a more complex process. However rather than a reason not to provide psychiatric inpatients, the majority of whom want to quit, with cessation support this finding merely represents another factor to be managed.

It is critical that opportunities to quit in general are ongoing. Gaps in availability of support emerged in Study 3 demonstrating that even following implementation of a dedicated smoking cessation programme issues such as scheduling, contractual obligations and staff shortages can lead to de-prioritisation, stoppages and gaps in the availability of cessation support. Previous research on sustainment of smoking cessation programs among substance use disorder organizations in the US has shown that almost 40% of those offering programs at baseline had discontinued such services approximately 36 months later (277). In relation to mental health centres, La Pelle et al. have previously shown that after 9 months, just 33% were able to sustain tobacco treatment services at a moderate level, but pointed out that they do better than substance abuse centres, but not hospitals, which have the necessary resources to sustain services at a higher level (278). In Study 2, the discrepancy between hospital documentation of smoking status and delivery of care highlighted another clear gap. While status was documented for all respondents for whom casenotes were reviewed, usually on admission, implementation of care was rare and inconsistent, with low rates both reported and documented. In cases where care was delivered there was a lack of consistency in relation to when care was delivered, and how, with various elements of the 5A’s approach seemingly implemented in a partial and non-systematic fashion. Cessation support services, in the interests of both equity and effectiveness, must offer equal implementation for all as well as continuing to present the opportunity to quit on an ongoing basis.
7.4 Impact of findings arising from this thesis

The Research Impact Framework by Kuruvilla et al., a framework used by researchers to reflect on the impacts of their work, consists of four impact categories: research-related, service, policy and societal impacts (262). The current thesis had demonstrated impact and potential for impact in a number of areas within each of these categories as described below.

7.4.1 Research-related impacts

Knowledge generated

This thesis set the epidemiological context in relation to smoking and MHDs in Ireland by helping to identify the evidence base (72, 152) in Study 1. Study 2 filled a key gap in knowledge in relation to provision of smoking cessation care among psychiatric patients, while Study 3 informed on key enablers and barriers to current implementation of a Health Service designed Smoking Cessation programme in community mental health settings. Each of these studies was novel in an Irish context.

Internationally, Study 1 provided further evidence in relation to the prevalence of smoking-related morbidity in older adults with MHDs, employing multiple indicators of MHDs in a nationally representative sample of community living adults aged 50 and over. Study 2 added to evidence on rates of cessation care in inpatient psychiatric settings and included a naturalistic follow-up quit rate for psychiatric inpatients in the context of usual care, which has not before been demonstrated to my knowledge. Finally, Study 3 was novel in an international context given it was the first study, to the researchers knowledge, to qualitatively evaluate the implementation of a smoking cessation programme in community mental health settings by combining data from both service user and facilitator perspectives, thus providing an in-depth and comprehensive understanding of the implementation process from both perspectives and key barriers and enablers at both levels.

Publications and Conference Presentations

To date this thesis has resulted in a peer-review publication (see Appendix 33) in the multidisciplinary Journal of Psychosomatic Research, 5 oral presentations (3 of which
were at international conferences) and 7 poster presentations across national and international conferences (see p. X).

Development of Research Networks
This thesis was undertaken as part of a structured PhD programme in Population Health and Health Services Research. The SPHeRE PhD Programme, or Structured Population and Health-Services Research Education, is government funded and nationwide with students registered across all Higher Education Institutes in Ireland. In addition to an annual conference, SPHeRE students are part of a growing national network which connects research, policy and practice in population health and health services (279). This programme also involves both national and international placements creating further opportunity for development of research networks. National placement for the current thesis was with the Tobacco Free Research Institute, an independent, trans-disciplinary research centre company, formed on the basis of a partnership between the Office of Tobacco Control and ASH Ireland (parent organisations: The Irish Cancer Society and The Irish Heart Foundation), which focuses on issues of tobacco dependence and tobacco control (280). There the researcher worked on the an online survey of healthcare professionals in Ireland in relation to delivery of cessation advice which has since led to two peer review publications (124, 244), in addition to assisting on other projects including a plain packaging survey among school children. Conducting research on barriers to cessation care delivery to patients in general from the perspective of healthcare professionals was also useful both in planning the research within the current thesis as well as interpreting results of same.

International placement was undertaken at the Center for Tobacco Control Research and Education, University of California, San Francisco and Stanford Prevention Research Center at Stanford University. The Center for Tobacco Control Research and Education brings together a broad range of research, education and public service activities and unites faculty involved in tobacco research across 14 departments and 4 schools (281). Professor Judith Prochaska, Associate Professor of Medicine at Stanford University, is a leader in the field of smoking and mental illness. The opportunity to present the three proposed studies to students and faculty at both research centres was therefore
invaluable and the discussions which followed helped shape the research going forward as well as develop key networks.

Awards
This thesis has resulted in two awards. The paper based on Study 1 received the Royal Academy of Medicine in Ireland Award for best paper in Epidemiology/Public Health 2017 (https://www.rami.ie/event/rami-research-awards-wednesday-29th-nov-2017/), and presentation of the thesis as a whole resulted in a runner-up award at the ‘Big Day in’ Royal College of Surgeons in Ireland ‘Thesis in 3’ 2017.

7.4.2 Service impacts

Evidence-based practice
The current thesis had several implications for evidence-based practice. Research can influence clinical practice and service delivery through the adoption of findings by health service providers (262). Study 1 highlighted increased prevalence of smoking-related disease among those with MHD. Study 2 showed an important gap in cessation care in a secondary care MHDs setting. Study 3 highlighted enablers to implementation of a cessation programme including an open recruitment approach, the provision of additional individual support where needed, the power of grouping with broader health initiatives and the usefulness of carbon monoxide monitors as a motivational tool. Barriers to the use of research-informed interventions are also important and a number of these were identified including service structure, staff shortages and literacy issues which can now be addressed. These findings will inform cessation programme guidelines for future implementation in these settings.

Quality of care
The current thesis highlighted a need to improve coverage in relation to cessation care provided to those with MHDs given the majority of psychiatric patients had received no intervention. Quality of healthcare also addresses responsiveness of health service to population health needs. As demonstrated, this is currently poor. Finally, issues related to availability of services were highlighted with cessation programmes no longer available in some centres at time of evaluation.
Recommendations arising from this thesis are provided in Table 7.1 and Table 7.2 below. Overall recommendations are provided in Table 7.1 while specific recommendations for the ongoing implementation of the smoking cessation programme evaluated in Study 3 are provided in Table 7.2.
Table 7. 1 Recommendations arising from this thesis

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<td>1</td>
<td>Overall thesis findings underscore the need for attention to the physical health of those with MHDs including support in smoking cessation.</td>
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<td>2</td>
<td>In line with the findings of this thesis and evidence from previous studies (110, 273, 274), all smokers should be offered cessation advice and assistance regardless of perceived readiness to quit.</td>
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<td>3</td>
<td>In relation to secondary settings, whole organisation interventions, which offer a systematic approach to the identification, treatment, and follow-up of smokers are a potential solution. For instance the Ottawa model, an application of the 5 A’s approach customised to the hospital setting, has proven successful in general hospital settings (50).</td>
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<td>4</td>
<td>Smoking status was documented for all in Study 2 suggesting that care could also be offered at this time and/or follow-up arranged in order to ensure all smokers are advised and offered assistance during each admission.</td>
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<td>5</td>
<td>Services who implement a smoking cessation programme must continue to present this opportunity and ensure cessation care is not neglected in the face of staff shortages or competing priorities.</td>
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<td>6</td>
<td>Smoking cessation care in community settings, while well placed for the maintenance of long term abstinence, is not sufficient alone in addressing smoking in those with mental health difficulties. Rather, echoing recommendations made in the UK Stolen Years Report (270); this thesis finds a joined-up approach across the health service in relation to smoking policies and quality cessation care is needed to support those with MHDs to quit smoking.</td>
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<tr>
<td>7</td>
<td>Significant medication interactions, which were present for over a third of inpatients in Study 2, represent an important factor to be managed in providing quality smoking cessation care to this group. This does not however represent a reason not to address smoking especially in light of the desire to quit among 3 out of 4 inpatients.</td>
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Specific recommendations are outlined next (Table 7.2):

**Table 7.2 Specific Recommendations for the ongoing implementation of the Quit Smoking Programme in community mental health services**

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<tr>
<td>1.</td>
<td>Efforts should be made to ensure that the Quit Smoking programme continues to be offered in all centres and that availability is not disrupted or deprioritised. It is crucial that centres continue to present the opportunity to quit, especially given non-attenders have expressed that they may use the service in future, while attendees have also opted to re-attend the 7-week programme.</td>
</tr>
<tr>
<td>2.</td>
<td>Facilitators should be adequately prepared for some service users requiring more intensive or longer term support in order to avoid feelings of frustration and perceptions of failure. Service users who wish to re-attend should be given this option and training should leave facilitators prepared for scenarios such as missed weeks, or no attendees ready to quit or set a quit date on the assigned week.</td>
</tr>
<tr>
<td>3.</td>
<td>A forum for facilitators to share knowledge and ideas would be helpful as would a support person. In addition to facilitators in the current study discussing the potential usefulness of a support person, in a similar study Lee et al. previously found assistance, in the form of monthly in-person site visits, phone calls, email consultations, and conference calls, was reported to be helpful in keeping implementation on track ((269)p.7).</td>
</tr>
<tr>
<td>4.</td>
<td>Technology available in centres should be used to enhance programme implementation and support and empower service users especially those with low literacy. While technology specifically was not mentioned, Lee et al. also reported a sense that more interactive and engaging content which makes material ‘come alive’ would enhance the smoking cessation programme in their process evaluation of same (269).</td>
</tr>
<tr>
<td>5.</td>
<td>While an open recruitment approach is important, some service users were interested but not quite ready to quit. These should be continually offered the programme as forced attendance appears to be counter-productive. The formation of other personal goals with those not ready to quit in advance of attendance seems helpful.</td>
</tr>
</tbody>
</table>
6. The ongoing facilitation of smoking, for instance, via use of shelters or continued use of original smoking areas, can act as a barrier for those aiming to cut down and quit. Designated smoking areas should where possible be out of the direct path and/or sight of the entrance/exit.

7. Grouping QSP with other health initiatives seems to be an effective and highly motivating approach and has been adopted previously in similar settings (269).

8. The Health Service as a whole must be supportive of smoking cessation in those with MHDs and aim for consistency in relation to smoking policies and the availability of quality cessation support.

9. A greater focus on alternative activities and coping mechanisms could be incorporated, as found in the US (54).

10. Education for both facilitators and service users in relation to the proven ability of those with MHDs to quit smoking should be incorporated to build confidence and self-belief.

### 7.4.3 Policy impacts

The current thesis has potential to impact at the level of health services administrator and managers/directors. Direct policy impacts are localised to the organisations involved in the research, St Patrick’s University Hospital and EVE community based services – a network of 16 centres. Influences are in relation to practice and service policies with findings used to shape policies going forward. Following finalisation of the policy brief (Appendix 34) the researcher will return to St Patrick’s University Hospital to present findings to the medical director and consultants while management at EVE, who commissioned Study 3, will be provided with a comprehensive research report detailing the findings discussed in Chapter 6.

At a broader level Study 1 represents persuasive evidence of the need for action at a policy level and by raising awareness should mobilise support for this population (262).
7.4.4 Societal impacts

Knowledge, attitudes and behaviour
At a societal level various impacts in relation to broader attitudes and knowledge are both targeted and expected through dissemination of the current research. These include knowledge of the existence of the ongoing association between MHDs, smoking and physical health, actual desire and ability to quit among those with MHDs, and the lack of current care.

Equity and human rights
Research can also influence health equity outcomes by showing whether the needs of disadvantaged and vulnerable populations are being addressed and through the application of findings to facilitate more equitable access to care (262). The current thesis provides service users with a voice in relation to these issues and it is hoped will encourage a broader debate around equity in relation to smoking in those with MHDs in Ireland.

7.5 Strengths
A strength of this thesis was the adoption of a pragmatic approach, broadly framed by the MRC guidance, allowing a focus on selecting methods which best answered the research questions and the associated use of mixed methods. Arguably, the broad focus of this thesis represents a strength rather than a limitation. Through a series of linked studies it addressed a number of strands at various population or service levels thus providing a comprehensive view of smoking and mental health difficulties and cessation care quality, and providing new, actionable knowledge for the Irish setting.

The use of evidence from a large nationally representative dataset in Study 1 means results can be generalised to those aged 50 and over in the population and thus highlights the scope of the problem to both the public and policymakers.

Once this inequity at the population/societal level was established, the next step demonstrated the gaps and inequity in current care at the systems level in both secondary care and community settings. Study 2 demonstrated the acceptability of cessation advice and the current low levels delivered in a psychiatric inpatient setting,
while Study 3 integrated qualitative data from both service users and programme facilitators to evaluate the ongoing implementation of smoking cessation programme across centres in a community service. The high participation rates achieved in each of these studies strengthened conclusions made.

By exploring smoking in those with MHDs at the societal, system, community and individual levels and employing both quantitative and qualitative methods, this thesis was able to provide a full picture and richer understanding which captured both population health and health services research.

7.6 Limitations

Limitations of the individual studies in this thesis have been outlined in each results chapter. In relation to the overall thesis, more limitations can be envisaged. The use of a different cohort of individuals with MHDs in each of the studies, although necessitated by restrictions in terms of time and ethical approval, could also be argued to be a weakness instead of a strength. Qualitative data collected in Study 3 is not for the same cohort as in Study 2. The researcher could perhaps have elected to conduct a qualitative component in Study 2 settings however the opportunity to evaluate the ongoing implementation of a smoking cessation programme in public mental health settings, representing a first step/novel attempt by the Irish health service to tackle this problem, was an opportunity that had to be taken. It also served to generalise the findings across sectors.

Study 2 collected data from service users and casenotes only and did not include staff surveys or interviews. While the researcher was able to review evidence in relation to barriers internationally as well as in general settings in Ireland, the lack of a staff component in Study 2 may have left some site-specific barriers undetected and omitted the voices of healthcare professionals from the thesis.

The inclusion of private and public settings again while allowing a comprehensive overview means that the thesis does not lend itself to the design of an intervention at one site as was originally planned in line with MRC guidelines. However, following the restrictions experienced in relation to ethical approval at the original proposed site the overall thesis aim was revised and now concerns overall impact and quality of care, meaning the variation in sites/settings is ultimately a strength of this thesis. Had this
thesis retained its original aim it is possible that the intervention designed may have been only implementable at that given site, with findings perhaps less useful or generalisable to other settings.

7.8 Future research
This thesis generated a number of recommendations in terms of directions of future research.

Study 1 provided evidence based on a nationally representative sample of community living adults aged 50 and over. Those resident in institutions, homeless people and those younger than 50 were therefore excluded. A national survey of smoking and disease in psychiatric settings, especially public services, would therefore be helpful in addressing this gap in knowledge.

Similarly while Study 2 provided evidence on current prevalence of cessation care in a private psychiatric setting, further surveys of psychiatric hospital settings in Ireland are required, especially within public settings.

Research assessing the attitudes of HCPs in mental health settings in Ireland towards provision of cessation care would be useful as would more qualitative in-depth explorations of the current barriers and enablers experienced by staff in secondary care settings.

Fully powered intervention studies in psychiatric settings informed by this preparatory work should follow. The recommendations for services arising from this thesis and detailed above have provided a starting point in terms of shaping potential solutions. Studies conducted in inpatient psychiatric hospital settings should however consider the complexity of relapse and increased usage which can occur in these settings (113, 227, 228). Efforts to capture and account for any admission-related changes in smoking status and consumption (in relation to follow-up quit and cut-down rates) should provide for a more reliable estimate of the effectiveness of any inpatient cessation interventions received.

Internationally, prolonged abstinence has been shown to be a challenge in relation to inpatient tobacco dependence treatment studies (272) and integration into outpatient
care may be a solution (275). Limitations in relation to time and the ultimate use of qualitative methods alone in Study 3 meant the current thesis could not elaborate on the potential of community-based programmes to offer a solution in relation to maintenance of long term abstinence in those with MHDs.

This thesis was broadly informed by MRC guidelines and also employed the RE-AIM evaluation framework in Study 2. Future research employing RE-AIM may wish to, where possible, include cost as well as additional qualitative components to enhance understanding of domains (158). Study 3, which was guided by MRC guidance for process evaluations of complex interventions, focused on what was implemented, and how, as well as the role of context in relation to implementation and outcomes. Studies concerning interventions less established than smoking cessation care may also wish to include a mechanisms of impact component, which was considered unnecessary in this case (153). Furthermore the use of mixed methods within any process evaluation study may allow future research to better understand complex pathways and/or identify unexpected mechanisms as well as test hypothesised causal pathways (153, 282).

7.9 Conclusions
This thesis is the first to address smoking and mental health in different settings in Ireland. It found that smoking and its physical impacts are prevalent in those with MHDs. Associations between MHDs and smoking-related disease were however not mediated or moderated by smoking. This suggests that in addition to smoking, more comprehensive attention is required towards the physical health of those with MHDs.

Significant room for improvement in relation to both rate and quality of cessation care delivered was demonstrated. In spite of lower rates of cessation care, psychiatric patients were similar in terms of their desire for advice, motivation to quit and actual quitting behaviour. This thesis also provided tentative evidence to suggest that cessation advice could be effective in those with mental health difficulties. This notwithstanding, there is a clear need for improved cessation care in in-patient settings given the low rates observed and frequency of suboptimal cessation care.

Barriers to full implementation of optimal cessation care exist. This is the case even in the context of a dedicated smoking cessation programme in a community based service with
long-term access to service users, which seems ideally positioned to support long term cessation. These include service structure, the lack of a joined-up approach across the health service and barriers considered specific to those with MHDs such as use of smoking as a coping mechanism, lack of self-belief or other activities and past culture. Addressing these barriers and making use of emergent enablers such as staff dedication, open recruitment approaches, use of tangible tools such as carbon monoxide monitors and grouping with broader health initiatives will provide the best chance of success in the ongoing delivery of quality cessation support in these settings.

Overall, this thesis has demonstrated that people with MHDs urgently require access to smoking cessation support across the spectrum of care.
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Appendices
Appendix 1: Study 1 Data - Variables Key

OUTCOMES:
_IBEHsmoker1= former smoker
_IBEHsmoker2= current smoker
smokcond= smoking-related disease

EXPOSURES:
anymhprob= Emotional, nervous or psychiatric problem (self-reported doctor diagnosed)
SRpsychmeduse = Psychiatric medication use (self-reported)
SRmed_prob = Self-reported doctor diagnosed emotional, nervous or psychiatric problem and self-reported any psychiatric medication
SRmedORprob = Self-reported doctor diagnosed emotional, nervous or psychiatric problem or self-reported any psychiatric medication
ph301_08 = Alcohol/Substance abuse (self-reported doctor diagnosed)
SUorMHprob = Alcohol/Substance abuse or Emotional, nervous or psychiatric problem (self-reported doctor diagnosed)
.IMHdep3_1 = Mild/Moderate depressive symptoms as per CES-D
.IMHdep3_2 = Severe depressive symptoms as per CES-D
_Ihadsacat_1 = possible anxiety as per HADS-A
_Ihadsacat_2 = probable anxiety as per HADS-A

COVARIATES:
FRwaist= waistcm
BEHcage2= Alcohol problem as per CAGE
ph201_05= diabetes (self-reported doctor diagnosed)
.IFReexcis_1 = Moderate engagement in Physical activity
.IFReexcis_2 = High engagement in Physical activity
_Iedu3_2 = Secondary education (High School) highest achieved
_Iedu3_3 = Third level education (Higher education) achieved
Appendix 2: Mediation analysis: Full models

Model 1

(a) Without smoking

- a) svy: logistic smoke any cond age sex i.edu3 i.FRexercise3 FRwaist BEHcage2 ph201_05
- code = 0 (smoke any cond) and i.edu3 (categorical coded; _Iedu3_1 omitted)
- (svy) linear regression using svyset to define the sampling unit.
- Note: Variances scaled within each stage to handle strata with a single sampling unit.

```
xi: svy: logistic smokcond anymh age sex i.edu3 i.FRexercise3 FRwaist BEHcage2 ph201_05
```

(b) With smoking

- a) svy: logistic smoke any cond age sex i.edu3 i.FRexercise3 FRwaist BEHcage2 ph201_05
- code = 0 (smoke any cond) and i.edu3 (categorical coded; _Iedu3_1 omitted)
- (svy) linear regression using svyset to define the sampling unit.
- Note: Variances scaled within each stage to handle strata with a single sampling unit.

```
xi: svy: logistic smokcond anymh age sex i.edu3 i.FRexercise3 FRwaist BEHcage2 ph201_05
```

Model 2

(a) Without smoking

- a) svy: logistic smoke any cond age sex i.edu3 i.FRexercise3 FRwaist BEHcage2 ph201_05
- code = 0 (smoke any cond) and i.edu3 (categorical coded; _Iedu3_1 omitted)
- (svy) linear regression using svyset to define the sampling unit.
- Note: Variances scaled within each stage to handle strata with a single sampling unit.

```
xi: svy: logistic smokcond anymh age sex i.edu3 i.FRexercise3 FRwaist BEHcage2 ph201_05
```
### Model 4

**Without smoking**

**Logistic regression**

| Variable | Coef. | Std. Err. | z | P>|z| | [95% Conf. Interval] |
|----------|-------|-----------|---|-----|---------------------|
| Smoker   | 2.0164 | 0.07633   | 26.27| 0.02 | 1.8647 2.1680 |
| Age      | 0.0251 | 0.00032   | 79.62| 0.00 | 0.0245 0.0257 |
| Sex      | 1.3467 | 0.08614   | 15.58| 0.00 | 1.2657 1.4276 |
| Education | 1.0321 | 0.05954   | 17.29| 0.00 | 0.9177 1.1564 |
| Physical activity | 0.9833 | 0.04145   | 23.71| 0.00 | 0.9026 1.0660 |
| Waistline | 1.0671 | 0.05971   | 17.82| 0.00 | 1.0003 1.1371 |
| Iedu3     | -0.0998 | 0.05079  | -1.97| 0.05 | -0.2090 0.0094 |
| FRexercise3 | 0.0392 | 0.02190  | 1.78| 0.07 | -0.0029 0.0713 |
| FRwaistline | 0.0247 | 0.01502   | 1.64| 0.10 | -0.0053 0.0546 |

Note: Vaezavan scaled within each stage to handle strata with a single sampling unit.

### Model 5

**Without smoking**

**Logistic regression**

| Variable | Coef. | Std. Err. | z | P>|z| | [95% Conf. Interval] |
|----------|-------|-----------|---|-----|---------------------|
| ph101_5  | 0.9717 | 0.04057   | 23.93| 0.00 | 0.9030 1.0413 |
| Age      | 0.0218 | 0.00032   | 68.70| 0.00 | 0.0212 0.0223 |
| Sex      | 1.3467 | 0.08614   | 15.58| 0.00 | 1.2657 1.4276 |
| Education | 1.0321 | 0.05954   | 17.29| 0.00 | 0.9177 1.1564 |
| Physical activity | 0.9833 | 0.04145   | 23.71| 0.00 | 0.9026 1.0660 |
| Waistline | 1.0671 | 0.05971   | 17.82| 0.00 | 1.0003 1.1371 |
| Iedu3     | -0.0998 | 0.05079  | -1.97| 0.05 | -0.2090 0.0094 |
| FRexercise3 | 0.0392 | 0.02190  | 1.78| 0.07 | -0.0029 0.0713 |
| FRwaistline | 0.0247 | 0.01502   | 1.64| 0.10 | -0.0053 0.0546 |

Note: Vaezavan scaled within each stage to handle strata with a single sampling unit.
(b) With smoking

. xi: logit smoking ph201_08 age sex i.edu3 i.FRexercise3 i.BEHsmoker i.BEHwaist i.BEHcage2 i.BEHsmoker ph201_05
   . _i.edu3 _i.educ1 1 1 (naturally coded: _i.edu3 0)
   . _i.FRexercise3 _i.FRexercise3 0 1 (naturally coded: _i.FRexercise3 0)
   . _i.BEHsmoker _i.BEHsmoker 0 1 (naturally coded: _i.BEHsmoker 0)

(running logistic on estimation sample)

Survey: logistic regression

Number of strata  =  3  Number of obs  =  5,176
Number of PSU's  =  621  Population size  =  735,169.58
Design df  =  416
Prob F >  F  =  0.0000

|          | Odds Ratio | Std. Err. | t     | P>|t| | [95% Conf. Interval] |
|----------|------------|-----------|-------|----|----------------------|
| smoking  |            |           |       |    |                      |
| ph201_08 | 1.624877   | .0851438  | 2.02  | 0.044| 1.51427             | 1.74506 |
| age      | 1.025101   | .006757   | 4.77  | 0.000| 1.01841             | 1.03184 |
| sex      | 1.125745   | .079321   | 1.47  | 0.095| .980328              | 1.30226 |
| _i.edu3  | 1.041138   | .079228   | 1.90  | 0.057| .777589              | 1.17544 |
| _i.educ1 | 1.096191   | .082646   | 1.12  | 0.248| .635367              | 1.75610 |
| _i.FRexercise3 | .651374 | .040386 | -4.43 | 0.000 | .349422 | 1.20216 |
| _i.BEHsmoker | .707698 | .067075 | -6.15 | 0.000 | .585175 | .857066 |
| _i.BEHcage2 | 1.007720 | .002937 | 3.02 | 0.002| 1.005794 | 1.010247 |
| _i.BEHwaist | 1.002633 | .021944 | 0.40 | 0.691| .677005 | 1.31173 |
| _i.BEHsmoker | 1.131128 | .081875 | 4.00 | 0.000| 1.148228 | 1.457954 |
| ph201_05  | 1.495705   | .020884   | 6.59  | 0.000| 1.409934             | 1.58299 |
| _issue | .574174    | .024146   | -4.63 | 0.000| .435401              | .767375 |

Note: Variance scaled within each stage to handle strata with a single sampling unit.

Model 6

(a) Without smoking

. xi: logit smoke prob ph201_08 age sex i.edu3 i.FRexercise3 i.BEHsmoker ph201_05
   . _i.edu3 _i.educ1 1 1 (naturally coded: _i.edu3 0)
   . _i.FRexercise3 _i.FRexercise3 0 1 (naturally coded: _i.FRexercise3 0)

(running logistic on estimation sample)

Survey: logistic regression

Number of strata  =  3  Number of obs  =  5,176
Number of PSU's  =  621  Population size  =  735,169.58
Design df  =  416
Prob F >  F  =  0.0000

|          | Odds Ratio | Std. Err. | t     | P>|t| | [95% Conf. Interval] |
|----------|------------|-----------|-------|----|----------------------|
| smoke    |            |           |       |    |                      |
| smokprob | 1.295754   | .107815   | 2.64  | 0.008| 1.073102             | 1.574428 |
| age      | 1.024865   | .0037548  | 7.35  | 0.000| 1.014933             | 1.034829 |
| sex      | 1.104847   | .0726582  | 1.60  | 0.051| .089316              | 1.241973 |
| _i.edu3  | 1.080466   | .0743245  | 1.35  | 0.180| .875045              | 1.344505 |
| _i.educ1 | 1.000437   | .0005546  | 1.90  | 0.057| .091047              | 1.016777 |
| _i.FRexercise3 | .986458 | .004484 | -1.36 | 0.18 | .774048 | 1.251562 |
| _i.BEHsmoker | .780205 | .020522 | -3.31 | 0.000 | .668423 | 0.925303 |
| _i.BEHcage2 | .714143 | .041712 | -4.63 | 0.000 | .593452 | .867312 |
| _i.BEHwaist | 1.172311 | .022831 | 4.55 | 0.000 | 1.083543 | 2.291973 |
| _issue | .574174    | .024146   | -4.77 | 0.000| .435401              | .767375 |

Note: Variance scaled within each stage to handle strata with a single sampling unit.
(b) With smoking

```
data svylogistic punched shrShortProb age sex i.FRexercise3 FRAssist RHScage3 i.BEHsmoker ph201_05
. i.edu  _educ1_3 (naturally coded; _educ1_3 omitted)
i.FRexercise3 _FRexercise_D-2 (naturally coded; _FRexercise_D omitted)
i.BEHsmoker _i.BEHsmoker_D-2 (naturally coded; _i.BEHsmoker_D omitted)
(running logistic on estimation sample)
```

Survey: Logistic regression

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<thead>
<tr>
<th>Number of strata</th>
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<tbody>
<tr>
<td>Number of obs</td>
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<tr>
<td>Population size</td>
<td>735,169.58</td>
</tr>
<tr>
<td>Design df</td>
<td>618</td>
</tr>
<tr>
<td>Fi 2, 607</td>
<td>14.43</td>
</tr>
<tr>
<td>Prob F &gt; F</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

**Linearized**

| smokcond | Odds Ratio | Std. Err. | t | P>|t| | [5% Conf. Interval] |
|-----------|------------|------------|---|-------|----------------------|
| shrShortProb | 1.29066 | .123304 | 2.67 | 0.008 | 1.072074 | 1.557511 |
| age | 1.02586 | .003673 | 7.07 | 0.000 | 1.022818 | 1.028933 |
| _educ1_3 | 1.01367 | .044813 | 0.18 | 0.858 | .876662 | 1.171604 |
| _ educ1_3 | 1.08816 | .085571 | 1.04 | 0.297 | .929887 | 1.268696 |
| _FRexercise_1 | .89524 | .068853 | -1.34 | 0.181 | .769919 | 1.040968 |
| _FRexercise_2 | .710742 | .056165 | -4.85 | 0.000 | .608766 | .839824 |
| FRAssist | 1.007591 | .0025271 | 3.02 | 0.001 | 1.002641 | 1.012566 |
| RHScage3 | 1.049251 | .0921261 | 1.05 | 0.298 | .893220 | 1.245884 |
| _BEHsmoker_1 | 1.03067 | .087511 | 4.04 | 0.000 | 1.146613 | 1.493311 |
| _i.BEHsmoker_D-2 | 1.03824 | .08788 | 0.95 | 0.699 | .874801 | 1.221645 |
| ph201_05 | 1.705532 | .231004 | 4.55 | 0.000 | 1.39494 | 2.121356 |

*Note: Variances scaled within each stage to handle strata with a single sampling unit.*

Model 7

(a) Without smoking

```
data svylogistic punched _shorndmp age sex i.FRexercise3 FRAssist RHScage3 i.BEHsmoker ph201_05
. _shorndmp | _shorndmp_D-2 (naturally coded; _shorndmp_D omitted)
i.edu  _educ1_3 (naturally coded; _educ1_3 omitted)
i.FRexercise3 _FRexercise_D-2 (naturally coded; _FRexercise_D omitted)
(running logistic on estimation sample)
```

Survey: Logistic regression

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</tr>
<tr>
<td>Fi 2, 607</td>
<td>14.43</td>
</tr>
<tr>
<td>Prob F &gt; F</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

**Linearized**

| smokcond | Odds Ratio | Std. Err. | t | P>|t| | [5% Conf. Interval] |
|-----------|------------|------------|---|-------|----------------------|
| _shorndmp_1 | 1.315789 | .761184 | -1.11 | 0.267 | .584553 | 2.56990 |
| _shorndmp_2 | 1.617132 | 1.419393 | 3.68 | 0.000 | 1.397819 | 1.879659 |
| _educ1_3 | 1.624304 | .871873 | 4.77 | 0.000 | 1.309483 | 1.985062 |
| _FRexercise_1 | .50329 | .317589 | 1.57 | 0.116 | .269439 | 0.962785 |
| _FRexercise_2 | .732702 | .492014 | 1.48 | 0.136 | .379213 | 1.423657 |
| FRAssist | 1.084497 | .0825629 | 4.81 | 0.000 | 1.005877 | 1.165782 |
| RHScage3 | 1.470032 | .0195322 | 7.54 | 0.000 | .900533 | 2.377508 |
| ph201_05 | 1.775228 | .2216139 | 4.87 | 0.000 | 1.442816 | 2.180579 |
| _BEHsmoker_1 | .865926 | .0205613 | -4.57 | 0.000 | .740376 | 1.019583 |

*Note: Variances scaled within each stage to handle strata with a single sampling unit.*

(b) With smoking

```
data svylogistic punched shrShortProb age sex i.FRexercise3 FRAssist RHScage3 i.BEHsmoker ph201_05 i.BEHsmoker
. i.Specify | _Specify_D-2 (naturally coded; _Specify_D omitted)
i.FRexercise3 _FRexercise_D-2 (naturally coded; _FRexercise_D omitted)
i.BEHsmoker _i.BEHsmoker_D-2 (naturally coded; _i.BEHsmoker_D omitted)
(running logistic on estimation sample)
```

Survey: Logistic regression

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<thead>
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<td>Number of obs</td>
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<tr>
<td>Design df</td>
<td>618</td>
</tr>
<tr>
<td>Fi 2, 607</td>
<td>14.43</td>
</tr>
<tr>
<td>Prob F &gt; F</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

**Linearized**

| smokcond | Odds Ratio | Std. Err. | t | P>|t| | [5% Conf. Interval] |
|-----------|------------|------------|---|-------|----------------------|
| shrShortProb | 1.265766 | .176172 | 1.16 | 0.246 | .886756 | 1.805555 |
| age | 1.04210 | .040788 | 1.04 | 0.301 | 1.009947 | 1.076077 |
| _educ1_3 | 1.026423 | .0170708 | 7.08 | 0.000 | 1.022818 | 1.030295 |
| _FRexercise_1 | .870245 | .0479872 | -2.87 | 0.004 | .769574 | .991085 |
| _FRexercise_2 | .807288 | .045695 | -1.77 | 0.077 | .714815 | .904259 |
| FRAssist | 1.522085 | .136665 | 11.97 | 0.000 | 1.281875 | 1.811575 |
| RHScage3 | 1.832077 | .1839295 | 9.90 | 0.000 | 1.585578 | 2.12354 |
| ph201_05 | 1.332138 | .0874826 | 1.52 | 0.128 | 1.075374 | 1.657005 |
| _BEHsmoker_1 | 1.231225 | .1078483 | 4.32 | 0.000 | .988785 | 1.565231 |
| _i.BEHsmoker_D-2 | .928808 | .0705648 | -4.06 | 0.000 | .787147 | 1.08914 |

*Note: Variances scaled within each stage to handle strata with a single sampling unit.*

218
Model 8

(a) Without smoking

```
xi: svy: logistic smokcond i.hadsacat age sex i.edu3 i.FRexercise3 FRwaist BEHcage2 ph201_05
```

(b) With smoking

```
xi: svy: logistic smokcond i.hadsacat age sex i.edu3 i.FRexercise3 FRwaist BEHcage2 ph201_05 i.BEHwaek
```
Appendix 3: Moderation analysis: Full models

### Model 1

**Survey Logistic regression:**

<table>
<thead>
<tr>
<th>Number of strata</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of PSUs</td>
<td>621</td>
</tr>
<tr>
<td>Sample size</td>
<td>730,126</td>
</tr>
<tr>
<td>Design size</td>
<td>418</td>
</tr>
<tr>
<td>F(1, 620)</td>
<td>X2 = 10.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Estimated coefficients</th>
<th>Std. Error</th>
<th>Z</th>
<th>95% Conf. Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day mental, non-psychiatric...</td>
<td>1.413312</td>
<td>0.579088</td>
<td>2.49</td>
</tr>
</tbody>
</table>

**svy:logistic smokcond anymh##BEHsmoker age sex i.edu3 i.FRexercise3 FRwaist BEHcage2 ph201_05**

### Model 2

**Survey Logistic regression:**

<table>
<thead>
<tr>
<th>Number of strata</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of PSUs</td>
<td>621</td>
</tr>
<tr>
<td>Sample size</td>
<td>730,126</td>
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<tr>
<td>Design size</td>
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<tr>
<td>F(1, 620)</td>
<td>X2 = 10.00</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Estimated coefficients</th>
<th>Std. Error</th>
<th>Z</th>
<th>95% Conf. Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:Psychosocial...</td>
<td>1.297284</td>
<td>0.508835</td>
<td>1.60</td>
</tr>
</tbody>
</table>

**svy:logistic smokcond anymh##BEHsmoker age sex i.edu3 i.FRexercise3 FRwaist BEHcage2 ph201_05**

Note: Variance scaled within each stage to handle strata with a simple sampling unit.
Model 3

Specifically, smokers (SmokSpdSp) among age sex 1:adult 1.Fr neconin micron BEHsmoke ph201_05

Survey Logistic regression

<table>
<thead>
<tr>
<th>Number of strata</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of obs</td>
<td>621</td>
</tr>
<tr>
<td>Population size</td>
<td>710,165.68</td>
</tr>
<tr>
<td>Design df</td>
<td>616</td>
</tr>
<tr>
<td>F (14, 605)</td>
<td>12.35</td>
</tr>
<tr>
<td>from F (0)</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Likelihood ratio</th>
<th>(Std. Err.)</th>
<th>t (Pr(&lt;)</th>
<th>[95% Conf. Interval]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.SmokSpdSp</td>
<td>1.259137</td>
<td>2.10</td>
<td>0.175</td>
</tr>
<tr>
<td></td>
<td>.864066</td>
<td>2.15</td>
<td></td>
</tr>
<tr>
<td>2.Behavior</td>
<td>1.351731</td>
<td>3.62</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>.928958</td>
<td>3.93</td>
<td></td>
</tr>
<tr>
<td>3.Cigarette</td>
<td>1.025953</td>
<td>0.00</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>.965071</td>
<td>0.03</td>
<td></td>
</tr>
<tr>
<td>1.SmokSpdSmokSp</td>
<td>1.243101</td>
<td>2.48</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>.928773</td>
<td>2.50</td>
<td></td>
</tr>
<tr>
<td>2.Behavior</td>
<td>1.351731</td>
<td>3.62</td>
<td>0.000</td>
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<td>0.00</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>.965071</td>
<td>0.03</td>
<td></td>
</tr>
<tr>
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<td>1.259137</td>
<td>2.10</td>
<td>0.175</td>
</tr>
<tr>
<td></td>
<td>.864066</td>
<td>2.15</td>
<td></td>
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<td>3.62</td>
<td>0.000</td>
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<tr>
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<td>3.Cigarette</td>
<td>1.025953</td>
<td>0.00</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>.965071</td>
<td>0.03</td>
<td></td>
</tr>
</tbody>
</table>

Note: Percent scaled within each stage to handle strata with a single
sampli ng unit.

Model 4

Specifically, smokers (SmokSpdSp) among age sex 1:adult 1.Fr neconin micron BEHsmoke ph201_05

Survey Logistic regression

<table>
<thead>
<tr>
<th>Number of strata</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of obs</td>
<td>621</td>
</tr>
<tr>
<td>Population size</td>
<td>710,165.68</td>
</tr>
<tr>
<td>Design df</td>
<td>616</td>
</tr>
<tr>
<td>F (14, 605)</td>
<td>12.35</td>
</tr>
<tr>
<td>from F (0)</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Likelihood ratio</th>
<th>(Std. Err.)</th>
<th>t (Pr(&lt;)</th>
<th>[95% Conf. Interval]</th>
</tr>
</thead>
<tbody>
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<td>1.SmokSpdSp</td>
<td>1.259137</td>
<td>2.10</td>
<td>0.175</td>
</tr>
<tr>
<td></td>
<td>.864066</td>
<td>2.15</td>
<td></td>
</tr>
<tr>
<td>2.Behavior</td>
<td>1.351731</td>
<td>3.62</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>.928958</td>
<td>3.93</td>
<td></td>
</tr>
<tr>
<td>3.Cigarette</td>
<td>1.025953</td>
<td>0.00</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>.965071</td>
<td>0.03</td>
<td></td>
</tr>
<tr>
<td>1.SmokSpdSmokSp</td>
<td>1.243101</td>
<td>2.48</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>.928773</td>
<td>2.50</td>
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<tr>
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<td>1.351731</td>
<td>3.62</td>
<td>0.000</td>
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<tr>
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<td>3.93</td>
<td></td>
</tr>
<tr>
<td>3.Cigarette</td>
<td>1.025953</td>
<td>0.00</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>.965071</td>
<td>0.03</td>
<td></td>
</tr>
<tr>
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<td>1.259137</td>
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<td>0.175</td>
</tr>
<tr>
<td></td>
<td>.864066</td>
<td>2.15</td>
<td></td>
</tr>
<tr>
<td>2.Behavior</td>
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<td>3.62</td>
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<td>.928958</td>
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<td></td>
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<td>3.Cigarette</td>
<td>1.025953</td>
<td>0.00</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>.965071</td>
<td>0.03</td>
<td></td>
</tr>
</tbody>
</table>

Note: Percent scaled within each stage to handle strata with a single
sampli ng unit.
Model 5

Predictive model for the outcome variable of interest.

Survey logistic regression:

<table>
<thead>
<tr>
<th>Likelihood Ratio Test</th>
<th>Wald Test</th>
<th>Score Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>p-value</td>
<td>p-value</td>
<td>p-value</td>
</tr>
</tbody>
</table>

Model 6

Predictive model for a different outcome variable.

Survey logistic regression:

<table>
<thead>
<tr>
<th>Likelihood Ratio Test</th>
<th>Wald Test</th>
<th>Score Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>p-value</td>
<td>p-value</td>
<td>p-value</td>
</tr>
</tbody>
</table>

Note: Variables scaled within each stage to handle clusters with a simple sampling unit.
Model 7
- `svy: logistic` command with `i.MHdep3##BEHsmoker age sex i.edu3 i.FRexercise3` as predictors
- Estimating logistic regression with estimation sample

Survey: Logistic regression

<table>
<thead>
<tr>
<th>Number of strata</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of obs</td>
<td>421</td>
</tr>
</tbody>
</table>

Logistic regression output:

<table>
<thead>
<tr>
<th>Model 7</th>
<th>Odds Ratio (95% CI)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>MHdep3</td>
<td>1.105 (1.037, 1.178)</td>
<td>0.002</td>
</tr>
<tr>
<td>Current</td>
<td>1.141 (1.069, 1.218)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>MHdep3*Current</td>
<td>0.905 (0.822, 0.995)</td>
<td>0.033</td>
</tr>
<tr>
<td>MHdep3<em>Current</em>Age</td>
<td>0.996 (0.975, 1.018)</td>
<td>0.337</td>
</tr>
</tbody>
</table>

Note: Variance scaled within each stage to handle strata with a single sampling unit.

Model 8
- `svy: logistic` command with `i.MHdep3##BEHsmoker age sex i.edu3 i.FRexercise3` as predictors
- Estimating logistic regression with estimation sample

Survey: Logistic regression

<table>
<thead>
<tr>
<th>Number of strata</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of obs</td>
<td>421</td>
</tr>
</tbody>
</table>

Logistic regression output:

<table>
<thead>
<tr>
<th>Model 8</th>
<th>Odds Ratio (95% CI)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>MHdep3</td>
<td>1.235 (1.146, 1.332)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Current</td>
<td>1.258 (1.164, 1.361)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>MHdep3*Current</td>
<td>1.020 (0.930, 1.117)</td>
<td>0.457</td>
</tr>
<tr>
<td>MHdep3<em>Current</em>Age</td>
<td>1.002 (0.983, 1.021)</td>
<td>0.770</td>
</tr>
</tbody>
</table>

Note: Variance scaled within each stage to handle strata with a single sampling unit.
Appendix 4: Models for smoking-related disease without High Cholesterol

. svy: logistic smokcondw age sex i.educ level i.gender i.FRskin i.FRwaist i.BEHcage2 ph201_05
Note: Variances scaled within each stage to handle strata with a single
sampling unit.

. xi: svy: logistic smokcondw anymh sex i.educ level i.gender i.FRexercise i.FRwaist
Note: Variances scaled within each stage to handle strata with a single
sampling unit.

Survey logistic regression:
Number of strata = 3 Number of obs = 5,178
Number of PSU's = 621 Population size = 735,189.08
Design df = 618 F (13, 607) = 23.56 P < 0.000

Survey logistic regression:
Number of strata = 3 Number of obs = 5,178
Number of PSU's = 621 Population size = 735,189.08
Design df = 618 F (13, 607) = 23.56 P < 0.000

Survey logistic regression:
Number of strata = 3 Number of obs = 5,178
Number of PSU's = 621 Population size = 735,189.08
Design df = 618 F (13, 607) = 23.56 P < 0.000

Survey logistic regression:
Number of strata = 3 Number of obs = 5,178
Number of PSU's = 621 Population size = 735,189.08
Design df = 618 F (13, 607) = 23.56 P < 0.000
Survey logistic regression:

Number of strata = 1
Number of obs  = 5,176
Number of PSU = 621
Population size = 710,189.58
Design df  = 618
F [ 10, 607 ] = 27.16
From  F [ 7, 607 ] = 2.569

Note: Variance dealt within each stage to handle strata with a simple
sampling unit.

Survey logistic regression:

Number of strata = 1
Number of obs  = 5,176
Number of PSU = 621
Population size = 710,189.58
Design df  = 618
F [ 10, 607 ] = 26.26
From  F [ 7, 607 ] = 2.569

Note: Variance dealt within each stage to handle strata with a simple
sampling unit.

Survey logistic regression:

Number of strata = 1
Number of obs  = 5,176
Number of PSU = 621
Population size = 710,189.58
Design df  = 618
F [ 10, 607 ] = 27.16
From  F [ 7, 607 ] = 2.569

Note: Variance dealt within each stage to handle strata with a simple
sampling unit.
. xi: svy: logistic smokcondw if smokp==1 if educ=3 if FRexercise==1 if waist==1 if BEHcage==2 if ph201==1 i.BEHsm

Note: Venetian codes within each stage to handle strata with a single
sampling unit.

. xi: svy: logistic smokcondw if smokp==1 if educ=3 if FRexercise==1 if waist==1 if BEHcage==2 if ph201==1 i.BEHsm

Note: Venetian codes within each stage to handle strata with a single
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. xi: svy: logistic smokcondw if smokp==1 if educ=3 if FRexercise==1 if waist==1 if BEHcage==2 if ph201==1 i.BEHsm

Note: Venetian codes within each stage to handle strata with a single
sampling unit.
. xi: svy:logistic smokcondw i.MHdep3 age sex i.edu3 i.FRexercise3 FRwaist BEHcage2 ph201_05 i.BEHsmok
. svy: mean (Needs: 13)

Survey: Logistic regression

Number of strata = 1
Number of obs = 5,115
Number of PSU = 641
Population size = 7,03,523
Design AF = .908
F: 15, 600
p = .000

<table>
<thead>
<tr>
<th>svy: mean (Needs: 13)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Note: Variance noted within each stage to handle strata with a single
sampling unit.

. xi: svy:logistic smokcondw i.MHdep3 age sex i.edu3 i.FRexercise3 FRwaist BEHcage2 ph201_05 i.BEHsmok
. svy: mean (Needs: 13)

Survey: Logistic regression

Number of strata = 1
Number of obs = 5,115
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Population size = 7,03,523
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<table>
<thead>
<tr>
<th>svy: mean (Needs: 13)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

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. xi: svy:logistic smokcondw i.MHdep3 age sex i.edu3 i.FRexercise3 FRwaist BEHcage2 ph201_05 i.BEHsmok
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<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Note: Variance noted within each stage to handle strata with a single
sampling unit.
### Survey Logistic Regression

#### Number of strata = 3  
Number of obs = 5,176

|                   | Estimate | Std. Err | z     | P>|z| | [95% Conf. Interval] |
|-------------------|----------|----------|-------|-----|----------------------|
| Intercept         | -0.008   | 0.002    | -4.27 | 0.000 | [-0.012, -0.004]     |
| sex               | 0.001    | 0.001    | 0.92  | 0.355 | [-0.001, 0.002]      |
| age               | 0.002    | 0.001    | 1.84  | 0.067 | [0.000, 0.004]       |
| _Iedu3_1 omitted  |         |          |       |      |                      |

Note: Outcomes coded within each strata to handle strata with a single sampling unit.

### Survey Logistic Regression

#### Number of strata = 3  
Number of obs = 5,176

|                   | Estimate | Std. Err | z     | P>|z| | [95% Conf. Interval] |
|-------------------|----------|----------|-------|-----|----------------------|
| Intercept         | -0.008   | 0.002    | -4.27 | 0.000 | [-0.012, -0.004]     |
| sex               | 0.001    | 0.001    | 0.92  | 0.355 | [-0.001, 0.002]      |
| age               | 0.002    | 0.001    | 1.84  | 0.067 | [0.000, 0.004]       |
| _Iedu3_1 omitted  |         |          |       |      |                      |

Note: Outcomes coded within each strata to handle strata with a single sampling unit.

### Survey Logistic Regression

#### Number of strata = 3  
Number of obs = 5,176

|                   | Estimate | Std. Err | z     | P>|z| | [95% Conf. Interval] |
|-------------------|----------|----------|-------|-----|----------------------|
| Intercept         | -0.008   | 0.002    | -4.27 | 0.000 | [-0.012, -0.004]     |
| sex               | 0.001    | 0.001    | 0.92  | 0.355 | [-0.001, 0.002]      |
| age               | 0.002    | 0.001    | 1.84  | 0.067 | [0.000, 0.004]       |
| _Iedu3_1 omitted  |         |          |       |      |                      |

Note: Outcomes coded within each strata to handle strata with a single sampling unit.
Appendix 5: Interaction effects without High Cholesterol

- logistic regression (logistic regression age sex i.edu3 i.FRexercise3 BEHsmoker BEHcage2 BEHwaist ph201_05)

Survey logistic regression:

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Odds Ratio</th>
<th>Std. Err.</th>
<th>z</th>
<th>P</th>
<th>(95% Conf. Interval)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Variables scaled within each stage to handle units with a single sampling unit.

- logistic regression (logistic regression age sex i.edu3 i.FRexercise3 BEHsmoker BEHcage2 BEHwaist ph201_05)

Survey logistic regression:

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Odds Ratio</th>
<th>Std. Err.</th>
<th>z</th>
<th>P</th>
<th>(95% Conf. Interval)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Variables scaled within each stage to handle units with a single sampling unit.
- svy: logistic svy:logistic svy:drdlogistic

**Survey Logistic Regression**

<table>
<thead>
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<th>Number of strata</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Number of obs</td>
<td>5,570</td>
</tr>
<tr>
<td>Number of PSU</td>
<td>621</td>
</tr>
<tr>
<td>Population size</td>
<td>718,109,58</td>
</tr>
<tr>
<td>Design df</td>
<td>605</td>
</tr>
<tr>
<td>From F</td>
<td>(0.0000)</td>
</tr>
</tbody>
</table>

### Logistic Estimation

<table>
<thead>
<tr>
<th></th>
<th>Odds Ratio</th>
<th>Std. Err.</th>
<th>t</th>
<th>P [95% Conf. Interval]</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1:Sheet76</td>
<td>0.142775</td>
<td>0.2213506</td>
<td>0.010</td>
<td>(0.0000)</td>
</tr>
<tr>
<td>Intercept</td>
<td>1.014501</td>
<td>0.010209</td>
<td>5.008</td>
<td>(0.0000)</td>
</tr>
<tr>
<td>Current</td>
<td>1.751857</td>
<td>0.000000</td>
<td>1.950</td>
<td>(0.0000)</td>
</tr>
</tbody>
</table>

### svy:logistic smokcondW SRmed_pr##BEHsmoker age sex i.edu3 i.FRexercise3 FRwaist BEHcage2 ph201_05

- svy: logistic svy:logistic svy:drdlogistic

**Survey Logistic Regression**

<table>
<thead>
<tr>
<th>Number of strata</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of obs</td>
<td>5,570</td>
</tr>
<tr>
<td>Number of PSU</td>
<td>621</td>
</tr>
<tr>
<td>Population size</td>
<td>718,109,58</td>
</tr>
<tr>
<td>Design df</td>
<td>605</td>
</tr>
<tr>
<td>From F</td>
<td>(0.0000)</td>
</tr>
</tbody>
</table>

### Logistic Estimation

<table>
<thead>
<tr>
<th></th>
<th>Odds Ratio</th>
<th>Std. Err.</th>
<th>t</th>
<th>P [95% Conf. Interval]</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1:Sheet76</td>
<td>1.237208</td>
<td>0.1908050</td>
<td>1.970</td>
<td>(0.0000)</td>
</tr>
<tr>
<td>Intercept</td>
<td>1.281012</td>
<td>0.000000</td>
<td>1.950</td>
<td>(0.0000)</td>
</tr>
<tr>
<td>Current</td>
<td>1.708851</td>
<td>0.000000</td>
<td>2.008</td>
<td>(0.0000)</td>
</tr>
</tbody>
</table>

- svy:logistic smokcondW SRmed_pr##BEHsmoker age sex i.edu3 i.FRexercise3 FRwaist BEHcage2 ph201_05

**Notes:**
- Variables coded within each stage to handle strata with a simple sampling unit.
- Variables coded within each stage to handle strata with a simple sampling unit.
- `svy: logistic` `smokcondw ph301_08##BEHsmoker age sex i.edu3 i.FRexercise3 FRwaist BEHcage2 ph201_05
  (saving logistic or estimation sample)

Survey Logistic Regression

**Number of strata = 3**
Number of obs = 1,776
Number of PSUs = 421
Population size = 719,169.98
Design df = 618
PSU df = 800
From: f = 2.8800

<table>
<thead>
<tr>
<th>model</th>
<th>N</th>
<th>Likelihood Ratio</th>
<th>Std. Err.</th>
<th>t</th>
<th>P</th>
<th>[95% Conf. Interval]</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ph301_08</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alcohol or substance abuse</td>
<td>0.960132</td>
<td>1.069837</td>
<td>-0.93</td>
<td>0.356</td>
<td>-1.230327</td>
<td>0.290464</td>
</tr>
<tr>
<td>Education</td>
<td>Fast</td>
<td>1.798383</td>
<td>1.739711</td>
<td>5.97</td>
<td>0.000</td>
<td>1.577884</td>
</tr>
<tr>
<td>Current</td>
<td>1.451291</td>
<td>1.376374</td>
<td>3.24</td>
<td>0.001</td>
<td>1.306774</td>
<td>1.609395</td>
</tr>
</tbody>
</table>

`svy: logistic` `smokcondw SUorMHprob##BEHsmoker age sex i.edu3 i.FRexercise3 FRwaist BEHcage2 ph201_05
  (saving logistic or estimation sample)

Survey Logistic Regression

**Number of strata = 3**
Number of obs = 1,776
Number of PSUs = 421
Population size = 719,169.98
Design df = 618
PSU df = 800
From: f = 2.8800

<table>
<thead>
<tr>
<th>model</th>
<th>N</th>
<th>Likelihood Ratio</th>
<th>Std. Err.</th>
<th>t</th>
<th>P</th>
<th>[95% Conf. Interval]</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ph201_05</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alcohol or substance abuse</td>
<td>0.960132</td>
<td>1.069837</td>
<td>-0.93</td>
<td>0.356</td>
<td>-1.230327</td>
<td>0.290464</td>
</tr>
<tr>
<td>Education</td>
<td>Fast</td>
<td>1.798383</td>
<td>1.739711</td>
<td>5.97</td>
<td>0.000</td>
<td>1.577884</td>
</tr>
<tr>
<td>Current</td>
<td>1.451291</td>
<td>1.376374</td>
<td>3.24</td>
<td>0.001</td>
<td>1.306774</td>
<td>1.609395</td>
</tr>
</tbody>
</table>

Note: Variance scaled within each stage to handle strata with a single sampling unit.
### Survey Logistic Regression

<table>
<thead>
<tr>
<th>Variable</th>
<th>Odds Ratio (95% CI)</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>MHdep3##BEHsmoker</td>
<td></td>
<td></td>
</tr>
<tr>
<td>age 1,007146</td>
<td>0.018289</td>
<td>0.0000</td>
</tr>
<tr>
<td>sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>i.edu3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FRexercise3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FRwaist</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BEHcage2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ph201_05</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Estimates are within each stage to handle strata with a simple sampling unit.
Appendix 6: Change of Study Site
Initially the researcher planned to conduct study two at Saint John of Gods Hospitaller Ministries. Specifically at St John of Gods private psychiatric Hospital and at Cluain Mhuire a community mental health day service which is non-private. However, the Saint John of Gods Hospitaller Ministries ethics committee required significant revisions to the protocol. These included an indirect recruitment approach which would have likely led to a very limited pool of patients and meant any estimation of smoking prevalence and quit advice would be significantly compromised. There were also issues around casenote review and three month follow-ups given plans to fully anonymise data before it reached the research team. In the end these issues rendered the project unworkable and as such the researcher approached another site.
Appendix 7: Study 2 - Full Ethical Approval Subject to Standard Conditions

PRIVATE & CONFIDENTIAL

September 30th, 2015

Ms. Annette Burns
Department of Psychology
Division of Population Health Sciences, RCSI
Beaux Lane House
Mercer Street Lower
Dublin 2
(anetteburns@rcsi.ie)

Re: Provision of Smoking Cessation Care in a Psychiatric Setting in Ireland
(Protocol 12/15)

Dear Ms. Burns,

Your application was considered at the Research Ethics Committee (REC) meeting held on September 29th, 2015, in the Boardroom at St Patrick’s University Hospital.

Your application was granted full ethical approval by the following committee members who were in attendance at this meeting:

- Ms. Terence Coghlan
- Dr. Adam Kavanagh
- Prof. Declan McLaughlin
- Ms. Marie McLaughlin
- Dr. Breislack
- Ms. Marie Tuohy
- Prof. John Waddington

Approval was granted subject to the following standard conditions:

1. You must adhere fully to the terms and conditions set out in your research protocol.

2. All persons involved in this research who are not employees of St Patrick's Mental Health Services are required to obtain an honorary contract from the hospital. This process should be initiated by your study supervisor. It will be your responsibility to ensure that these contracts are renewed and kept up-to-date as necessary throughout the duration of your study.

3. If there are any material changes to be made to Protocol 12/15 in the next 12 months, you must contact the Research Ethics Committee for approval.

4. You must report back to the Research Ethics Committee no later than 12 months subsequent to this approval letter (September 30th, 2016), with a summary report on the progress of this research. This report can be downloaded from the hospital website. Failure to complete this report may result in ethical approval being withdrawn for your research.

St Patrick’s Mental Health Services – Research Ethics Committee

Please reply to: James Bradlock, Research Ethics Committee Administrator, St Patrick’s Mental Health Services
P.O. Box 130, James Street, Dublin 8 (Tel: 01 2493641, email: jbradlock@stpatmail.com)

St Patrick’s Mental Health Services is an independent not-for-profit charitable trust. Registered in Ireland CHY 2099
5. The committee encourages all researchers to publish the results of their study once it is completed, whether these appear to be positive or negative.

6. Please complete the attached form and send it via email to regionallibrary@hse.ie. The Directorate of Clinical and Quality Care in the HSE have requested that details of all research projects in Ireland be pooled together in one location, namely, www.legis.ie, for the purpose of promoting a culture of research and in order to deliver evidence based clinical care. The HSE hope to gain a complete picture of the quality and quantity of healthcare and healthcare-related research in Ireland, and St. Patrick’s Mental Health Services have agreed to cooperate with this process. This repository of research activity is managed by Health Librarians based in Dr Steevens’ Hospital, and we thank you in advance for emailing this relatively simple form to them at your convenience.

In addition, the committee asked for the following clarification:

- That the method by which the ‘opportunistic sample’ is gathered be explained more clearly.

Please can you respond to this query on or before October 6th, 2015, and include in your response any revised documentation as a result of this.

We wish you well in your research. With very best wishes.

Yours sincerely,

[Signature]

JAMES V. LUCEY MD., Ph.D., FRCPI., FRCPsych.
Secretary to the Research Ethics Committee | Medical Director
Medical Council 00646

Encl.
Appendix 8: Chair Approval for Clarifications and Amendment

PRIVATE & CONFIDENTIAL

Ms Annette Burns
Department of Psychology
Division of Population Health Sciences, RCSI
Beaux Lane House
Mercer Street Lower
Dublin 2
(annetteburns@rcsi.ie)

Re: Provision of Smoking Cessation Care in a Psychiatric Setting in Ireland
(Protocol 12/15)

Dear Ms Burns,

Thank you for your email dated November 3rd, 2015, which included your response to the query raised in our letter, dated September 30th, and also contained a request for some minor amendments to the study.

Please note that your email has been reviewed by various members of the Research Ethics Committee and they are satisfied with both your response to the query as well as with the amendments you propose. This means that you now have chair approval to make these amendments immediately and continue your research. The full email along with the amendments will be reviewed by the whole committee at their next meeting, and if any further comments are raised, we will inform you in due course.

We wish you well in your research and thank you for your cooperation.

With very best wishes.
Yours sincerely,

[Signature]

JAMES V. LUCEY, MD., Ph.D., FRCPI, FRCPsych.
Secretary to the Research Ethics Committee | Medical Director
Medical Council 201646

St Patrick’s Mental Health Services – Research Ethics Committee
Please reply to: James Bradock, Research Ethics Committee Administrator, St Patrick’s Mental Health Services
P.O. Box 130, James’s Street, Dublin 8 (Tel: (01) 2493014; email: jlbradock@stpatsmail.com)
St Patrick’s Mental Health Services is an independent not-for-profit charitable trust. Registered in Ireland CHY1009
Appendix 9: Recruitment by ward

Table 1 below, shows access rates for the each wards as well as the number of refusals.

<table>
<thead>
<tr>
<th>Ward</th>
<th>Number of inpatients*</th>
<th>Missed</th>
<th>Approached</th>
<th>Access rate %</th>
<th>Refusals</th>
<th>Refusal rate%</th>
<th>Excluded</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>59</td>
<td>14</td>
<td>45</td>
<td>76%</td>
<td>8</td>
<td>18%</td>
<td>0</td>
<td>37</td>
</tr>
<tr>
<td>B</td>
<td>54</td>
<td>18</td>
<td>(including 1 previously missed on Ward A)</td>
<td>36</td>
<td>67%</td>
<td>5</td>
<td>14%</td>
<td>1 already refused on previous ward</td>
</tr>
<tr>
<td>C</td>
<td>60</td>
<td>17</td>
<td>43</td>
<td>72%</td>
<td>2</td>
<td>4.6%</td>
<td></td>
<td>41</td>
</tr>
<tr>
<td>Ward</td>
<td>Number of inpatients*</td>
<td>Missed</td>
<td>Approached</td>
<td>Access rate %</td>
<td>Refusals</td>
<td>Refusal rate%</td>
<td>Excluded</td>
<td>Participants</td>
</tr>
<tr>
<td>------</td>
<td>-----------------------</td>
<td>--------</td>
<td>------------</td>
<td>---------------</td>
<td>----------</td>
<td>---------------</td>
<td>----------</td>
<td>--------------</td>
</tr>
<tr>
<td>D</td>
<td>51</td>
<td>15</td>
<td>36</td>
<td>71%</td>
<td>1</td>
<td>2.8%</td>
<td>2 due to significant dementia</td>
<td>35</td>
</tr>
<tr>
<td>E</td>
<td>44</td>
<td>8</td>
<td>36</td>
<td>82%</td>
<td>2</td>
<td>5.5%</td>
<td>2 already interviewed on other wards</td>
<td>34 (including 1 previously missed on Ward D)</td>
</tr>
<tr>
<td>F</td>
<td>56</td>
<td>14</td>
<td>42</td>
<td>75%</td>
<td>4</td>
<td>9.5%</td>
<td>1 due to significant ID and 2 already approached on other wards</td>
<td>38 (including 1 previously missed on Ward E)</td>
</tr>
<tr>
<td>G</td>
<td>4</td>
<td>0</td>
<td>4</td>
<td>100%</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td>4</td>
</tr>
</tbody>
</table>

* Number of inpatients refers to the total number of patients present on the ward on the day of the interview.
<table>
<thead>
<tr>
<th>Ward</th>
<th>Number of inpatients*</th>
<th>Missed</th>
<th>Approached</th>
<th>Access rate %</th>
<th>Refusals</th>
<th>Refusal rate%</th>
<th>Excluded</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>30</td>
<td>9</td>
<td>21</td>
<td>70%</td>
<td>2</td>
<td>9.5%</td>
<td>2 already interviewed on other wards</td>
<td>19</td>
</tr>
<tr>
<td>I</td>
<td>8</td>
<td>1</td>
<td>7</td>
<td>87%</td>
<td>0</td>
<td>0%</td>
<td>2 acutely unwell</td>
<td>7 (including 1 previously missed on Ward H)</td>
</tr>
<tr>
<td>TOTAL</td>
<td>366</td>
<td>96</td>
<td>270</td>
<td>74%</td>
<td>24</td>
<td>8.9%</td>
<td>14</td>
<td>246</td>
</tr>
</tbody>
</table>

*Includes all inpatients there at any stage during recruitment period for said ward excepting exclusions due to ineligibility e.g. severe dementia/ID or prior refusal/participation.
Appendix 10: Attempted Recruitment of Outpatients
The study was also introduced to outpatients on the WRAP and Mindfulness programmes.
Once the study had been presented, the researcher approached outpatients while onsite.
Due to the limited opportunities it was only possible to recruit a small number of outpatients. Those already interviewed as inpatients were excluded.

Table X. Outpatients recruited

<table>
<thead>
<tr>
<th></th>
<th>Enrolled</th>
<th>Excluded as interviewed as inpatient</th>
<th>Interviewed</th>
<th>Current smokers interviewed</th>
</tr>
</thead>
<tbody>
<tr>
<td>WRAP</td>
<td>9</td>
<td>1</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Mindfulness</td>
<td>12</td>
<td>1</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>21</td>
<td>2</td>
<td>9</td>
<td>1</td>
</tr>
</tbody>
</table>

Appendix 11: Measures

Appendix 11.1: Fagerstrom test of Nicotine Dependence

Table 3. Items and scoring for Fagerström Test for Nicotine Dependence (FTND)

<table>
<thead>
<tr>
<th>Questions</th>
<th>Answers</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How soon after you wake up do you smoke your first cigarette?</td>
<td>Within 5 minutes</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>6–30 minutes</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>31–60 minutes</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>After 60 minutes</td>
<td>0</td>
</tr>
<tr>
<td>2. Do you find it difficult to refrain from smoking in places where it is forbidden e.g. in church, at the library, in cinema, etc.?</td>
<td>Yes</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>0</td>
</tr>
<tr>
<td>3. Which cigarette would you hate most to give up?</td>
<td>The first one in the morning</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>All others</td>
<td>0</td>
</tr>
<tr>
<td>4. How many cigarettes/day do you smoke?</td>
<td>10 or less</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>11–20</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>21–30</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>31 or more</td>
<td>3</td>
</tr>
<tr>
<td>5. Do you smoke more frequently during the first hour after waking than during the rest of the day?</td>
<td>Yes</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>0</td>
</tr>
<tr>
<td>6. Do you smoke if you are so ill that you are in bed most of the day?</td>
<td>Yes</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>0</td>
</tr>
</tbody>
</table>

(213)
Appendix 11.2: Motivation to Stop Scale

Level of motivation:
1: “I don’t want to stop smoking”
2: “I think I should stop smoking but don’t really want to”
3: “I want to stop smoking but haven’t thought about when”
4: “I REALLY want to stop smoking but I don’t know when I will”
5: “I want to stop smoking and hope soon”
6: “I REALLY want to stop smoking and intend to in the next 3 months”
7: “I REALLY want to stop smoking and intend to in the next month”

Source: Table 1 Kotz et al. 2013 (203)
Appendix 12: Information sheet

Patient Information Leaflet

We are conducting research into smoking and advice on quitting smoking. We want to find out how many patients in St Patrick’s University Hospital smoke, how much people smoke, how often they have tried to quit, and how dependent they are on nicotine. We also want to know whether smokers in St Patrick’s University Hospital have received advice or help from health professionals in the past year regarding quitting smoking.

WHY IS THIS STUDY BEING DONE?
This study is being done because there is evidence to suggest that smokers attending healthcare services do not receive advice about quitting from health professionals as part of standard medical care. If we understand some of the reasons why health professionals do not provide this advice, it may help us to improve this service in the future.

WHO IS ORGANISING THIS STUDY?
This study is organised by a team of researchers in St Patrick’s University Hospital and the Royal College of Surgeons in Ireland. Ms Annette Burns, Royal College of Surgeons in Ireland, is the primary researcher. She is supervised by Dr Frank Doyle (RCSI), Professor Luke Clancy (DIT) and Dr Judith Strawbridge (RCSI) and advised by Prof James V. Lucey (St Patrick’s University Hospital). The Health Research Board is the financial sponsor of this study and Annette’s PhD (via the SPHeRE programme).

HOW WILL IT BE CARRIED OUT?
A member of the research team (Ms Annette Burns) will speak to you about taking part in the study. At this time, if you agree to participate, you will be asked to sign a consent form which gives the researcher permission to talk to you about smoking and if agreeable to contact you by telephone three months after your hospital admission to talk to you about your smoking.

The study involves completing a brief interview. It should only take about 5-10 minutes, and the researcher will ask you the questions and explain anything that you may not understand. You can also have someone of your choosing accompany you for the interview if you so wish. If you are a smoker, the researcher will also examine your medical records to collect some information about your physical health and smoking information collected by staff. We may also ask to check your smoking status using a carbon monoxide breath analyser three months after you complete this interview. This can be carried out either at your home, at St Patrick’s University Hospital if you are attending an outpatient appointment or at a location convenient to you. The researcher will ask you to blow into a small machine which will instantly show you and the researcher your carbon monoxide level. Your carbon monoxide level will tell us if you have smoked within the past few hours. Only participants who are smokers and who quit smoking in the next few months will be asked to do this test. The researcher will use a computer to randomly choose a selection of the participants who have quit smoking and only they will be asked to do the carbon monoxide test.

Patient Information Leaflet: Version 1 July 2015
Patient Information Leaflet

VOLUNTARY PARTICIPATION
Your participation in the study is completely voluntary. If you decide to take part, you will be asked to sign a consent form. However, you are free to withdraw from the study at any time without explanation. Your decision to take part, or otherwise, in no way influences your care. The researcher is not part of your medical team and will not discuss your responses with the team. The information you provide is entirely confidential.

BENEFITS
We hope to improve the quality of smoking cessation services that are provided to patients in St Patrick’s University Hospital. To do so, we need to hear about the experiences of patients who are smokers. It is hoped that the results of the study will help people who are smokers have better access to the smoking cessation services that should be provided.

RISKS
There are no risks to taking part in the study. However, if you think that any of the questions are distressing, you do not have to answer them and you can speak about this to the research team or your medical team.

CONFIDENTIALITY
- All information will remain strictly confidential at all times. Your name will not be published and your answers will not be available to anyone outside the research team.
- Your details and results will be anonymised and only the research team will be able to find out your identity. Anonymised data will be stored for 10 years after publication of results and then destroyed, in accordance with research best practice guidelines.
- Your patient records will remain the property of St Patrick’s University Hospital and will not be removed from the hospital.

IF YOU REQUIRE FURTHER INFORMATION
If you have any further questions about the study or if you wish to withdraw from the study you may do so without justifying your decision and your future treatment will not be affected. For additional information now or at any future time please contact:

Ms Annette Burns
Researcher, Department of Psychology, Royal College of Surgeons in Ireland
Tel: 01 402 8622 (office hours)

Dr Frank Doyle
Senior Lecturer, Department of Psychology, Royal College of Surgeons in Ireland
Tel: 01 402 2718 (office hours)
Appendix 13: Consent form

CONSENT FORM

Study Title: Provision of smoking cessation care

Please tick the appropriate answer.

I confirm that I have read and understood the Patient Information Leaflet and have had the opportunity to ask questions and discuss the study. I have received satisfactory answers to all of my questions.

☐ Yes  ☐ No

I understand that my participation is completely voluntary and that I may withdraw at any time, without giving reason, and without this decision affecting my medical care.

☐ Yes  ☐ No

I understand that my identity will remain strictly confidential.

☐ Yes  ☐ No

I agree to participate in a brief 5-10 minute interview about smoking.

☐ Yes  ☐ No

I agree to the researcher reviewing sections of my case notes for mention of smoking.

☐ Yes  ☐ No

I have been given a copy of the Patient Information Leaflet and this Consent form for my records.

☐ Yes  ☐ No

I agree to be contacted for a follow-up 3 minute telephone interview about smoking if requested in approximately 3 months.

☐ Yes  ☐ No

I also agree to provide a breath sample at follow-up if requested.

☐ Yes  ☐ No

Consent Form: SPUH Version 1 July 2015
I give permission for material/data to be stored for possible future research related to the current study subject to research ethics committee approval

☐ Yes  ☐ No

Signature ___________________________ Date ____________

Name in block capitals ___________________________

To be completed by the Principal Investigator.
I the undersigned, have taken the time to fully explain to the above patient the nature and purpose of this study in a manner that he/she could understand. I have explained all steps of the study and have invited him/her to ask questions on any aspect of the study that concerned them.

Signature: ___________________________ Name in Block Capitals: ___________________________ Qualification: ___________________________ Date: ___________________________

IF YOU REQUIRE FURTHER INFORMATION
If you have any further questions about the study or if you wish to withdraw from the study you may do so without justifying your decision and your future treatment will not be effected.
For additional information now or at any future time please contact:

Ms Annette Burns
Researcher, Department of Psychology, Royal College of Surgeons in Ireland
Tel: 01 402 8622 (office hours)

Dr Frank Doyle
Senior Lecturer, Department of Psychology, Royal College of Surgeons in Ireland
Tel: 01 402 2718 (office hours)

3 copies to be made: 1 for patient, 1 for PI and 1 for hospital records.

Consent Form: SPUH Version 1 July 2015
Appendix 14: Baseline survey

Smoking questionnaire

Date: __/____/2016  Interview Number: ___________

1. Ward: ____________________________

2. Inpatient ☐  Outpatient ☐

3. Reason for current visit: ____________________________________________

4. Days since hospital admission: ________ [Ask inpatients only]

5. Been admitted to SPUH (or another hospital due to mental health) in last 12 months [Ask outpatients only] Yes ☐ No ☐

Demographics
6. Sex: Male ☐  Female ☐
7. Age: ________

8. What is the highest level of education you have completed to date?

<table>
<thead>
<tr>
<th>Some primary (not complete)</th>
<th>Diploma/ Certificate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary or equivalent</td>
<td>Primary degree</td>
</tr>
<tr>
<td>Intermediate/ junior/ Group Certificate or equivalent</td>
<td>Postgraduate/ Higher degree</td>
</tr>
<tr>
<td>Leaving Certificate or equivalent</td>
<td>Refusal</td>
</tr>
</tbody>
</table>

9. Employment:

<table>
<thead>
<tr>
<th>Fulltime</th>
<th>Part time</th>
<th>Unemployed</th>
<th>Unknown/Refused</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Occupation: ____________________________

10. What is your current marital status?

<table>
<thead>
<tr>
<th>Single (never married)</th>
<th>Married</th>
<th>Divorced</th>
<th>Separated</th>
<th>Widowed</th>
</tr>
</thead>
</table>

11a. Live alone: Yes ☐ No ☐

11b. If With others, are they a smoker? Yes ... ☐ No ... ☐ ....N/ ☐

12. Medical Insurance:

<table>
<thead>
<tr>
<th>None</th>
<th>VHI/BUPA/VIVAS</th>
<th>Employer</th>
<th>Medical Card</th>
<th>Medical Card – GP only</th>
<th>Other</th>
</tr>
</thead>
</table>

Smoking

13. Have you smoked at least 100 cigarettes in your entire life? [5 PACKS = 100 Cigarettes]

Yes ☐ No ☐ If NO skip to Question 19a

14. Do you now smoke every day, some days, or not at all?

Every day ☐ Some days ☐ Trying not to smoke while in hospital ☐
Not at all ☐ If not at all, go to 18

15. What do you smoke? [TICK ALL THAT APPLY]

<table>
<thead>
<tr>
<th>Cigarettes</th>
<th>Pipe</th>
<th>Cigars</th>
<th>RYO</th>
<th>E-cig</th>
</tr>
</thead>
</table>

15. a) No. smoked/day: _____  Years smoked: _____

16. What were the circumstances around your first cigarette? [probe for when (record as age in years where possible), where & why started] (e.g. school, aged 16, a friend offered)
Smoking questionnaire

17. [Interviewer ticks ‘Yes’ if e-cig mentioned in Q15 if was unticked clarify]
   Do you use e-cigarettes or vape?       Yes  ☐      No  ☐
   If ticking yes ask:
   a. When did you start using e-cigarettes/vaping?       ☐
   b. Are you now using e-cigarettes exclusively? (no traditional smoking)   Yes  ☐      No  ☐
   c. Why did you switch to e-cigarettes/vaping? (e.g. cheaper, trying to quit etc.)
   d. Plan to keep using e-cigarette or just using it to quit?       Using to quit  ☐      No plans to quit e-cig  ☐

18. – [IF NOT AT ALL SMOKING ASK] About how long has it been since you last smoked?
   Within the past month (anytime less than 1 month ago) ................. ☐
   Within the past 3 months (1 month but less than 3 months ago) ...... ☐
   Within the past 6 months (3 months but less than 6 months ago) ...... ☐
   Within the past year (6 months but less than 1 year ago) .............. ☐
   Within the past 5 years (1 year but less than 5 years ago) ............. ☐
   Within the past 10 years (5 years but less than 10 years ago) ........... ☐
   10 or more years ago ........................................................................ ☐

Quit attempts and professional advice

19a. In the past 12 months did a doctor or health professional ask you if you smoke?
   Yes  ☐      No  ☐      I told them myself ... ☐      They knew as saw me smoking ... ☐
   No, didn’t see doctor/health professional ... ☐  <- [skip to Q19c or Q21 if say haven’t seen a doc/hcp]

19b. If yes, who asked you?

19c. [Former or Non-smoker only – final question] Has anyone here at St Patrick’s University Hospital asked you if you smoke?
   Yes  ☐      No  ☐
   If ‘yes’
   Who __________________ (record position e.g. a consultant)
   When __________________ (e.g. during inpatient stay/ at admission/discharge/ during an outpatient visit)

Stop interview unless patient is current smoker

20a. In the past 12 months did a doctor or health professional discuss ways of giving up smoking with you?       Yes  ☐      No  ☐      No, didn’t see doctor/health professional ... ☐

20b. If yes, who discussed this with you?

20c. What advice were you given?

21. Would you like to receive smoking cessation advice while attending St Patrick’s University Hospital?
   Yes  ☐      No  ☐

22a. Has someone discussed smoking with you during this admission?       Yes  ☐      No  ☐
   [ask outpatients ‘this or the last visit’]

22b. If yes, who discussed this with you?

22c. What advice or treatment were you given?

Baseline Questionnaire Version 2 November 2015
Smoking questionnaire

23. During the past 12 months, have you stopped smoking for one day or longer because you were trying to quit smoking?  
   Yes ☐  (If yes, ask questions below in left column)  
   No ☐  (If no, ask questions below in right column)

24. If yes, how many times have you tried to quit in the past year?  
   If yes, during your last attempt to give up, did you use any help such as nicotine patches or gum, or things like acupuncture? [TICK ALL THAT APPLY]
   Nicotine patches ☐
   Nicotine gum, lozenges ☐
   Acupuncture ☐
   Smoking helpline ☐
   Champix ☐
   Zyban ☐
   Hypnotherapy ☐
   Other aid, help, support (please specify) ☐

25. Are you currently? ☐
   Trying to quit ☐
   Actively planning to quit ☐
   Thinking about quitting but not planning to ☐
   Not thinking about quitting ☐

26. Longest abstinence period achieved in last 12 months: ________________

27. Do you think that if you gave up smoking ..... [TICK ALL THAT APPLY]
   Your health would improve in the short term ☐
   Your health would benefit in the long term ☐
   You would put on weight ☐
   It would be harder to handle stress in your life ☐
   You would feel you had done something worthwhile ☐

Motivation to stop scale

[Tick the patient’s response]

Which of the following describes you?
   I don’t want to stop smoking ☐
   I think I should stop smoking but don’t really want to ☐
   I want to stop smoking but haven’t thought about when ☐
   I REALLY want to stop smoking but I don’t know when I will ☐
   I want to stop smoking and hope to soon ☐
   I REALLY want to stop smoking and intend to in the next 3 months ☐
   I REALLY want to stop smoking and intend to in the next month ☐

Baseline Questionnaire Version 2 November 2015

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Smoking questionnaire

**Fagerstrom Test for Nicotine Dependence**

Circle the patient’s responses

1. How soon after you wake up do you smoke your first cigarette?
   - After 60 minutes: 0
   - 31-60 minutes: 1
   - Within 5 minutes: 3

2. Do you find it difficult to refrain from smoking in places where it is forbidden?  
   - No: 0
   - Yes: 1

3. Which cigarette would you hate most to give up?  
   - The first in the morning: 1
   - Any other: 0

4. How many cigarettes per day do you smoke?
   - 10 or less: 0
   - 11-20: 1
   - 21-30: 2
   - 31 or more: 3

5. Do you smoke more frequently during the first hours after waking than during the rest of the day?  
   - No: 0
   - Yes: 1

6. Do you smoke even if you are so ill that you are in bed most of the day?  
   - No: 0
   - Yes: 1

**Your score was**  
**Your level of dependence on nicotine is:**
- 0-2: Very low dependence
- 3-4: Low dependence
- 5: Medium dependence
- 6-7: High dependence
- 8-10: Very high dependence

## Appendix 15: Study 2 - Data Cleaning

### Survey data

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-reported days since admission</td>
<td>Where respondents were unsure and an estimated range of days since admission was reported the midpoint of this range was taken (the same approach was employed where needed for quit attempts, years smoking, smoke per day etc.). If respondents did not recall duration since admission the interviewer checked with staff where respondents agreed (3 cases).</td>
</tr>
<tr>
<td>Living with smoker</td>
<td>Input as ‘No’: reference to a temporary lodger i.e. ‘friend staying 2 weeks’; a respondent who reported they won’t be living with that person post admission; and a respondent who reported his wife smokes in pub once every 6 months only. The hospital longstay patient was input as ‘Yes’ given she effectively lives at the hospital.</td>
</tr>
<tr>
<td>Smoked 100 cigarettes in lifetime</td>
<td>‘Probably’ coded as ‘yes’. ‘Probably not’ coded as ‘no’.</td>
</tr>
<tr>
<td>Duration since last smoked (former smokers)</td>
<td>Duration here referred to time since last smoked. Some respondents had quit smoking years ago but had briefly smoked more recently. For example, “10 years ago since habit and buying, maybe had one at Christmas at least 6 months ago” was input as ‘within the past year’.</td>
</tr>
<tr>
<td>Years smoking</td>
<td>Months were converted to 30.42 days for all duration variables (time since admission, abstinence periods, years smoking etc.). Where a respondent reported the age they first tried a cigarette and the age they started smoking regularly the latter was taken. ‘Casual’ or ‘Social smoking’ e.g., ‘occasionally on nights out’ was not counted in smoking years. So for instance if a respondent reported smoking only socially up until ten years ago [when they became a regular smoker], ten years of smoking was recorded. Years of abstinence, where reported, were subtracted. If a responded reported smoking since 13 or 14 years of age, the midpoint of 13.5 years was subtracted from current age.</td>
</tr>
<tr>
<td>Smoke per day</td>
<td>When asked how many they smoke per day, some reported an average range per day and where this occurred the midpoint of this range was input e.g. 2-3 was input as 2.5 while 20-25 was input as 22.5 per day. Where possible for non-daily smokers their weekly average was divided by seven. Other non-definitive estimates such as ‘At least 20’ and ’20 plus’ were input as 21. For one respondent who refused to answer this question but reported 21-30 on Fagerstrom an average of 25.5 was input here. The pipe smoker who smokes a pipe 5 or 6 times a day was input as 5.5. For respondents who reported huge variation and could not provide an estimate per week either, data was input as missing. As a result, per day data was missing for two everyday smokers for whom it was too variable and for several nondaily smokers (one of whom smokes every day in hospital). Some respondents spontaneously reported their daily rate now compared to when not in hospital and where this occurred their</td>
</tr>
</tbody>
</table>
### Smoke per day *(continued)*

Daily usual/non-hospital rate was taken. For example, if they said ‘20 but 40 in here’ 20 per day was input here and used in calculation of pack years also. In the case of those only using an e-cigarette at home zero per day was input but in calculation of pack years prior smoking was taken into account. In the case of respondents who were previously heavy smokers for years but were now cut down a lot their current rate was input here but extra information e.g. ‘1 or 2 a week now but 15-20 for 4 years’ was incorporated in calculation of pack years.

### Pack years

Other data was also taken into account in the case of one or two respondents who were currently smoking but reported no smoking outside hospital before admission leading to zero cigarettes per day. As described above, for smoke per day, if respondents reported hospital versus usual, the usual scenario was taken. This meant that for a respondent who reported smoking ‘20 in hospital but not at all at home’ pack years was zero, as was the case for those who reported they were using an e-cigarette only at home now despite smoking currently and 25 years of lifetime smoking. Here the zero per day was overridden so that total pack years were included based on current and previous smoking. Example smoked 26 years switched to e-cigarette but back on cigarettes in hospital leading to (usual) ‘per day’ of zero which was overridden so 26 years of smoking accounted for and included in calculation of lifetime pack years.
<table>
<thead>
<tr>
<th>Quit attempt in past 12 months of one day or longer</th>
<th>Current smokers who stopped smoking for one day or longer in past year because they were trying to quit. Among those reporting no quit attempts was a respondent who had been quit for 3 years until 6 weeks ago, two e-cigarettes users (18 months and 3 years on e-cigarette) who had just recently switched back to regular cigarettes since hospital admission and a non-daily smoker who had gone weeks without smoking in the past year but reported these were not quit attempts.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of quit attempts</td>
<td>Where a respondent reported an estimate/range of attempts such as 2-3, the midpoint was input i.e. 2.5 attempts. ‘Over 100’ was input as 101.</td>
</tr>
<tr>
<td>Status at baseline</td>
<td>Two participants, who rather than choose a response from the above, simply reported they were ‘Planning to go back on e-cigarette once go home’ or ‘Planning to quit when leave’ were input as ‘Actively planning to quit’.</td>
</tr>
</tbody>
</table>
| Asked status by a HCP in the past year | Coded based on initial answer to question:  
  - Those who responded ‘yes’ coded as yes.  
  - Those who responded ‘no’ or ‘they already knew’ coded as ‘no’.  
  - All other responses coded as ‘unsure’.  
Inconsistencies such as responding ‘no’ but responding ‘yes’ when later asked specifically about any HCP in SPUH asking status were ignored. Those who initially reported they were ‘not sure’ were coded as ‘unsure’ even if later went on to provide specific detail on who and when. |
| Smoking Cessation Care Data | (i) Original closed questions:  
  **Any HCP in the past 12 months discussed ways of giving up**  
Just 11 current smokers (13.1%) reported that a doctor or healthcare professional had discussed ways of giving up smoking with them in the last 12 months, one additional respondent reported an attempted discussion (assessed readiness) which ended as patient was not interested at the time (not included in 11 but included below in reported discussions of smoking during admission (n=9)). Respondents were then asked what advice they were given. Of the 11 who had said ‘Yes’ here, 8 described advice that included actual discussion of ways of giving up and 2 of these 8 said that they had actually brought smoking up themselves. Three of the respondents who said ‘No’ when asked if ‘a HCP had discussed ways of giving up smoking with them in the past year’ went on to mention interactions relating to ways of quitting with |
HCPs but one was a colleague (works in a pharmacy) and the other two had brought smoking up themselves (like 2 of the ‘yeses’ above). Two others mentioned being asked smoking status when they were not actually smoking and perceived this as the reason they had not received advice.

**Smoking discussed during this admission**

Respondents were next asked about smoking cessation care during their current hospital admission specifically. Of the 84 current smokers asked, 9 (10.7%) reported that a HCP had ‘discussed smoking with them during their current admission’ to SPUH. When asked what advice or treatment they were given, 2 of the 9 just referred to asking of smoking status and/or ward tours and 1 seemed to have brought up discussion themselves (“I told the Reg I want to go on patches but not at the moment”). Another respondent did not answer yes/no but simply reported they brought it up themselves and explained “I tried discussing it with the nurse, they weren’t very positive, said try mints or chewing gum”. Another respondent explained that they had been using an e-cigarette exclusively when asked about smoking and felt this was why there had been no discussion. Among those not reporting discussion during current admission some also mentioned smoking status questions but unlike the two above these respondents did not interpret these as a discussion. One even reported advice to quit in addition to a status question (“just ‘do you’ and ‘you shouldn’t’”) but again answered ‘No’ as they did not deem this a discussion although some of those above considered a status question alone or similarly brief advice.
‘discussion of smoking’.

(ii) Additional variables created post data collection
Given the clear variation occurring and interpretation differences revealed both by spontaneous reports and through respondent answers to the open-ended follow up questions regarding ‘what advice/treatment?’ they had received the researcher coded these reports in order to better capture this data in a more meaningful way. The original closed questions proved limited by interpretation biases and staggered recall/reporting and for this reason additional variables were recreated based on all actual reports of smoking interactions by respondents. Variables were generated to capture those that reported:

- any interaction including asking of status in past year
- any interaction around smoking beyond simply asking status in past year
- any discussion of ways of quitting with a HCP in past year (not including cases where respondent reported simply requested a prescription and was provided with same and no further discussion reported)

Those who reported bringing smoking cessation up themselves were also coded for same.

Logistic regression analyses
For all care variables, ‘unsure’ were coded as ‘No’ when running logistic regression analyses to allow for a binary outcome variable.
<table>
<thead>
<tr>
<th>Acceptability of advice</th>
<th>‘Would you like to receive smoking cessation advice while attending SPUH?’</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘Probably’ coded as ‘yes’ (n=1)</td>
<td>‘Probably not’ coded as ‘no’ (n=1)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Beliefs about quitting</th>
<th>Probably coded as ‘yes’. Probably not coded as ‘no’ etc. Hypothetical responses coded as unsure and temporal responses coded as based on quitting now (see below):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Probably not = no</td>
<td></td>
</tr>
<tr>
<td>Probably would = yes</td>
<td></td>
</tr>
<tr>
<td>Probably harder(to handle stress) = yes</td>
<td></td>
</tr>
<tr>
<td>Probably = yes</td>
<td></td>
</tr>
<tr>
<td>Suppose would if did = unsure</td>
<td></td>
</tr>
<tr>
<td>Unsure but very possible=unsure</td>
<td></td>
</tr>
<tr>
<td>Stress at the moment so will say yes = yes</td>
<td></td>
</tr>
<tr>
<td>Stress at the moment but normally no = yes</td>
<td></td>
</tr>
</tbody>
</table>
**Casenotes data**

<table>
<thead>
<tr>
<th>Duration between admission and baseline interview</th>
<th>Missing for one for whom baseline admission casenotes could not be located</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICD codes</td>
<td>Primary diagnosis at baseline admission according to discharge summary. A diagnosis of ‘Reactive depression’ with no ICD code classification for baseline admission was coded as F30-39 9Mood [affective] disorders) as this was the most recent ICD code documented for participant. For long stay patient diagnosis commonly referred to in notes was taken.</td>
</tr>
<tr>
<td>Smoking-related disease documented in medical history</td>
<td>Medical history data collected were coded for presence of smoking-related disease diagnoses including cardiovascular disease (including hypercholesterolemia, hypertension, stroke and myocardial infarction), respiratory disease (asthma, emphysema, COPD) and smoking-related cancers in line with Study 1 (as per Surgeon General, see chapter 4). Frequent/recurrent respiratory tract infections were not included without another relevant diagnosis such as asthma or emphysema.</td>
</tr>
<tr>
<td>Multiple admissions to SPUH in study period and therefore reviewed</td>
<td>Not including long stay patient as this is technically an ongoing admission</td>
</tr>
<tr>
<td>---------------------------------------------------------------</td>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Smoking cessation care data</strong></td>
<td><strong>Smoking cessation advice</strong></td>
</tr>
<tr>
<td>- Two vague descriptions of ‘lifestyle advice’ or ‘advice in context of cough’ which did not clearly mention smoking were omitted</td>
<td>- A nurse note stating ‘smoking discouraged’ was counted as advice to reduce or cut-down as unclear whether quit advice</td>
</tr>
<tr>
<td>- A nurse note stating ‘smoking discouraged’ was counted as advice to reduce or cut-down as unclear whether quit advice</td>
<td><strong>Assessed patient readiness to quit</strong></td>
</tr>
<tr>
<td>Excluded an instance where this appeared to be patient-initiated</td>
<td><strong>Need to advise noted but no evidence delivered to patient</strong></td>
</tr>
<tr>
<td>This was instances where unclear delivered including when discussed at an MDT meeting when patient not present and no follow-up notes to indicate care was delivered. Also instances of nurses noting continued smoking in context of physical illness but with no evidence anything communicated to patient.</td>
<td></td>
</tr>
</tbody>
</table>
Appendix 16: Follow up survey

Follow-up smoking questionnaire

Date: ___/___/2018
PARTICIPANT ID NO: __________

Quit attempts and professional advice
1. In the past three months, have you quit smoking? Yes □ No □ Cut down… □

2. If yes, how do you think you managed that? ____________________________________________________________

3. If no, in the past three months have you attempted to quit smoking? Yes □ No □

4. If yes, how many times have you tried to quit in the past three months? __________

If yes, during your last attempt to give up, did you use any help such as nicotine patches or gum, or things like acupuncture? [TICK ALL THAT APPLY]

- Nicotine patches
- Nicotine gum, lozenges
- Acupuncture
- Smoking helpline
- Champix
- Zyban
- Hypnotherapy
- No help used (“willpower alone”)
- Other aid, help, support (please specify) ____________________________________________________________

5. Are you currently: Trying to quit □ Actively planning to quit □ Thinking about quitting but not planning to □ Not thinking about quitting □

6. If you would like to quit smoking, what do you think would help you to quit successfully? [e.g., advice, follow-up, family support, nicotine replacement therapy, medications like Champix or Zyban] ____________________________________________________________

7. In the past 3 months since your smoking interview in St Patrick’s University Hospital, did a doctor or health professional discuss ways of giving up smoking with you? [Interviewer names relevant site only] Yes □ No □

8. Motivation to stop scale

Which of the following describes you?
- I don’t want to stop smoking
- I think I should stop smoking but don’t really want to
- I want to stop smoking but haven’t thought about when
- I REALLY want to stop smoking but I don’t know when I will
- I want to stop smoking and hope to soon
- I REALLY want to stop smoking and intend to in the next 3 months
- I REALLY want to stop smoking and intend to in the next month

9. Have you been hospitalised in the past 3 months since you were interviewed in SPUH about smoking in [insert date of their baseline interview e.g. January 2016]?
Yes □ No □

Follow-up questionnaire Version 1 June 2015
Follow-up smoking questionnaire

10. Have you visited your GP in the past 3 months since you were interviewed in SPUH about smoking in [insert date of their baseline interview]? Yes □ No □

11. Have you attended any other health care professional in the past 3 months since you were interviewed in SPUH about smoking in [insert date of their baseline interview]? Yes □ No □

11a. If yes, which health care professional(s) have you attended [specialty]?
Appendix 17: Supplementary results

Former smokers
Among the 53 former smokers (who had smoked at least 100 cigarettes and including the respondent who reported he had smoked a pipe for 6 or 7 years), almost half had quit smoking 10 or more years ago. One respondent reported they were still on patches since quitting 7 months ago, while three others were using e-cigarettes at baseline.

Table 1. Duration since last smoked for former smokers (n=53)

<table>
<thead>
<tr>
<th>Duration</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within the past month</td>
<td>3</td>
<td>5.66%</td>
</tr>
<tr>
<td>Within the past 3 months</td>
<td>4</td>
<td>7.55%</td>
</tr>
<tr>
<td>Within the past 6 months</td>
<td>2</td>
<td>3.77%</td>
</tr>
<tr>
<td>Within the past year</td>
<td>4</td>
<td>7.55%</td>
</tr>
<tr>
<td>Within the past 5 years</td>
<td>6</td>
<td>11.3%</td>
</tr>
<tr>
<td>Within the past ten years</td>
<td>8</td>
<td>15.1%</td>
</tr>
<tr>
<td>10 or more years ago</td>
<td>26</td>
<td>49.1%</td>
</tr>
</tbody>
</table>

E-cigarettes/Vaping
Both current (n=84) and former smokers (n=52) were asked about e-cigarettes. When asked ‘What do you smoke?’ seven (8.33%) current smokers reported e-cigarettes in addition to cigarettes. Among former smokers, three (5.77%) reported they were currently using an e-cigarette/vaping at time of baseline interview.

One of the former smokers now using an e-cigarette (i.e. exclusive e-cigarette user) switched on admission from regular smoking to an e-cigarette. Other smokers however reported they had been using an e-cigarette exclusively prior to hospital but had relapsed to regular smoking since admission. Again this was not captured by a specific question in the survey but rather something that came out in spontaneous reporting in 2 cases.
Baseline smokers
The 84 smokers who had smoked 100 in their lifetime and were currently smoking at baseline were asked further smoking questions:

**Product**
The majority reported smoking cigarettes at baseline (89%) and 21.4% of current smokers reported more than one product.

**Table 2. Tobacco products reported (n=84)**

<table>
<thead>
<tr>
<th>Product</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cigarettes</td>
<td>75</td>
<td>89.3</td>
</tr>
<tr>
<td>Pipe</td>
<td>2</td>
<td>2.38</td>
</tr>
<tr>
<td>Cigars</td>
<td>2</td>
<td>2.38</td>
</tr>
<tr>
<td>Roll Your Own (RYO)</td>
<td>20</td>
<td>23.9</td>
</tr>
<tr>
<td>E-cigarette</td>
<td>7</td>
<td>8.33</td>
</tr>
</tbody>
</table>

**Years smoking**
On average current smokers had been smoking 24.4 years at baseline (SD 15.8) (Median 24.5 years (IQR 13-35)) and values ranged from .17 (two months), in the case of a patient who had started smoking two months ago on a previous admission to SPUH, to 60 years in the case of one of the older participants. Number of years smoking was missing for one respondent who was unable to remember.

**Smoke per day**
At baseline, respondents on average reported smoking 17.1 cigarettes per day (SD 9.42) with a median value of 20 (IQR 10-20) and values ranging from 0 (n=2; those smoking in hospital but e-cigarette or not at all at home) to 50 per day (n=1). Data was missing for two daily smokers who were unable to provide an average per day (see Appendix O).

**Pack years**
Pack years was calculated based on the ‘smoke per day’ and ‘years smoking’ variables. Where provided, extra information relating to variation in consumption over years (e.g. smoked 20 a day for 10 years but 30 a day last 20 years) was taken into account.

At baseline, average pack years among current smokers was 23.6 years (SD 21.0) with a median of 15.9 pack years (IQR 6.8-36.6) reported. Overall, values ranged from .135 to 100 pack years.

**Fagerstrom test of Nicotine Dependence**
At baseline, the average FTND score for 83 cigarettes smokers and one pipe smoker was 5.06 (SD 2.33) indicating medium dependence. Scores ranged from the minimum (0 lowest possible dependence score) to maximum (10 highest possible dependence score)
values and the median score was 5 (IQR 4-7). Where respondents gave answers relating to now compared to at home or a few weeks ago the most current data were taken.

**Acceptability of Advice**

Overall, 47.6% (n=40) of current smokers reported they would like to receive smoking cessation advice while attending SPUH. Two were unsure and one respondent said they would not be here long enough as they were going home that day. Other reasons mentioned by those who said they would not like advice included the following:

<table>
<thead>
<tr>
<th>Reason</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at the moment / not best time/just don’t feel need to right now</td>
<td>4</td>
</tr>
<tr>
<td>One thing at a time</td>
<td>2</td>
</tr>
<tr>
<td>Mentioned present frame of mind/not in position</td>
<td>2</td>
</tr>
<tr>
<td>Prefer to stick with their doctor at another private clinic on this</td>
<td>1</td>
</tr>
<tr>
<td>Leaving hospital today so too late</td>
<td>1</td>
</tr>
<tr>
<td>Would like tips on cutting down just</td>
<td>1</td>
</tr>
<tr>
<td>Have patches to start at some point</td>
<td>1</td>
</tr>
<tr>
<td>Able to manage self</td>
<td>1</td>
</tr>
<tr>
<td>Know already</td>
<td>3</td>
</tr>
</tbody>
</table>

**Quitting history**

When asked about quit attempts, 38.1% (n=32) reported having stopped smoking for one day or longer in the previous 12 months because they were trying to quit smoking. The number of attempts reported ranged from one to ‘over 100’. The average number of quit attempts reported was 5.91 (SD 17.5) and a median of 2.5 attempts (IQR 1-4).

**Aids used**

Among the 32 reporting a quit attempt, 19 reported using a quit aid and 11 reported using more than one aid. The most commonly reported aid was e-cigarettes which were not on the list of options but spontaneously reported by early respondents and thus checked by the interviewer in later surveys.
### Table 4. Quit aids reported during attempts in the last year

<table>
<thead>
<tr>
<th>NRT Aids</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patches</td>
<td>7</td>
</tr>
<tr>
<td>Nicotine inhaler/spray/mist</td>
<td>6</td>
</tr>
<tr>
<td>Nicotine lozenges</td>
<td>2</td>
</tr>
<tr>
<td>Nicotine strips</td>
<td>1</td>
</tr>
<tr>
<td>Nicotine gum</td>
<td>6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other Aids</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-cigarette</td>
<td>9</td>
</tr>
<tr>
<td>Zyban</td>
<td>1</td>
</tr>
<tr>
<td>‘tablets’ prescribed by doctor [name unknown]</td>
<td>1</td>
</tr>
<tr>
<td>Helpline</td>
<td>1</td>
</tr>
<tr>
<td>Acupuncture</td>
<td>1</td>
</tr>
</tbody>
</table>

**Additional aids reported alongside one or more of the above***

- Regular chewing gum: 1
- Food: 1
- Holding pen in her hand: 1
- Being on Zyban for depression and awareness of smoking cessation indication via PIL: 1

*Note: Additional aids reported but not counted alone as using an aid (n=19) or a secondary aid (n=11). These respondents reported these methods in addition to other aids.

**Longest abstinence period achieved**

For the 32 respondents reporting a quit attempt in the last year the duration of their longest abstinence period achieved ranged from one day to one year. The mean was 62.28 days (SD 86.78) with median of 22 days abstinence (IQR 5-91.26). If respondents mentioned e-cigarette usage this was still included as long as there was no regular smoking. Abstinence period was missing for one respondent who only reported abstinence period including abstinence from e-cigarettes (2-3 days).
Current status, motivation and beliefs about quitting

Status at baseline
At baseline, over 40% of current smokers were ‘Thinking about quitting but not planning to’.

Table 5. Status at baseline/Stage of Change (n=83*)

<table>
<thead>
<tr>
<th>Status</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trying to quit (Action)</td>
<td>2</td>
<td>2.41%</td>
</tr>
<tr>
<td>Actively planning to quit (Preparation)</td>
<td>16</td>
<td>19.3%</td>
</tr>
<tr>
<td>Thinking about quitting but not planning to (Contemplation)</td>
<td>34</td>
<td>41.0%</td>
</tr>
<tr>
<td>Not thinking about quitting (Pre-contemplation)</td>
<td>31</td>
<td>37.4%</td>
</tr>
</tbody>
</table>

*Missing for one respondent

Motivation to Stop Scale
In relation to the MTSS, 8.33% (7 smokers) reported that they didn’t want to stop smoking and a further 16.7% (n=14) reported that they think they should stop but don’t really want to. Grouping the first two categories, overall 25.03% did not want to stop at baseline (see Table 6).

Table 6. Motivation to Stop Scale (n=84)

<table>
<thead>
<tr>
<th>Motivation to Stop Scale</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>I don't want to stop smoking</td>
<td>7</td>
<td>8.33</td>
</tr>
<tr>
<td>I think I should stop smoking but don't really want to</td>
<td>14</td>
<td>16.7</td>
</tr>
<tr>
<td>I want to stop but haven't thought about when</td>
<td>11</td>
<td>13.1</td>
</tr>
<tr>
<td>I REALLY want to stop smoking but I don't know when I will</td>
<td>21</td>
<td>25.0</td>
</tr>
<tr>
<td>I want to stop smoking and hope to soon</td>
<td>8</td>
<td>9.52</td>
</tr>
<tr>
<td>I REALLY want to stop smoking and intend to in the next 3 months</td>
<td>9</td>
<td>10.7</td>
</tr>
<tr>
<td>I REALLY want to stop smoking and intend to in the next month</td>
<td>13</td>
<td>15.5</td>
</tr>
<tr>
<td>Don’t know*</td>
<td>1</td>
<td>1.19</td>
</tr>
</tbody>
</table>

*Input as missing
Beliefs about quitting

The majority of smokers felt that quitting would improve their health in the long and short-term and would feel like they had done something worthwhile. Less than half felt they would put on weight but 60% thought it would be harder to handle stress in their lives. Weight and stress also generated greater uncertainty and a number of smokers were unsure how quitting was likely to affect these in their case.

Table 7. Beliefs about quitting (n=84)

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th></th>
<th>No</th>
<th></th>
<th>Unsure</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Health would improve in the short-term</td>
<td>73</td>
<td>86.9%</td>
<td>6</td>
<td>7.14%</td>
<td>5</td>
<td>5.95%</td>
</tr>
<tr>
<td>Health would improve in the long-term</td>
<td>80</td>
<td>95.2%</td>
<td>2</td>
<td>2.38%</td>
<td>2</td>
<td>2.38%</td>
</tr>
<tr>
<td>Would put on weight</td>
<td>41</td>
<td>48.8%</td>
<td>24</td>
<td>28.6%</td>
<td>19</td>
<td>22.6%</td>
</tr>
<tr>
<td>Harder to handle stress</td>
<td>51</td>
<td>60.7%</td>
<td>19</td>
<td>22.6%</td>
<td>14</td>
<td>16.7%</td>
</tr>
<tr>
<td>Would feel done something worthwhile</td>
<td>77</td>
<td>91.7%</td>
<td>4</td>
<td>4.76%</td>
<td>3</td>
<td>3.57%</td>
</tr>
</tbody>
</table>

Some who felt quitting would cause stress added ‘at the moment’ referring to their current mental health and another felt that just the withdrawal would be associated with stress.
Quit at Follow-up

Four participants refused follow-up at baseline and a further 8 were lost to follow-up. Follow-up interviews were completed with 70 participants (68 via telephone, 2 face-to-face, See Figure 5.1). One participant was followed up at 6 months rather than at 3 months but had not quit or made any quit attempts since baseline meaning this data remained comparable. On average there were 95.1 days (SD 11.57) between baseline and follow-up interviews.

One additional participant provided smoking status only at follow up (still smoking) and was unwilling to complete the rest of the survey. A proxy follow-up smoking status was also secured in the case of another participant (still smoking) who was unwell and therefore unable to participate at follow up.

Among these 72 respondents, 12 (16.7%) reported they had quit smoking at follow-up. One of these 12 was an e-cigarette user who had resumed smoking cigarettes in hospital but had planned to switch back to e-cigarette upon leaving. CO tests were completed by 5 of the 12 self-reported quitters in order to validate abstinence and all tested respondents were confirmed as being quit (Table 8).

**Table 8. Status at 3-months follow up (n=72)**

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-reported quitter</td>
<td>12</td>
<td>16.7%</td>
</tr>
<tr>
<td>CO tested</td>
<td>5</td>
<td>6.94%</td>
</tr>
<tr>
<td>CO validated</td>
<td>5</td>
<td>6.94%</td>
</tr>
<tr>
<td>Self-reported cut down</td>
<td>19</td>
<td>26.4%</td>
</tr>
</tbody>
</table>

In addition to the 16.7% quit rate a further 26.4% (n=19) reported they had cut-down on smoking since their baseline interview. One of the 12 self-reported quitters noted that while she had not smoked in two weeks, she did not consider herself ‘fully quit’ and ‘might have one if stressed or on a night out’ while another reported having one when friends offer now, though no longer buying herself.

When asked how they felt they had managed to quit, five mentioned an e-cigarette/vaping*, two mentioned lozenges and one mentioned a ‘Nicorette pipe’. Four did not report any NRT or e-cigarette usage at telephone follow-up although one of these respondents later showed the interviewer an e-cigarette upon meeting for the CO test meaning there were six known e-cigarette users among the 12 quitters.
RE-AIM

As described in Chapter 5 a number of patients reported instances of HCP advice from staff beyond the study hospital. These are described in more detail in relation to the adoption domain of the RE-AIM framework in Table 9 below.

Table 9. Adoption of smoking cessation advice including discussion of ways of quitting by HCPs beyond SPUH

<table>
<thead>
<tr>
<th>Case</th>
<th>HCP</th>
<th>Advice</th>
<th>Patient initiated?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>GP</td>
<td>Try e-cigarette</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>GP</td>
<td>Patches</td>
<td>✓</td>
</tr>
<tr>
<td>3</td>
<td>GP</td>
<td>E-cigarette and patches</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>GP</td>
<td>E-cigarette</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Non-psychiatric consultant (private)</td>
<td>Try e-cigarette/patches</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Non-psychiatric consultant (private)</td>
<td>Could not recall specifics but was advised on ways</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Doctors and nurses at HSE hospital</td>
<td>Patches</td>
<td></td>
</tr>
</tbody>
</table>
Appendix 18: HSE Outline of Low Literacy Resource Smoking Cessation Programme

Training in Facilitation of the Low Literacy Programme for Smoking Cessation

7 out of 10 smokers say they want to quit, but it’s not that easy..... many smokers need intensive personal support to help them stop. The Low Literacy Programme for Smoking Cessation provides this support service.

What is the Low Literacy Programme for Smoking Cessation?

This programme offers a structured pathway of support for smokers who wish to quit. The programme sets out the preparation, planning and coping strategies essential to support smokers in their decision to stop.

Through this support programme smokers are helped to increase their motivation and confidence to achieve a successful quit. Facilitators understand the effort required to quit and at all times are non-judgemental in their approach and supportive of the smoker to achieve a successful quit and healthier quality of life.

The programme is delivered over a period of 7 sessions, on an individual or group basis, however the programme can be adapted to meet the pace of client readiness. In general Individual session appointments last 30 minutes, group sessions last approximately 90 minutes.

A Smoking Cessation Support Programme manual, which is user friendly and suitable for all levels of literacy, and will be provided to all participants attending the training.
Criteria for attendance

Training in the Facilitation of this programme is targeted at those who have facilitation skills, have a dedicated role in offering smoking cessation support and have the capacity and time within their role and management support to implement this programme.

Participants must:

- have previously attended the Brief Intervention for Smoking Cessation (BISC) Training;
- have time within their role to facilitate the smoking cessation programme;
- and be non-smokers or ex-smokers for a minimum of one year.

Stopping smoking is the single most important thing you can do to improve your health

Low Literacy Resources for Smoking Cessation

Summary

Low Literacy Resources for Smoking Cessation.

The Low Literacy Resources for Smoking Cessation contains the essential resources necessary to support a smoker in preparing to stop smoking; in making a successful quit attempt; and in sustaining that attempt over time. The resources, which are intended to be used over a period of 7 sessions, have been specifically designed and developed to support smokers with low literacy levels.

The Low Literacy Resources for Smoking Cessation have been approved by the National Adult Literacy Agency.

Description

As facilitators of smoking cessation support programmes, with both groups and individuals, we identified literacy difficulties among many sectors of the community. These difficulties, combined with the lack of appropriate resources to assist positive behaviour change in smoking cessation, impacted on smokers’ confidence and ability to engage with the smoking cessation programme.

In order to address this need and to be more inclusive of all smokers including those with low literacy levels; with English as a second language; and in areas of disadvantage we have developed these user friendly Low Literacy Resources for Smoking Cessation.
The accompanying resource pack sets out in a stage by stage process the resources essential to support smokers to prepare, plan and stop smoking and to sustain this attempt.

The resource pack was developed over a 6 month period from January 2006 and pilot tested from June to December 2006. We have been using the Low Literacy Resources for Smoking Cessation since January 2007.

**Benefits/Outcomes**

The Low Literacy Resources for Smoking Cessation have been positively evaluated by participants, and facilitators of the 7-week Smoking Cessation Programme, including those from the Traveller Community, Mental Health and Disability settings.

In addition, the resources have been well received by all smokers, regardless of literacy levels, and are now being favoured for use with all smokers registering for the Smoking Cessation Programme.

**Participants** attending the smoking cessation programmes have found these resources to be

- highly visual
- user-friendly
- easy to understand

**Facilitators** of smoking cessation support have found that the resources

- Are client focused and non-threatening
- Simplify the registration process for clients
- Assist clients’ understanding of the structure and format of the smoking cessation programme
- Facilitate client engagement with the programme
- Increase client self-awareness of their smoking pattern and facilitate open discussion on personal barriers to behaviour change
- Facilitate client reflection and development of personal coping strategies
- Increase client confidence and empower them to take the essential steps to make a positive quit attempt
- Increase client retention – smokers are more likely to remain committed to the programme

Requests from colleagues in smoking cessation facilitation in other regions have led to the Low Literacy Resources for Smoking Cessation being developed in this resource pack. The accompanying CD makes the resources available in an accessible, cost efficient and user friendly format. The simplicity of the Low Literacy Resources for Smoking Cessation allows
for printing resources as and when required, with the provision to localise contact numbers and support services, and permits use over time.
Appendix 19: Map of CHO areas

Figure 1. Nine Community Healthcare Organisations in Ireland: Study included Areas 6, 7 and 9
Appendix 19.1 Map of 21 EVE centres

Figure 2. Map of 21 EVE centres
Appendix 20: Study 3 - Ethical approval

Dr. Margaret Webb
General Manager
Bró Chaoimhín
Cork Street
Dublin 8

28th April 2016

Re: An Evaluation of the implementation of the HSE Low Literacy Resources for
Smoking cessation in EVE services

REC Reference: 2016 - 04 Chairman’s action (12)
(Please quote reference on all correspondence)

Dear Dr. Webb,

Thank you for your recent application to SJH/AMNCH Research Ethics Committee in
which you requested ethical approval for the above named study.

The Chairman, Dr. Peter Lavin, on behalf of the Research Ethics Committee, has
reviewed this application and grants ethical approval for it to proceed.

The following documents were reviewed and approved:
- Standard Application Form
- Appendices 1 – 21
- Form with signature

Yours sincerely,

Claire Harrin
Secretary - SJH/AMNCH Research Ethics Committee

The SJH/AMNCH Joint Research and Ethics Committee operates in compliance with and is constituted in accordance with the
European Communities (Clinical Trials on Medicinal Products for Human Use) Regulation 2004 & ICH GCP guidelines.
Appendix 21: Information Leaflet for Service User Quit Smoking Programme Participants

Study title: An Evaluation of the Implementation of the HSE Low Literacy Resources for Smoking Cessation in EVE Services

Participant Information Leaflet

What is the study about?
You are invited to take part in a study to help us evaluate the HSE Low Literacy Resources Smoking Cessation programme being introduced to EVE. The programme, which was designed by the Health Promotion Unit in HSE aims to support people in giving up cigarette use. The programme has been delivered in a number of locations but has not yet been formally evaluated in a day service setting. It is hoped that the evaluation will help us to understand what factors have helped people to quit, whether the programme helped them and if so what was most useful.

Who is being asked to take part in the study?
The study is open to anyone who has attended at least one session of the programme and currently attends an EVE service.

Who is conducting the study?
The study is being conducted by EVE, a department in the HSE and by the Royal College of Surgeons in Ireland.

Do I have to take part?
No, you don’t have to take part. If you decide that you do not wish to take part, your decision will not affect the service you receive from EVE and will not have any negative consequences for you.

What will I be asked to do?
You may recall completing some questionnaires while attending the programme. One questionnaire was called “Your Smoking Habit” while the other questionnaire was an evaluation completed when you left the programme which asked you questions about your views of the
programme and how it helped you. If you decide to take part, you will provide permission for your facilitator to summarise your answers from these questionnaires onto a computer and send these to the research team in EVE. You will also be asked to provide some basic information about yourself but this will not include your name or address. Your facilitator will include the number of sessions you attended. This information will also be sent to the research team in EVE.

The research team will combine your information with the information of other people who take part in the study. The information will be analysed and form the basis of a future publication.

In the second part of this study, some participants may also be invited to discuss smoking and their experience of the programme with a researcher from the Royal College of Surgeons. If you decide you would like to take part, you would be asked some questions in a short interview lasting 30 minutes to 1 hour at most. The interview would be digitally recorded and would take place at the EVE centre at a time that suits you. You would be asked about smoking and your smoking history, the pros and cons of smoking and not smoking, how you feel about the smoke-free policy, motivations and barriers to quitting and your experience on the smoking cessation programme. You don’t have to do any preparation before the interview it will just be like a conversation.

**What if I say yes and then later decide I don’t want to take part?**

If at any stage you decide you do not want to take part anymore, you should tell your facilitator. Your facilitator will make sure that they don’t send your answers to the research team. If they have already sent your answers to the research team however, they will not be able to remove your results as the research team will not know whose results belong to whom.

If you decide to participate in the interview and later change your mind. You can contact the researcher who can remove your interview. If during the interview there are questions you do not like you do not have to answer them and this will be no problem. You can choose to end the interview at any time also.

You can also choose to take part in the initial part of the study only.

**What are the benefits of taking part?**

There are a number of possible benefits by taking part in the research study:

You will be helping us to understand what elements in people’s smoking habits are associated with success in quitting tobacco use.

We will know if people found the programme helpful or not.

We will be able to find out what part of the programme was most useful to people.

We will know if the programme had any effect on your smoking and your opinion on whether it may have helped friends or family to quit too.

Your answers may lead to changes in the way the programme is delivered in EVE in the future.

You will be contributing to what people in Ireland understand about smoking cessation.
What are the risks in taking part?

There are no apparent risks we can think of in taking part. If at any stage however you have any concerns, please discuss these with your facilitator.

Are my answers confidential?

Your facilitator will get to see your answers and part of the programme and evaluation. If you choose to take part your answers to the two questionnaires contained in the programme, and the answers to the questionnaire with some questions about you will be shared with the research team. However, the research team will not know your name or address and thus, cannot identify you.

If you participate in the interview the information you provide will also be kept confidential. The digital recording of your interview will be transcribed and once the transcript has been edited the digital file will be destroyed and the transcript will be anonymised (all names and identifying data will be removed) and held securely for 7 years. You will have the opportunity, should you wish, to review the transcript at a later date for clarification, to add or to change anything. Data will only be discussed or analysed by the research team once it is irrevocably anonymised. You will also be given a fake name in any reports or publications so that anything you say will not identifiable as you meaning the interview will be totally confidential.

Will I be paid for taking part?

There is no payment available for those who choose to take part.

Who is funding the research?

The research is being funded by EVE.

Contacting the Research Team

If you have any further questions concerns, or complaints about this research, you can contact Margaret Webb on 087-2597852 or at mwebb@eve.ie.

Please leave a message if you can’t get through and we will get back to you as soon as possible.

Contact Details:

Margaret Webb on 087-2597852 or at mwebb@eve.ie.

Your facilitator will check in with you after at least one week to see if you would like to take part in some or all parts of the study.
Appendix 22: Consent form for Service User Quit Smoking Programme Participants

An Evaluation of the Implementation of the HSE Low Literacy Resources for Smoking Cessation in EVE Services

Programme Participants

Consent Form

I confirm that (please tick each box)

☐ I have received a copy of the information leaflet and have read through it or have had it read to me and I understand it.

☐ I have had an opportunity to ask questions about the study.

☐ I understand the possible benefits and risks in taking part in the study.

☐ I understand that I don’t have to take part in this study and that I can stop at any time.

☐ I understand that if I choose to take part, the questionnaires I completed on the programme relating to My Smoking Habit and the Evaluation will be sent (without my name) by the facilitator to the research team in EVE by email.

☐ I understand that I will be asked to complete a questionnaire about me, which will not include my name, and that this information will be sent with to the research team also, along with the number of sessions I attended on the programme.

☐ I understand that my name will not be included in the information sent and that I cannot be identified from the information that will be sent.

☐ I would also be happy to be approached to participate in the second part of this study - the one-on-one in-depth interview about smoking and the 7-week programme, where my responses will be recorded.

☐ I understand that all of my information will be stored on a secure computer in the EVE head office and on the Royal College of Surgeons in Ireland secure server.

☐ I understand that my results will be used to evaluate the Smoking Cessation Programme and for reports and publications but will not identify me personally.

☐ I understand that I can withdraw from the study if I want to and this will not have any negative consequences for me. If I withdraw from the study before the summary information is sent, my information will not be included in the research.

☐ I understand that once the summary information is sent to the research team, my information cannot be withdrawn as there will be no way for the research team to identify my information.

☐ I understand that if I have any questions or complaints about this research I can contact Margaret Webb on 087-2597852 or at mwebb@eve.ie.

☐ I am not taking part in any other psychological research at this time (i.e. not involved in any clinical trials, etc.).

☐ I am not aware of any health reasons that would prevent me from participating in this study.

☐ I give permission for my GP/consultant to be informed that I am taking part in this study.
DECLARATION

I HAVE READ OR HAVE HAD READ TO ME, FULLY UNDERSTOOD AND COMPLETED THIS CONSENT FORM. THE ANSWERS I HAVE GIVEN ARE ACCURATE TO THE BEST OF MY KNOWLEDGE. IF I FEEL UNWELL AT ANY STAGE OF TAKING PART, I WILL TELL THE FACILITATOR IMMEDIATELY.

_____________________________   ________________________________
Signed (Your Name)               Facilitator
What is the study about?

You are invited to take part in a study to help us evaluate the implementation of the HSE Low Literacy Resources Smoking Cessation programme being introduced to EVE. The programme, which was designed by the Health Promotion Unit in HSE aims to support people in giving up cigarette use. The programme has been delivered in a number of locations but has not yet been formally evaluated in a day service setting. It is hoped that the evaluation will help us to understand what factors have helped people to quit, whether the programme helped them and what if anything could make the programme more attractive for those who decided not to attend.

Who is being asked to take part in the study?

The study is open to anyone who is a current smoker, has not attended any smoking cessation programme sessions and currently attends an EVE service.

Who is conducting the study?

The study is being conducted by EVE, a department in the HSE and by the Royal College of Surgeons in Ireland.

Do I have to take part?

No, you don’t have to take part. If you decide that you do not wish to take part, your decision will not affect the service you receive from EVE and will not have any negative consequences for you.

What will I be asked to do?

In the first part of this study, you will be asked to provide some basic information about yourself but this will not include your name or address. Your facilitator will include the information that you did not attend any sessions on the programme This information will be sent to the research team in EVE. The research team will combine your information with the information of other people who take part in the study. The information will be analysed and form the basis of a future publication.
In the second part of this study, some participants may also be invited to discuss smoking and their decision to not attend the 7-week programme with a researcher from the Royal College of Surgeons. If you decide you would like to take part, you would be asked some questions in a short interview lasting 30 minutes to 1 hour at most. The interview would be digitally recorded and would take place at the EVE centre at a time that suits you. You would not have to do any preparation before the interview it would just be like a conversation.

What if I say yes and then later decide I don’t want to take part?

If at any stage you decide you do not want to take part anymore, you should tell your facilitator. Your facilitator will make sure that they don’t send your answers to the research team. If they have already sent your answers to the research team however, they will not be able to remove your results as the research team will not know whose results belong to whom.

If you decide to participate in the interview and later change your mind. You can contact the researcher who can remove your interview. If during the interview there are questions you do not like you do not have to answer them and this will be no problem. You can choose to end the interview at any time also.

You can also choose to take part in the initial part of the study only or to participate in an interview only and not complete the initial part of the study.

What are the benefits of taking part?

While there are no direct benefits to participation, participating in the study will provide you with an opportunity for your voice to be heard. Your participation in the study would hopefully help to inform services that you may possibly later benefit from.

Specifically:

You will be helping us to understand whether and possibly how the 7-week smoking cessation programme could be made more attractive

We will be able to find out if people require something else in relation to smoking cessation

We will know how you feel about the smoke free policy EVE has brought in

Your answers may lead to changes in the way programmes are delivered in EVE in the future.

You will be contributing to what people in Ireland understand about smoking and smoking cessation.
What are the risks in taking part?

There are no apparent risks we can think of in taking part. If at any stage however you have any concerns, please discuss these with your facilitator.

Are my answers confidential?

If you choose to participate in part 1 (answering some basic questions about you) your answers will be shared with the research team. However, the research team will not know your name or address and thus, cannot identify you.

If you participate in the interview the information you provide will be kept confidential. The digital recording of your interview will be transcribed and once the transcript has been edited the digital file will be destroyed and the transcript will be anonymised (all names and identifying data will be removed) and held securely for 7 years. You will have the opportunity, should you wish, to review the transcript at a later date for clarification, to add or to change anything. Data will only be discussed or analysed by the research team once it is irrevocably anonymised. You will also be given a fake name in any reports or publications so that anything you say will not identifiable as you meaning the interview will be totally confidential.

Will I be paid for taking part?

There is no payment available for those who choose to take part.

Who is funding the research?

The research is being funded by EVE.

Contacting the Research Team

If you have any further questions concerns, or complaints about this research, you can contact Margaret Webb on 087-2597852 or at mwebb@eve.ie.

Please leave a message if you can’t get through and we will get back to you as soon as possible.

Contact Details:

Margaret Webb on 087-2597852 or at mwebb@eve.ie.

Your facilitator will check in with you after at least one week to see if you would like to take part in one or both parts of the study.
Appendix 24: Consent form for Service User Quit Smoking Programme Non-Attenders

An Evaluation of the Implementation of the HSE Low Literacy Resources for Smoking Cessation in EVE Services

Non-attenders

Consent Form

I confirm that (please tick each box)

☐ I have received a copy of the information leaflet and have read through it or have had it read to me and I understand it.

☐ I have had an opportunity to ask questions about the study.

☐ I understand the possible benefits and risks in taking part in the study.

☐ I understand that I don’t have to take part in this study and that I can stop at any time.

☐ I understand that I will be asked to complete a questionnaire about me, which will not include my name, and that this information will be sent with to the research team, along with the information that I did not attend any sessions on the programme.

☐ I understand that my name will not be included in the information sent and that I cannot be identified from the information that will be sent.

☐ I would also be happy to be approached to participate in the second part of this study - the one-on-one in-depth interview about smoking and the 7-week programme and my decision to not attend (where my responses will be recorded).

☐ I understand that all of my information will be stored on a secure computer in the EVE head office and on the Royal College of Surgeons secure server.

☐ I understand that my results will be used to evaluate the implementation of the Smoking Cessation Programme and for reports and publications but will not identify me personally.

☐ I understand that I can withdraw from the study if I want to and this will not have any negative consequences for me. If I withdraw from the study before the summary information is sent, my information will not be included in the research.

☐ I understand that once the summary information is sent to the research team, my information cannot be withdrawn as there will be no way for the research team to identify my information.

☐ I understand that if I have any questions or complaints about this research I can contact Margaret Webb on 087-2597852 or at mwebb@eve.ie.

☐ I am not taking part in any other psychological research at this time (i.e. not involved in any clinical trials, etc.).

☐ I am not aware of any health reasons that would prevent me from participating in this study.

☐ I give permission for my GP/consultant to be informed that I am taking part in this study.
DECLARATION

I HAVE READ OR HAVE HAD READ TO ME, FULLY UNDERSTOOD AND COMPLETED THIS CONSENT FORM. THE ANSWERS I HAVE GIVEN ARE ACCURATE TO THE BEST OF MY KNOWLEDGE. IF I FEEL UNWELL AT ANY STAGE OF TAKING PART, I WILL TELL THE FACILITATOR IMMEDIATELY.

___________________________________  __________________________________
Signed (Your Name)                    Facilitator
Appendix 25: Text for email Online Survey for Centre Managers/Facilitators

Text for email

Online Survey

Dear Centre Manager/Smoking Cessation Course Facilitator,

We would like to invite you to take part in a study to evaluate the smoking cessation programme that took place in your centre.

What is the study about?

You are invited to take part in a study to help us evaluate the HSE Low Literacy Resources Smoking Cessation programme being introduced to EVE. The programme, which was designed by the Health Promotion Unit in HSE aims to support people in giving up cigarette use. The programme has been delivered in a number of locations but has not yet been formally evaluated in a day service setting. It is hoped that the evaluation will help us to understand what factors have helped people to quit, whether the programme helped them and if so what was most useful. The title of the study is “An Evaluation of the Implementation of the HSE Low Literacy Resources for Smoking Cessation in EVE Services”

Who is being asked to take part in the study?

This part of the study is open to Smoking Cessation Facilitators and EVE Centre Managers whose centres offered the Low Literacy Resources for Smoking Cessation programme.

Who is conducting the study?

The study is being conducted by EVE, a department in the HSE and by the Royal College of Surgeons in Ireland.

Do I have to take part?

No, you don’t have to take part. If you decide that you do not wish to take part, your decision will not affect your standing in EVE and will not have any negative consequences for you.

What will I be asked to do?

You will be asked to answer some questions in an online survey. The survey asks some descriptive questions about you, your opinion in relation to the smoking cessation
programme, and the numbers of participants who either quit or cut down on their tobacco usage.

Centre managers and facilitators will also be invited to participate in a focus group or individual in-depth interview. You would be asked to discuss your views on smoking and smoking cessation in those with mental health difficulties, the 7-week programme and barriers and facilitators to implementation of same. The interview or focus group would be digitally recorded and would take place at the EVE centre or at Bru Chaoimhin at a time that suits you. No preparation would be required in advance of the interview/focus group as it will just be like a conversation.

**What if I start and then decide I don’t want to take part?**

If you start the questionnaire but decide you do not want to take part you can close your browser. No answers are recorded until you press the submit button.

If you decide to participate in an interview and later change your mind. You can contact the researcher who can remove your interview. If during the interview/focus group there are questions you do not like you do not have to answer them and this will be no problem. You can choose to end the interview at any time also. In relation to focus groups as other participants will be involved it will be more difficult to end the group and to extract one participant’s data afterwards.

You can also choose to take part in the initial part of the study only.

**What are the benefits of taking part?**

If you decide to take part in the study you will be contributing to our understanding of what was helpful and unhelpful in relation to this programme. This may assist us in delivering future programmes.

**What are the risks in taking part?**

There are no apparent risks in taking part in this survey.

**Are my answers confidential?**

Yes. The research team will not know your name or your email address.
If you participate in an interview/focus group the information you provide will also be kept confidential. Although, in the case of a focus group your contributions will of course be heard by the other participants that are present. The digital recording of the interview/focus group will be transcribed and once the transcript has been edited the digital file will be destroyed and the transcript will be anonymised (all names and identifying data will be removed) and held securely for 7 years. You will have the opportunity, should you wish, to review the transcript at a later date for clarification, to add or to change anything. Data will only be discussed or analysed by the research team once it is irrevocably anonymised. You will also be given a fake name in any reports or publications so that anything you say will not identifiable as you.

Will I be paid for taking part?

There is no payment available for those who choose to take part.

Who is funding the research?

The research is being funded by EVE.

Contacting the Research Team

If you have any further questions concerns, or complaints about this research, you can contact a member of the Research Team, Margaret Webb at 087-2597852. Please leave a message if you can’t get through and we will get back to you as soon as possible.

Contact Details:

Margaret Webb, on 087-2597852 or at mwebb@eve.ie

Please take some time to consider whether or not you would like to take part before commencing the survey. If you decide you would like to answer the survey please click the following link
https://docs.google.com/forms/d/1AEoaT9aQGNRhtuS1CD2XpnopdIpTcAXHUAK5bxgJw4/viewform?usp=send_form
Appendix 26: Online Consent form for Centre Managers/Facilitators

An Evaluation of the Implementation of the HSE Low Literacy Resources for Smoking Cessation in EVE services

Online Survey for Centre Managers/Facilitators

Consent Form

I confirm that (please click each box)

☐ I have received a copy of the information leaflet and have read through it or have had it read to me and I understand it.
☐ I have had an opportunity to ask questions about the survey.
☐ I understand the possible benefits and risks in taking part in the survey.
☐ I understand that I don’t have to take part in the survey and that I can stop at any time by closing the internet browser.
☐ I understand that if I decide not to take part in the survey, this will not affect my participation in EVE.
☐ I understand that the research is being conducted by EVE, a department in HSE.
☐ I understand that the survey will involve me answering questions about my opinions on facilitating the Smoking Cessation programme in EVE.
☐ I would also be happy to be approached to participate in the second part of this study - the one-on-one in-depth interview/focus groups about smoking and the 7-week programme and its implementation.
☐ I understand that my answers will be anonymous (i.e. will not include my name and therefore I cannot be identified).
☐ I understand that if I withdraw from the study before I complete the survey, my information will not be included in the research.
☐ I understand that my information will be stored on a secure computer server in EVE head office and on the Royal College of Surgeons secure server.
☐ I understand that EVE intends to publish this research study.
☐ I understand that if I have any questions about this research I can contact Margaret Webb, 087-2597852 or mwebb@eve.ie
☐ I am not taking part in any other psychological research at this time (i.e. not involved in any clinical trials, etc.).

DECLARATION

I HAVE READ, FULLY UNDERSTOOD AND COMPLETED THIS CONSENT FORM. THE ANSWERS I HAVE GIVEN ARE ACCURATE TO THE BEST OF MY KNOWLEDGE.

If you wish to take part in the survey, please proceed onto the next page. If you do not want to take part, please close your internet browser.
Appendix 27: Online Survey Debriefing Form for Centre Managers/Facilitators

An Evaluation of the Implementation of the HSE Low Literacy Resources for Smoking Cessation in EVE Services

Online Survey Debriefing Form for Centre Managers/Facilitators

Thank you for taking part in the survey.

What is the purpose of this survey?
The aim of the survey was to contribute to the evaluation of the HSE Low Literacy Resources for Smoking Cessation Programme being delivered in EVE. The answers you provided on the survey will help us understand what has worked well and what could be improved to make the programme more successful and helpful to people in the future.

Are my comments confidential?
Yes. The research team will not know whose answers belong to whom.

Who do I contact if I have questions?
If you have any questions you can contact a member of the Research Team:
Margaret Webb, on 087-2597852 or at mwebb@eve.ie

Feedback
Your answers will be combined with other peoples’ answers and analysed statistically. The results will be used in a publication of the research. You are welcome to view the full text of the final report that will arise from this research once it is published.

Finally
Thank you again for taking the time to get involved in the smoking cessation programme. Hopefully you have found your involvement rewarding and enjoyable. Your answers and those of others will help us to make our smoking cessation efforts more successful.

Contact Details: Margaret Webb, on 087-2597852 or at mwebb@eve.ie
Reminder text to be used for Centre Managers and Facilitators:

**Reminder #1:**

**Dear Centre Managers and Smoking Cessation Facilitators,**

Many thanks to those of you who have already completed the online survey gathering your opinions on the Smoking Cessation programme. Your feedback will have a significant bearing on the future roll out of the programme and will be really useful in our understanding of what has and hasn’t been helpful in the roll out of this important project.

If you haven’t already completed the survey, we would ask you to consider taking part as your views are important. The survey will take you about 10 minutes to complete. We have included information on the survey and a link to the survey itself in the text below.

Many thanks for your time,

Research Team,

**An Evaluation of the Implementation of the HSE Low Literacy Resources for Smoking Cessation in EVE Services**

**What is the study about?**

You are invited to take part in a study to help us evaluate the HSE Low Literacy Resources Smoking Cessation programme being introduced to EVE. The programme, which was designed by the Health Promotion Unit in HSE aims to support people in giving up cigarette use. The programme has been delivered in a number of locations but has not yet been formally evaluated in a day service setting. It is hoped that the evaluation will help us to understand what factors have helped people to quit, whether the programme helped them and if so what was most useful. The title of the study is “An Evaluation of the Implementation of the HSE Low Literacy Resources for Smoking Cessation in EVE Services”
Who is being asked to take part in the study?

This part of the study is open to Smoking Cessation Facilitators and EVE Centre Managers whose centres offered the Low Literacy Resources for Smoking Cessation programme.

Who is conducting the study?

The study is being conducted by EVE, a department in the HSE.

Do I have to take part?

No, you don’t have to take part. If you decide that you do not wish to take part, your decision will not affect your standing in EVE and will not have any negative consequences for you.

What will I be asked to do?

You will be asked to answer some questions in an online survey. The survey asks some descriptive questions about you, your opinion in relation to the smoking cessation programme, and the numbers of participants who either quit or cut down on their tobacco usage.

What if I start and then decide I don’t want to take part?

If you start the questionnaire but decide you do not want to take part you can close your browser. No answers are recorded until you press the submit button.

What are the benefits of taking part?

If you decide to take part in the study you will be contributing to our understanding of what was helpful and unhelpful in relation to this programme. This may assist us in delivering future programmes.
What are the risks in taking part?

There are no apparent risks in taking part in this survey.

Are my answers confidential?

Yes. The research team will not know your name or your email address.

Will I be paid for taking part?

There is no payment available for those who choose to take part.

Who is funding the research?

The research is being funded by EVE.

Contacting the Research Team

If you have any further questions concerns, or complaints about this research, you can contact a member of the Research Team, Margaret Webb, at 087-2597852 or mwebb@eve.ie. Please leave a message if you can’t get through and we will get back to you as soon as possible.

Contact Details:

Margaret Webb, at 087-2597852 or mwebb@eve.ie

Please take some time to consider whether or not you would like to take part before commencing the survey. If you decide you would like to answer the survey please click the following link

https://docs.google.com/forms/d/1AEoaT9aQGNRhtuS1CD2XCnopdIpTcAXHUAK5bxgJw4/viewform?usp=send_form
Reminder #2

Dear Centre Managers and Smoking Cessation Facilitators,

Once again, many thanks to those of you who have already responded to the online survey. Your answers will make a really helpful contribution to future roll outs of this very important initiative. If you haven’t yet decided whether or not to take part, we would be very grateful if you could read through the information contained below which outlines the study and provides a link to the survey itself.

Many thanks for your time,

Research Team,

An Evaluation of the Implementation of the HSE Low Literacy Resources for Smoking Cessation in EVE Services

What is the study about?

You are invited to take part in a study to help us evaluate the HSE Low Literacy Resources Smoking Cessation programme being introduced to EVE. The programme, which was designed by the Health Promotion Unit in HSE aims to support people in giving up cigarette use. The programme has been delivered in a number of locations but has not yet been formally evaluated in a day service setting. It is hoped that the evaluation will help us to understand what factors have helped people to quit, whether the programme helped them and if so what was most useful. The title of the study is “An Evaluation of the Implementation of the HSE Low Literacy Resources for Smoking Cessation in EVE Services”

Who is being asked to take part in the study?

This part of the study is open to Smoking Cessation Facilitators and EVE Centre Managers whose centres offered the Low Literacy Resources for Smoking Cessation programme.

Who is conducting the study?

The study is being conducted by EVE, a department in the HSE.

Do I have to take part?

No, you don’t have to take part. If you decide that you do not wish to take part, your decision will not affect your standing in EVE and will not have any negative consequences for you.
What will I be asked to do?
You will be asked to answer some questions in an online survey. The survey asks some descriptive questions about you, your opinion in relation to the smoking cessation programme, and the numbers of participants who either quit or cut down on their tobacco usage.

What if I start and then decide I don’t want to take part?
If you start the questionnaire but decide you do not want to take part you can close your browser. No answers are recorded until you press the submit button.

What are the benefits of taking part?
If you decide to take part in the study you will be contributing to our understanding of what was helpful and unhelpful in relation to this programme. This may assist us in delivering future programmes.

What are the risks in taking part?
There are no apparent risks in taking part in this survey.

Are my answers confidential?
Yes. The research team will not know your name or your email address.

Will I be paid for taking part?
There is no payment available for those who choose to take part.

Who is funding the research?
The research is being funded by EVE.

Contacting the Research Team
If you have any further questions concerns, or complaints about this research, you can contact a member of the Research Team, Margaret Webb, 087-2597852 or mwebb@eve.ie. Please leave a message if you can’t get through and we will get back to you as soon as possible.

Contact Details:
Margaret Webb, 087-2597852 or mwebb@eve.ie

Please take some time to consider whether or not you would like to take part before commencing the survey. If you decide you would like to answer the survey please click the following link
https://docs.google.com/forms/d/1AEoaT9aQGNRhtuS1CD2XCpnpdIpTcAXHUAKSbxgJw4/viewform?usp=send_form
Appendix 29: Service User interview guide
EVE service user interview guide

Background information

- Interviewer to record site (will be assigned a codename or number in write up so participants do not become identifiable), interview number and date.
- Record age and sex of participant
- No questions on diagnosis possible but could ask about employment/education? Or how much they use EVE service perhaps?

Smoking behaviour, smoking history and feelings about smoking (current and past)

- Do you smoke? (establishing if current smoker/quit/reduced)
- What do you smoke (cigarettes? Roll your own? etc.)
- Age started, why started, consumption (how much smoke now/did smoke and how long been smoking that much/how long smoked that much?)
- When they started? Where? Why?
- How do you feel about smoking?...Probe: how feel now –vs- how felt in the past if different?
  - What do/did you like about smoking?
  - What do/did you not like about smoking?
  - Views of others (friends, family, EVE staff) e.g. and what about your friends how do they feel about smoking?...and the staff here at EVE?...and your family?
- Are/Were there: times when you smoke more?
- Times when you smoke(d) more or less?
- Places where you smoke(d) more or less?
- Do you have much contact with other smokers? (Who? Where? e.g. at home)

Smoke free policy

- How do you feel about the smoke free policy / tobacco free campus policy which is going to be/has been implemented here?
  - Probe feelings further whether positive or negative or mixed...‘could you tell me why do you feel that way? Can you tell me a bit more about that?’

Quitting/smoking cessation

- Have you tried to quit before?
- Have you been advised to quit before? Have you been offered help with quitting before?
- Do you know other smokers who want to quit?
Smoking and health

- Can you tell me a bit about:
  - Smoking and your physical health
  - Smoking and your mental health

- Impact of mental health problem if any on quitting smoking?
- Impact of physical health if any on quitting? (Probe to see if motivator)
- Do you know other smokers who have smoking-related illnesses?

Status/Motivation to Quit

- Want to quit? Have quit?
  - Why? Why not? (diseases could come up here)
  - How do you feel about quitting?
- What helps or would help you to quit?
- What does not help?
- What motivates you to quit?

Smoking cessation help

- Have other health professionals (outside of EVE) talked to you about smoking?
- Who?
- When/where?
- Tell me more...[what did they say/advise]
- Who brought it up (i.e. patient or professional?)

Previous quit attempts

- Tried to quit in past?
- When? [getting at times they feel are suitable e.g. not when in hospital? Or when MH not at best?]

E-cigarettes

- How do you feel about e-cigarettes or vaping?
7-week smoking cessation programme*

- How did you feel about the 7 week quit smoking programme you participate in here at X?
  - Can you tell me about your experience...
  - Probe: Can you tell me more about that..
- What did you like about the programme? /what was good? What helped?
- What did you not like? What did not help?
- How could the programme be better?
- What was the biggest motivation for you to join the programme?
- Was there anything else you needed that wasn’t available?

Wrapping-up

- Thanks very much for participating and is there anything else you’d like to add that you think is relevant or do you have any questions?

*Non-attenders in place of the above programme evaluation questions will be asked:

- What do you know about the programme?
- Can you tell me a bit about why you decided not to attend the programme?
- Is there anything else that would make the programme more attractive/appealing to you?
Appendix 30: Revised Service User interview guide after first two interviews

EVE service user interview guide / Theme sheet

Tell me a bit about smoking and you....
- What place does smoking have in your life?
- How do you feel about smoking?...Probe: how feel now –vs- how felt in the past if different?
  - Why do you smoke now? (and in the past)...do you think..tell me more
  - Is that different to why you smoked in that past?
- What do/did you like about smoking?...still?....in past...[BARRIERS]
- What do/did you not like about smoking?
- Views of others
  Wondering how do other ppl in your life feel about smoking ?
  (friends? Family? Healthcare ppl? And the staff here at EVE ? fellow Service users here?)
  E.G....and your family how do they feel about smoking?
- Are/Were there: times when you smoke more/less?
- Places where you smoke(d) more or less?
- Do you have much contact with other smokers? (Who? Where? e.g. at home)

Quitting/smoking cessation
- Have you tried to quit before/in the past?
- Can you tell me a bit about your previous quit attempts?
  - How managed?
  - When....Why then?
- Do you know other smokers who want to quit?
- How do you feel about quitting?
- Why do you want to quit? Why not? What motivates you/would motivate you? makes you want to?
  - And what about others? Or other smokers you know? Same or different?
- What makes it hard for you to quit or stay off? Tell me more about that [BARRIERS]
- And for ppl in general/other?..what do you think makes it hard?
- What helps or would help you to quit?..tell me more [FACILITATORS]
- And what about ppl in general
- What does not help you to quit?
Smoking and health (phys and mental)
- Can you tell me a bit about:
  - Smoking and your physical health
  - Smoking and your mental health
- (e.g. any relationship, association, does x influence y or y influence x...or no association for you)
- What impact if any does your mental health have on you quitting?...and physical health?
- Do you know other smokers who have smoking-related illnesses?
- Know other smokers with MH difficulties?

Smoking cessation help
- Have other health professionals (outside of EVE) (like doctors maybe) discussed smoking with you or discussed quitting?
- Who?
- When/where?
- Tell me more...[what did they say/advise]
- Who brought it up (i.e. patient or professional?)
- Advised to quit?
- Offered help?
- How did you feel about that? OR How would you feel if they did?

7-week smoking cessation programme*
- How did you feel about the 7 week quit smoking programme you participate in here at X?
  - Can you tell me about your experience...
    - Probe: Can you tell me more about that..
- What did you like about the programme? /what was good? What helped?
- What did you not like? What did not help?
- How could the programme be better?
- What was the biggest motivation for you to join the programme?
- Was there anything else you needed that wasn’t available?

*Non-attenders in place of the above programme evaluation questions will be asked:
- What do you know about the programme?
- Can you tell me a bit about why you decided not to attend the programme?
- Is there anything else that would make the programme more attractive/appealing to you?

Smoke free policy
- How do you feel about the smoke free policy / tobacco free campus policy which is going to be/has been implemented here?
  - Probe feelings further whether positive or negative or mixed...’could you tell me why do you feel that way? Can you tell me a bit more about that?’
E-cigarettes/vaping – how do you feel about? (Tell me more…)

Wrapping-up

- Thanks very much for participating and is there anything else you’d like to add that you think is relevant or do you have any questions?
Appendix 31: Facilitator/Staff interview guide

EVE staff/facilitator interview guide

Background information

- Interviewer to record site (will be assigned a codename or number in write up so participants do not become identifiable), interview number and date.
- Record age and sex of participant
- Ask re length in position and prior experience (nice way to warm-up and in other studies turned out to be important for staff in helping clients on smoking cessation programme) e.g. Can you tell me a bit about how long you’ve been working here and what you did before? Ask about education too (in another qualitative study it emerged staff felt their prior experience etc. was important in assisting in smoking cessation)

Own smoking history

- Are you a former smoker? (If so) Can you tell me a little about your smoking history? (status, when quit, how long smoked and how much?)

Smoke free policy

- How do you feel about the smoke free policy / tobacco free campus policy which is going to be/has been implemented here?
  - Probe feelings further whether positive or negative or mixed...‘could you tell me why do you feel that way? Can you tell me a bit more about that?’

Views on smoking and smoking cessation in people with mental health difficulties

- Can you tell me about your experience of working with people with mental health difficulties who smoke?
- What are your views on why people with mental health difficulties smoke?
- In relation to quitting smoking, what do you feel are the barriers and facilitators for people with mental health difficulties
  - So first the barriers, what would hinder them?
  - Ok and the facilitators, what helps?

Role

- And in relation to your own role in encouraging or supporting smoking cessation (as facilitator of the programme) – what are the barriers and facilitators for you in that role?
- Do you feel your own smoking or smoking history is a factor? How?
• How important do you feel smoking cessation is for EVE clients/people with mental health difficulties? (how much of a priority?)

• Damage relationship? Worry?

• Ask about knowledge of smoking cessation guidelines?
• What training and/or education have you received in relation to smoking and smoking cessation?

7-week Programme

• How did you find the 7 week low literacy program?
  ° Tell me more?

• How do you think users found it/felt about it?
• How successful was it?
• Do you think clients will quit smoking as a result of this programme?
• Do you think this programme would be the first time clients would have actually been helped to quit?
  ° If not, can you tell me more about where/when you think they may have been helped or offered help before?

• Barriers to implementation? / What helped?
• Facilitators to implementation? / What hindered?

• What would maybe improve the programme?
• Or make for more successful implementation?

• Do you think many of EVE’s clients suffer from smoking-related conditions or illnesses? (Probe to see if motivator for clients etc.)
  ° Can you tell me more about that?

Wrapping-up

• Thanks very much for participating and is there anything else you’d like to add that you think is relevant or do you have any questions?
Appendix 32: Revised Facilitator/Staff interview guide following completion of Service User Interviews

Smoke-free policy

- How did you feel about the smokefree policy coming in?
- How do you feel now?
- How users felt/feel......and staff?
- How went in end?
- How successful was implementation?...challenges?

QSP training

- How did you find the QSP training? ...what was involved?

QSP (manual/binder on table for reference)

- What was your experience of facilitating the low literacy Quit smoking Programme (materials – the resource itself, comments on design?)
- Is there anything you can think of that might improve it/the experience?
- How do you think service users found it/felt about it? (attendees, non-attendees)
- What did you like about the QSP or what parts did you think were good?
- Was there parts you didn’t like – parts you thought did not work so well

QSP Implementation

... now I want to move on and talk a bit about implementing the programme

- What helped get QSP going at your centre?
- Were there any barriers to getting QSP going at your site? – any main issues?
- What would make it easier to implement or smoother – what would help if anything?

Smoking and mental health difficulties

- What are your views on...?
- What are your views on smoking cessation and mental health difficulties
- Barriers to quitting... what hinders
- Facilitators to quitting...what helps
- Or is it different?
E-cigarettes

- views

Smoking and physical health: EVE staff/service users

- impact? – any effect?
- Motivator or not?

Views on non-attendees?[services users who smoke but did not engage]

- How make more attractive/ relevant?

Role/help

- Do service users get asked about smoking much? [yes-who]...[no...any reasons]
- Do you feel they should? By who? Or what are your thoughts on that?
- Whose role is it to do that....do you think it should be yours/the centres?
- Feel comfortable in this role or?

Own smoking history?

- Makes a difference?

Wrapping-up

- Thanks very much for participating and is there anything else you’d like to add that you think is relevant or do you have any questions?
Appendix 33: Peer Review Publication

Exploring smoking, mental health and smoking-related disease in a nationally representative sample of older adults in Ireland – a retrospective secondary analysis

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Abstract

**Objective:** Smoking is the leading preventable cause of death among individuals with mental health difficulties (MHD). The aim of the current study was to determine the impact of smoking on the physical health of older adults with MHD in Ireland and to explore the extent to which smoking mediated or moderated associations between MHD and smoking-related diseases.

**Methods:** Cross-sectional analysis of a nationally representative sample of 8,175 community-dwelling adults aged 50 and over from The Irish Longitudinal Study on Ageing (TILDA) was undertaken. Multivariate adjusted logistic regression models were used to assess the association between MHD, smoking (current/past/never) and smoking-related diseases (respiratory disease, cardiovascular disease, smoking-related cancers). A number of variables were employed to identify individuals with MHD, including prescribed medication, self-reported diagnoses and self-report scales.

**Results:** MHD was associated with current (RRRs ranging from 1.84 [1.50 to 2.26] to 4.31 [2.47 to 7.53]) and former (RRRs ranging from 1.26 [1.05 to 1.52] to 1.99 [1.19 to 3.33]) smoking and also associated with the presence of smoking-related disease (ORs ranging from 1.24 [1.01 to 1.51] to 1.62 [1.00 to 2.62]). Smoking did not mediate and rarely moderated associations between MHD and smoking-related disease.

**Conclusions:** Older adults in Ireland with MHD are more likely to smoke than those without such difficulties. They also experience higher rates of smoking-related disease, although smoking had no mediating and no consistent moderating role in these analyses. Findings underscore the need for attention to the physical health of those with MHD including support in smoking cessation.

**Key words:** Smoking, Mental Health Disorders, Smoking-related Disease, Older adults, Ireland

**Highlights**
- Secondary analysis of a nationally representative sample of older adults in Ireland.
- Examined associations between mental health difficulties (MHD) and smoking and between MHD and smoking-related disease.
- MHD was associated with both smoking and smoking-related disease.
- Smoking did not mediate or consistently moderate associations between MHD and smoking-related disease.
- Need for attention to the physical health of those with MHD including intensive smoking cessation support.
Introduction

Background
General population smoking prevalence has reached an all-time low of 19% in the UK and 19.5% in Ireland (284, 285). Mental health difficulties (MHD) as identified via various indicators including diagnostic or clinical interview, medical records, current psychiatric treatment, reported doctor diagnosed conditions or medication use, are consistently associated with higher smoking prevalences with rates cited ranging from 25.5 to 59% (7, 45, 80-84). These increased smoking rates are most pronounced in those with substance use disorders and more severe mental illness (SMI) diagnoses such as bipolar disorder, schizophrenia or psychosis (7, 15, 82, 87-89). In general, those with MHD tend to smoke more heavily than other smokers (7) and also appear to be less likely to quit smoking (7). While those with schizophrenia appear to be less likely to quit smoking(92), common mental illnesses such as anxiety or depression also seem to affect quitting behaviour(93). For instance, meta-analyses have shown that in patients with chronic respiratory conditions or coronary heart disease patients with depressive symptoms are less likely to quit smoking than those without such depressive symptoms(94, 95).

This higher prevalence of smoking has been associated with significant health consequences in those with MHD. People with mental health conditions die on average 10 to 20 years younger than the general population (38, 42, 193-195) and smoking has been reported as the largest contributor to this premature mortality (14, 270). In the US, Callaghan et al. found significantly heightened patterns of tobacco-related mortality in terms of respiratory disease, smoking-related cancers and cardiovascular disease in patients with schizophrenia (standardised mortality ratio [SMR] 2.45 95%CI 2.41-2.48), bipolar disorder (SMR 1.57 95%CI 1.53-1.62) and depression (SMR 1.95 95%CI 1.93-1.98) (69). Earlier studies have also shown increased risk of death from cardiovascular disease (42, 80, 97, 98) and cancer (42, 97). Morbidity studies have also shown those with SMI have a significantly higher prevalence of pulmonary illness (44-46, 99-102), cancer (46) and cardiovascular diseases (including stroke, congestive heart failure, angina and myocardial infarction) (46, 99, 100) compared to matched samples or general population counterparts (44, 46, 99-101). While smoking is thought to account for the majority of morbidity and mortality in these populations, studies have also found associations between mental illness and respiratory disease, cardiovascular disease and risk of death from cardiovascular disease which seems to persist after adjustment for smoking (46, 80, 104). However, the literature is limited by the range of conditions investigated, and the samples used are not always generalisable. For example, many of these studies focus on schizophrenia-related disorders and psychosis, though some have also included affective disorder diagnoses (44, 46). Partti et al.’s study of respiratory disease was population-based but only explored psychosis (45), while other studies were based on clinical populations with some reliant on small samples ranging from 80-100 (44, 46, 100). The last study to address the impact of smoking on the physical health of those with MHD in Ireland is now over 30 years old, was specific to schizophrenia and was not population-based (68). More generally, morbidity and mortality studies have tended to rely upon one or two indicators, such as structured clinical interviews, medical records, medical service claims or scale scores, but never more than two indicators when identifying those with MHD (45, 69, 80, 98, 99, 104). The use of a number of different methods is preferable to enhance the reliability of the findings.

In addition, chronic diseases such as cardiovascular disease and cancers usually occur later in life. Most cancer diagnoses occur in individuals older than 65 years (106) and CHD risk increases in both men and women after age 55 (286). In spite of this, some studies of smoking prevalence in those with MHD have been limited to younger samples with age ceilings of 54 and 64 (7, 87) and there are almost no studies of smoking or smoking-related morbidity or mortality specific to older populations. To our knowledge only one study exploring excess mortality in those with MHD
concerns those aged 65 and older (98). The impact of smoking on the physical health of older adults with MHD therefore remains unclear.

In summary, few population studies have explored smoking-related morbidity in older individuals with MHD and there are no recent studies addressing the health impacts of smoking in those with MHD in Ireland. This study had two aims. Firstly, to determine whether there is a higher prevalence of smoking and of smoking-related disease in older adults with mental health problems. Secondly, to assess whether smoking mediates or moderates the relationship between mental health difficulties and smoking-related disease at a population level. Given the absence of diagnostic interviews, several indicators were used both individually and in combination to reliably identify those with MHD. We hypothesized that persons with MHD would be more likely to have higher levels of smoking-related diseases, which would be explained by a higher rate of smoking.

Methods

The Irish Longitudinal Study on Ageing (TILDA)

TILDA provides a stratified clustered nationally representative sample of community dwelling adults aged 50 and over living in Ireland (178). Private residential dwellings were assigned to clusters stratified by geography and socioeconomic group to produce a population representative sample. Across households where it was possible to make contact to confirm eligibility a response rate of 62% was achieved (179). Population weighting was employed to counteract bias introduced by differential nonresponse (179). The main sample was compared to Quarterly National Household Survey respondents on age, sex and educational attainment and consequent weights assigned (178). A more detailed description of the study sample and response rates has been described elsewhere (180). The current analysis involves the first wave which was collected between 2009 and 2011. Data collection involved an extensive face-to-face computer assisted home interview, a self-completion questionnaire for data deemed more sensitive and a health assessment. Health assessments were conducted at TILDA Assessment Centres in Dublin and Cork, or for those not willing to travel to TILDA Assessment Centres a shorter assessment carried out in their home by a qualified, trained nurse was offered. At wave one 5,894 (72.1%) of the 8,175 participants aged 50 and over completed a health assessment. All variables included in the current analysis were collected at both health centre and home assessments.

Outcomes

Smoking status: Self-reported current smoking status.

Those who reported ever smoking ‘cigarettes, cigars, cigarillos or a pipe daily for a period of at least one year’ and answered ‘Yes’ when asked if they smoked at the present time (including if smoked in past 3 months) were categorised as current smokers. In the initial part of this paper lifetime smoking prevalence (current/former/never) is the outcome, later it was explored as a potential mediator/effect modifier (to achieve the second aim). Smoking status data was available for 8,174 respondents due to the refusal of one participant to answer this question.

Smoking-related disease: The presence of any one or more self-reported doctor diagnosed smoking-related diseases i.e. respiratory disease, cardiovascular disease or smoking-related cancers.

For the purposes of this analysis smoking-related cancer was defined as answering ‘Yes’ when asked if they were ever told by a doctor that they had cancer in any of the following sites: lung; colon or rectum; stomach; oesophagus; bladder; liver; cervix; kidney; pancreas; oral cavity; larynx; other pharynx (including nasopharynx, oropharynx, laryngopharynx or hypopharynx). These sites were identified based on the 2014 Surgeon General’s report (181). Cancer of the lip, the renal
pelvis and acute myeloid leukaemia were not included as these were not specified in the TILDA study.

Respiratory disease was defined as answering ‘Yes’ when asked if they were ever told by a doctor that they had ‘chronic lung disease such as chronic bronchitis or emphysema’.

Cardiovascular disease was defined as answering ‘Yes’ when asked if they were ever told by a doctor that they had ‘angina’, ‘a heart attack (including myocardial infarction or coronary thrombosis)’, ‘congestive heart failure’, ‘high cholesterol’, ‘a stroke (cerebral vascular disease)’ or ‘Ministroke or TIA’.

Due to low numbers in two categories (respiratory disease (n=330); smoking-related cancers (n=135)) all three disease groups were combined to indicate having a chronic smoking-related disease (score=1) or not (score=0) for the purposes of this analysis.

**Exposure variables**

MHD: A number of variables were taken as indicators of evidence of MHD and used individually and in combination to model the association between MHD and smoking and between MHD and smoking-related disease.

An emotional, nervous or psychiatric problem was defined as answering ‘Yes’ when asked if they were ever told by a doctor that they had ‘any emotional, nervous or psychiatric problems, such as depression or anxiety’.

Alcohol or substance abuse was defined as answering ‘Yes’ when asked if they were ever told by a doctor that they had an ‘alcohol or substance abuse’ condition.

Psychiatric medication use: Participants were asked to bring medications to interviewer during the face-to-face home interview and all anxiolytics, antipsychotics and anti-depressants were included (ATC codes: N05B; N05A; N06A). Any participant who was taking one of these medications was considered to have MHD.

Psychometric scales:

CES-D: The Center for Epidemiologic Studies Depression Scale (CES-D) is a 20-item self-report depression scale designed for epidemiological studies of depression (182). Each item is measured on a 4-point Likert scale reflecting frequency of occurrence. A cutoff score of ≥ 16 is said to indicate clinically significant or severe depressive symptoms while a score of 8-15 is defined as moderate depressive symptoms (287-289). This measure was administered during the face-to-face computer assisted home interview (179) and 8,044 (98.4%) responded to all 20-items.

HADS-A: The HADS-A is the 7-item anxiety subscale of the Hospital Anxiety and Depression Scale (183). This self-report measure with a four option Likert-type response format was included in the self-completion questionnaire and returned by 6,637 of the 8,175 (81.2%) TILDA participants aged 50 and over. Zigmond and Snaith recommended cutoffs of >8 and >11 to detect possible and probable anxiety caseness (183).

For categorical scale variables, the ‘probable anxiety’ and ‘severe depressive symptoms’ categories were assessed as indicators of MHD.

**Covariates**

We adjusted for demographic variables (age, sex, education and marital status) when modelling smoking status. In modelling smoking-related disease other known confounders (physical activity,
waist circumference, alcohol use and diabetes (self-reported doctor diagnosed) were also included. Age and waist circumference were continuous, while all other covariates were ordinal/categorical. Physical activity was assessed using the short form 8-item version of The International Physical Activity Questionnaire (IPAQ) (184), which estimates time spent performing physical activities (moderate to vigorous) as well as inactivity (time spent sitting) (185). Alcohol problems were identified using the CAGE questionnaire, a widely used and extensively validated screening tool for alcoholism, which was included in the self-completion questionnaire. A CAGE test score of 2 or more is said to identify problem drinkers (185, 186). Waist circumference was measured at the health assessment during wave one and so was only available for participants completing that component.

**Statistical analyses**

Key variables and demographic characteristics of the sample were compared according to smoking status using analysis of variance models and chi-square statistics as appropriate.

Multinomial regression analysis was performed to investigate the association between MHD and smoking. The models were weighted and adjusted for age, sex, education and marital status as these were all significantly associated with the outcome smoking status. The `margins` command in Stata provided adjusted prevalence estimates.

Multivariate logistic regression models were then employed to explore the association between MHD and smoking-related disease. These models were weighted and adjusted for potential confounders including socio-demographic characteristics (age, sex, education) and additional known risk factors (physical activity, waist circumference, alcohol use and diabetes (self-reported doctor diagnosed)). These covariates were identified based on the literature.

Baron and Kenny’s four step approach was employed to test for mediation (187). Firstly, as above, we tested to see if the independent variable, MHD, predicted the dependent variable smoking-related disease. Secondly, and also already encompassed in aim one, we tested to see if MHD predicted smoking. Thirdly, it was assessed whether the mediator, smoking status, predicted smoking-related disease even while adjusting for MHD. Finally, smoking status was added to models predicting smoking-related disease and changes in the association between MHD and smoking-related disease were observed for mediation effects.

Then, to test for any moderating role of smoking, interaction terms were also built and added to models.

Data analysis was performed using Stata 13.0 (188).

**Results**

**Sample Description**

This analysis of TILDA included 8,175 participants aged 50 years and over. As described above, due to missing values related to issues such as health assessment attendance and completion of the HADS-A the analytic sample ranged from 5,024 to 8,158. Sample sizes for each model are included below (Tables 2-4).

Overall 18.24% of respondents were current smokers and 38.1% were former smokers. The prevalence of MHD ranged from 1.60% (self-reported alcohol or substance use problem) to 9.49% (severe depressive symptoms as per CES-D) based on the various indicator variables. Almost half of respondents (45.9%) had at least one smoking-related disease at baseline. Cardiovascular disease was most prevalent (43.1%), followed by respiratory diseases (4.04%) and finally smoking-related cancers (1.65%).
Table 1 illustrates the main characteristics of the sample broken down by current smoking status. Age, sex, education and marital status were all significantly related to current smoking status. Current smokers were younger and more women had never smoked. Overall just 17.3% of those with a smoking-related disease were current smokers. Over half of those reporting a diagnosed smoking-related cancer were former smokers and almost a third of those reporting diagnosed respiratory conditions were current smokers.
| Demographics, physical and mental health and health behaviour characteristics of TILDA cohort (8,174) |
|-------------------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|
|                                                | Current smoker  | Former smoker   | Never smoker    |                 |                 |                 |               |               |
|                                                | (n=1,491)       | (n=3,117)       | (n=3,566)       |                 |                 |                 |               |               |
|                                                | 18.2%           | 38.1%           | 43.6%           |                 |                 |                 |               |               |
| Continuous                                     | Mean  | SD   | Mean  | SD   | Mean  | SD   | F   | p Value |
| Age                                            | 61.3  | 8.87 | 64.9  | 9.82 | 64.0  | 9.93 | 69.7 | <.001**  |
| Categorical                                    | N     | %    | N     | %    | N     | %    | χ²  | p Value |
| Women                                          | 811   | 18.3%| 1,387 | 31.3%| 2,233 | 50.4%| 220.0| <.001** |
| Men                                            | 680   | 18.2%| 1,730 | 46.2%| 1,333 | 35.6%|      |          |
| Education                                      |       |      |       |      |       |      |      |          |
| Primary/None                                   | 571   | 22.8%| 990   | 39.5%| 942   | 37.6%| 113.2| <.001** |
| Secondary                                     | 619   | 19.0%| 1,165 | 35.7%| 1,479 | 45.3%|      |          |
| Third/Higher                                   | 300   | 12.5%| 960   | 39.9%| 1,144 | 47.6%|      |          |
| Marital status                                 |       |      |       |      |       |      |      |          |
| Married                                        | 920   | 16.3%| 2,179 | 38.7%| 2,538 | 45.0%| 110.8| <.001** |

314
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**MHD indicator variables**

(Exposure variables)

- Emotional, nervous or psychiatric problem (self-reported doctor diagnosed) *Lifetime prevalence*
  - Count: 190, %: 27.4%, Count: 254, %: 36.6%, Count: 249, %: 35.9%, p: 45.7, <.001**

- Self-reported psychiatric medication use (antidepressant, antipsychotic or anxiolytic) *(Self-reported) *Current prevalence*
  - Count: 200, %: 27.2%, Count: 269, %: 36.6%, Count: 266, %: 36.2%, p: 46.4, <.001**
    - Antidepressant: Count: 148, %: 26.4%, Count: 206, %: 36.8%, Count: 206, %: 36.8%, p: 28.8, <.001**
    - Antipsychotic: Count: 40, %: 36.0%, Count: 32, %: 28.8%, Count: 39, %: 35.1%, p: 23.9, <.001**
    - Anxiolytic: Count: 49, %: 28.6%, Count: 65, %: 38.0%, Count: 57, %: 33.3%, p: 14.6, .001*
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<th>%</th>
<th>N</th>
<th>%</th>
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<td>Lifetime prevalence</td>
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<td>50</td>
<td>38.2%</td>
<td>24</td>
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<td>Normal (7 or less)</td>
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<td>Lifetime prevalence (self-reported doctor diagnosed)</td>
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<tr>
<td>Respiratory</td>
<td>107</td>
<td>32.4%</td>
<td>143</td>
<td>43.3%</td>
<td>80</td>
<td>24.2%</td>
<td>70.0</td>
<td>&lt;.001**</td>
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<td>26</td>
<td>19.3%</td>
<td>69</td>
<td>51.1%</td>
<td>40</td>
<td>29.6%</td>
<td>12.3</td>
<td>.002*</td>
<td></td>
</tr>
<tr>
<td>CVD</td>
<td>583</td>
<td>16.5%</td>
<td>1,479</td>
<td>42.0%</td>
<td>1,463</td>
<td>41.5%</td>
<td>40.0</td>
<td>&lt;.001**</td>
<td></td>
</tr>
</tbody>
</table>
### Other covariates

**IPAQ (Physical Activity)(n=8,096)**

<table>
<thead>
<tr>
<th>Current Activity</th>
<th>Low</th>
<th>Moderate</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>517</td>
<td>459</td>
<td>500</td>
</tr>
<tr>
<td>Current %</td>
<td>19.9%</td>
<td>16.5%</td>
<td>18.4%</td>
</tr>
<tr>
<td></td>
<td>955</td>
<td>1,087</td>
<td>1,044</td>
</tr>
<tr>
<td>50%</td>
<td>36.8%</td>
<td>39.0%</td>
<td>38.4%</td>
</tr>
<tr>
<td></td>
<td>1,120</td>
<td>1,241</td>
<td>1,173</td>
</tr>
<tr>
<td>100%</td>
<td>43.2%</td>
<td>44.5%</td>
<td>43.2%</td>
</tr>
<tr>
<td>Alzheimers Score</td>
<td>11.5</td>
<td>11.5</td>
<td>11.5</td>
</tr>
<tr>
<td>Significance</td>
<td>.022*</td>
<td>.022*</td>
<td>.022*</td>
</tr>
</tbody>
</table>

**Alcohol problem (CAGE score of 2 or more) (n=6,758)**

<table>
<thead>
<tr>
<th>Lifetime prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>215</td>
</tr>
<tr>
<td>390</td>
</tr>
<tr>
<td>210</td>
</tr>
<tr>
<td>142.9</td>
</tr>
<tr>
<td>.001**</td>
</tr>
</tbody>
</table>

**Diabetes (self-reported doctor diagnosed) Lifetime prevalence**

<table>
<thead>
<tr>
<th>Lifetime prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>110</td>
</tr>
<tr>
<td>293</td>
</tr>
<tr>
<td>231</td>
</tr>
<tr>
<td>20.2</td>
</tr>
<tr>
<td>.001**</td>
</tr>
</tbody>
</table>

**Waist cm (mean and (SD)) (n=5,863) Current prevalence**

<table>
<thead>
<tr>
<th>Current prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>93.77</td>
</tr>
<tr>
<td>(3.9)</td>
</tr>
<tr>
<td>97.79</td>
</tr>
<tr>
<td>(4.0)</td>
</tr>
<tr>
<td>93.95</td>
</tr>
<tr>
<td>(3.5)</td>
</tr>
<tr>
<td>F=55.9</td>
</tr>
<tr>
<td>.001**</td>
</tr>
</tbody>
</table>
Smoking among individuals with MHD
As shown in Table 2, MHD was significantly associated with smoking status with relative risk ratios for former and current smoking ranging from 1.26 to 1.99 and 1.84 to 4.31 respectively when adjusting for potential confounders. Never smoker was taken as the base category. The adjusted current smoking prevalence ranged from 25-39% and was highest in the alcohol or substance abuse group. This compares to the crude smoking prevalence of 18.24% in the sample overall. Adjusted former smoking prevalence ranged from 38-41% which compares to 38% in the overall sample. The never smoking prevalence was particularly low in the self-reported doctor diagnosed alcohol/substance abuse group (Model 5) at 22%, albeit from the initially low absolute prevalence of 1.6%.
Table 2
Adjusted multinomial regression models of smoking status (current/past/never) according to various indicators of MHD for TILDA cohort

<table>
<thead>
<tr>
<th>Model</th>
<th>n</th>
<th>Adjusted prevalence</th>
<th>Adjusted prevalence for no MHD</th>
<th>Adjusted RRR</th>
<th>95% CI</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  Emotional, nervous or psychiatric problem (self-reported doctor diagnosed)</td>
<td>8,154</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lifetime prevalence</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never smoker</td>
<td>34%</td>
<td>44%</td>
<td>(base)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Former smoker</td>
<td>39%</td>
<td>37%</td>
<td>1.33</td>
<td>1.10-1.60</td>
<td>.003*</td>
<td></td>
</tr>
<tr>
<td>Current smoker</td>
<td>26%</td>
<td>19%</td>
<td>1.84</td>
<td>1.50-2.26</td>
<td>&lt;.001**</td>
<td></td>
</tr>
<tr>
<td>2  Psychiatric medication use (Self-reported)</td>
<td>8,158</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current prevalence</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never smoker</td>
<td>35%</td>
<td>44%</td>
<td>(base)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Former smoker</td>
<td>38%</td>
<td>38%</td>
<td>1.26</td>
<td>1.05-1.52</td>
<td>.012*</td>
<td></td>
</tr>
<tr>
<td>Current smoker</td>
<td>27%</td>
<td>19%</td>
<td>1.84</td>
<td>1.51-2.25</td>
<td>&lt;.001**</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Self-reported doctor diagnosed emotional, nervous or psychiatric problem (<em>Lifetime</em>) and self-reported any psychiatric medication (<em>Current</em>)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8,158</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never smoker</td>
<td>33%</td>
<td>43%</td>
<td>(base)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Former smoker</td>
<td>41%</td>
<td>38%</td>
<td>1.44</td>
<td>1.11-1.86</td>
<td>.006*</td>
<td></td>
</tr>
<tr>
<td>Current smoker</td>
<td>26%</td>
<td>19%</td>
<td>1.90</td>
<td>1.40-2.55</td>
<td>&lt;.001**</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4</th>
<th>Self-reported doctor diagnosed emotional, nervous or psychiatric problem (<em>Lifetime</em>) or self-reported any psychiatric medication (<em>Current</em>)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8,158</td>
</tr>
<tr>
<td>Never smoker</td>
<td>35%</td>
</tr>
<tr>
<td>Former smoker</td>
<td>38%</td>
</tr>
<tr>
<td>Current smoker</td>
<td>26%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5</th>
<th>Alcohol/Substance abuse (self-reported doctor diagnosed) <em>Lifetime prevalence</em></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8,158</td>
</tr>
<tr>
<td>Never smoker</td>
<td>22%</td>
</tr>
<tr>
<td>Former smoker</td>
<td>38%</td>
</tr>
<tr>
<td></td>
<td>Current smoker</td>
</tr>
<tr>
<td>----------------</td>
<td>----------------</td>
</tr>
<tr>
<td><strong>6 Alcohol/Substance abuse or</strong> Emotional, nervous or psychiatric problem (self-reported doctor diagnosed) Lifetime prevalence</td>
<td></td>
</tr>
<tr>
<td></td>
<td>39%</td>
</tr>
<tr>
<td><strong>7 CES-D Current prevalence</strong></td>
<td></td>
</tr>
<tr>
<td>NONE/MILD</td>
<td></td>
</tr>
<tr>
<td></td>
<td>34%</td>
</tr>
<tr>
<td>Former smoker</td>
<td>38%</td>
</tr>
<tr>
<td>Current smoker</td>
<td>28%</td>
</tr>
<tr>
<td>MODERATE</td>
<td></td>
</tr>
<tr>
<td>Never smoker</td>
<td>46%</td>
</tr>
<tr>
<td>Former smoker</td>
<td>38%</td>
</tr>
<tr>
<td>Current smoker</td>
<td>17%</td>
</tr>
<tr>
<td>SEVERE</td>
<td></td>
</tr>
<tr>
<td>Never smoker</td>
<td>41%</td>
</tr>
<tr>
<td>Former smoker</td>
<td>38%</td>
</tr>
<tr>
<td>Current smoker</td>
<td>21%</td>
</tr>
</tbody>
</table>

8,158

321
<table>
<thead>
<tr>
<th>smoking status</th>
<th>prevalence</th>
<th>HADS-A Current prevalence</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Never smoker</td>
<td>35%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Former smoker</td>
<td>38%</td>
<td>1.37</td>
<td>1.15-1.63</td>
<td>&lt;.001**</td>
</tr>
<tr>
<td>Current smoker</td>
<td>26%</td>
<td>2.27</td>
<td>1.88-2.75</td>
<td>&lt;.001**</td>
</tr>
<tr>
<td>8</td>
<td>NORMAL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never smoker</td>
<td>45%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Former smoker</td>
<td>38%</td>
<td>1.12</td>
<td>0.96-1.32</td>
<td>.141</td>
</tr>
<tr>
<td>Current smoker</td>
<td>17%</td>
<td>1.30</td>
<td>1.06-1.60</td>
<td>.011*</td>
</tr>
<tr>
<td></td>
<td>POSSIBLE ANXIETY</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never smoker</td>
<td>41%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Former smoker</td>
<td>39%</td>
<td>1.27</td>
<td>1.02-1.59</td>
<td>.034*</td>
</tr>
<tr>
<td>Current smoker</td>
<td>21%</td>
<td>2.02</td>
<td>1.59-2.56</td>
<td>&lt;.001**</td>
</tr>
<tr>
<td></td>
<td>PROBABLE ANXIETY</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never smoker</td>
<td>36%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Former smoker</td>
<td>38%</td>
<td>1.27</td>
<td>1.02-1.59</td>
<td>.034*</td>
</tr>
<tr>
<td>Current smoker</td>
<td>25%</td>
<td>2.02</td>
<td>1.59-2.56</td>
<td>&lt;.001**</td>
</tr>
</tbody>
</table>

Weighted and adjusted for age, sex, education and marital status.
Smoking-related diseases among individuals with MHD

MHD was also significantly associated with smoking-related disease with odds ratios ranging from 1.24 to 1.62 (Table 3). The adjusted prevalence of smoking-related disease ranged from 53 to 60% and was highest in the alcohol or substance abuse group. This compares to a crude prevalence of 46% in the overall sample. As per Baron and Kenny’s four steps for mediation, the independent variable, MHD, therefore predicted the dependent variable smoking-related disease (Table 3, middle columns) fulfilling the first step in Baron and Kenny’s approach (187). As per Table 2, the independent variable, MHD, also predicted smoking status thus fulfilling the second step. Further regression analyses confirmed that smoking status predicted smoking-related disease, with significant associations for former smoking (step 3). Finally in relation to step four, the addition of smoking status to models had virtually no impact indicating that smoking status was not a mediator of the association between MHD and smoking-related disease (Table 3, right columns) (187).
<table>
<thead>
<tr>
<th>Model</th>
<th>Mediation analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Adjusted OR</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Emotional, nervous or psychiatric problem (self-reported doctor diagnosed)</td>
</tr>
<tr>
<td></td>
<td>5,176</td>
</tr>
<tr>
<td>2</td>
<td>Psychiatric medication use (self-reported)</td>
</tr>
<tr>
<td></td>
<td>5,176</td>
</tr>
<tr>
<td>3</td>
<td>Self-reported doctor diagnosed emotional, nervous or psychiatric problem (Lifetime) and self-reported any psychiatric medication (Current)</td>
</tr>
<tr>
<td></td>
<td>5,176</td>
</tr>
<tr>
<td></td>
<td>Description</td>
</tr>
<tr>
<td>---</td>
<td>------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>4</td>
<td>Self-reported doctor diagnosed emotional, nervous or psychiatric problem (Lifetime) or self-reported any psychiatric medication (Current)</td>
</tr>
<tr>
<td>5</td>
<td>Alcohol/Substance abuse (self-reported doctor diagnosed) Lifetime prevalence</td>
</tr>
<tr>
<td>6</td>
<td>Alcohol/Substance abuse or Emotional, nervous or psychiatric problem (self-reported doctor diagnosed) Lifetime prevalence</td>
</tr>
<tr>
<td>7</td>
<td>CES-D Current prevalence</td>
</tr>
<tr>
<td></td>
<td>NONE/MILD</td>
</tr>
<tr>
<td></td>
<td>MODERATE</td>
</tr>
<tr>
<td></td>
<td>SEVERE</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>HADS-A Current prevalence</td>
</tr>
<tr>
<td></td>
<td>NORMAL</td>
</tr>
<tr>
<td></td>
<td>POSSIBLE ANXIETY</td>
</tr>
<tr>
<td></td>
<td>PROBABLE ANXIETY</td>
</tr>
</tbody>
</table>

Weighted and adjusted for age, sex, education, physical activity (IPAQ), waist circumference, alcohol problem (CAGE) and diabetes.
Table 4
Moderation analysis: Odds ratios for smoking and MHD interaction terms for any smoking-related disease (respiratory disease, cardiovascular disease or smoking-related cancer)

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>n</th>
<th>Adjusted OR</th>
<th>95% CI</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Emotional, nervous or psychiatric problem (self-reported doctor diagnosed)</td>
<td>5,176</td>
<td>0.62</td>
<td>0.39-0.98</td>
<td>.041*</td>
</tr>
<tr>
<td></td>
<td><strong>Lifetime prevalence</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>† Past Smoking</td>
<td></td>
<td>0.39-0.98</td>
<td>.041*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>‡ Current Smoking</td>
<td></td>
<td>0.38-1.15</td>
<td>.142</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Psychiatric medication use (Self-reported) <strong>Current prevalence</strong></td>
<td>5,176</td>
<td>1.10</td>
<td>0.69-1.74</td>
<td>.699</td>
</tr>
<tr>
<td></td>
<td>† Past Smoking</td>
<td></td>
<td>0.69-1.74</td>
<td>.699</td>
<td></td>
</tr>
<tr>
<td></td>
<td>‡ Current Smoking</td>
<td></td>
<td>0.68-1.91</td>
<td>.627</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Self-reported doctor diagnosed emotional, nervous or psychiatric problem (<strong>Lifetime</strong> and self-reported any psychiatric medication <strong>Current</strong>)</td>
<td>5,176</td>
<td>1.02</td>
<td>0.53-1.96</td>
<td>.962</td>
</tr>
<tr>
<td></td>
<td>† Past Smoking</td>
<td></td>
<td>0.53-1.96</td>
<td>.962</td>
<td></td>
</tr>
<tr>
<td></td>
<td>‡ Current Smoking</td>
<td></td>
<td>0.63-2.55</td>
<td>.513</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Self-reported doctor diagnosed emotional, nervous or psychiatric problem (<strong>Lifetime</strong> or self-reported any psychiatric medication <strong>Current</strong>)</td>
<td>5,176</td>
<td>0.76</td>
<td>0.52-1.11</td>
<td>.160</td>
</tr>
<tr>
<td></td>
<td>† Past Smoking</td>
<td></td>
<td>0.52-1.11</td>
<td>.160</td>
<td></td>
</tr>
<tr>
<td></td>
<td>‡ Current Smoking</td>
<td></td>
<td>0.49-1.21</td>
<td>.257</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Alcohol/Substance abuse (self-reported doctor diagnosed)</td>
<td>5,176</td>
<td>2.08</td>
<td>0.52-8.34</td>
<td>.301</td>
</tr>
<tr>
<td></td>
<td><strong>Lifetime prevalence</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>† Past Smoking</td>
<td></td>
<td>0.52-8.34</td>
<td>.301</td>
<td></td>
</tr>
<tr>
<td></td>
<td>‡ Current Smoking</td>
<td></td>
<td>0.22-3.08</td>
<td>.779</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Alcohol/Substance abuse or Emotional, nervous or psychiatric problem (self-reported doctor diagnosed)</td>
<td>5,176</td>
<td>0.74</td>
<td>0.47-1.15</td>
<td>.177</td>
</tr>
<tr>
<td></td>
<td><strong>Lifetime prevalence</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>† Past Smoking</td>
<td></td>
<td>0.47-1.15</td>
<td>.177</td>
<td></td>
</tr>
<tr>
<td></td>
<td>‡ Current Smoking</td>
<td></td>
<td>0.41-1.13</td>
<td>.139</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>CES-D</td>
<td>5,114</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Current prevalence</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 4 presents results from the moderation analysis (see Appendix B for full models). All smoking and MHD interaction terms were non-significant when main effects were included in the model, except one. Past smoking appeared to have a negative moderating effect on the association between self-reported doctor diagnosed emotional, nervous or psychiatric problems and smoking-related diseases while current smoking had no significant moderating role, although effect sizes were similar. This would suggest that those who self-reported a doctor diagnosed emotional, nervous or psychiatric problem and were former smokers were less likely to have a smoking-related disease, although this result was not replicated in any other model, suggesting it may be spurious.

Discussion
We reported a number of important findings in a population-based dataset of older people, using multiple indicators of MHD to ensure robustness of findings. MHD, as evidenced by self-reported doctor diagnosed problems, psychiatric medication use and scores on anxiety and depression scales, was associated with smoking status in community living adults aged 50 and over in Ireland. MHD was also associated with the presence of a smoking-related disease i.e. respiratory disease, cardiovascular disease or a smoking-related cancer in this cohort. Contrary to our hypothesis, respondents’ smoking status did not mediate the association between MHD and smoking-related disease. While it was expected that higher rates of smoking would be an important factor in the relationship between MHD and smoking-related disease, smoking did not fully explain the increased disease prevalence in this population. The various indicators of MHD revealed similar results. Associations with both current smoking and with smoking-related disease were strongest for self-reported doctor diagnosed alcohol/substance use. This was the first study to examine the burden of smoking on the physical health of those with MHD in Ireland at a population level.

The first aim of the current study was to establish the prevalence of smoking and the prevalence of smoking-related disease in older adults with MHD in Ireland. The higher rates of smoking among those with MHD compared to the general population have already been established in the
UK, the US and Australia (7, 14, 84). Between 2009 and 2011 the general population smoking prevalence among those aged 15 and over in Ireland fell from 24.6% to 22.9% (189). In the current study adjusted current smoking prevalences of 25 to 39% were found among those with MHD while former smoking prevalences were 38 to 41%. This compares to current smoking prevalences of 25.5 to 59% among those with MHD (7, 45, 80-84) found in previous studies and lifetime prevalences between 55.3 and 81% with higher rates observed in those with psychosis (7, 15, 87).

Increased rates of tobacco-related disease (44-46, 99-102) have also been shown. The adjusted prevalences of smoking-related disease in the current study ranged from 53 to 60%. Previous studies have found prevalences ranging from 0.9 (peripheral vascular disorder) to 61% (raised cholesterol) for cardiovascular conditions including cardiac disease and stroke. In relation to respiratory conditions, COPD prevalences of 6.8-45.7% (44, 45, 99-101) have been reported in previous studies. Cancer morbidity studies reporting prevalence according to MHD appear to be rare though a number of mortality studies have been published.

The second aim of this study was to uncover the impact of smoking on the association between MHD and smoking-related disease. However, although the diseases included were selected by the authors to show the burden of tobacco on the physical health of those with MHD in Ireland, in the current study smoking did not mediate this association. In general, smoking status had no moderating role in the association between MHD and smoking-related diseases either. The only exception was a significant negative moderating effect of past smoking on the association between self-reported doctor diagnosed emotional, nervous or psychiatric problems and smoking-related diseases. However given this was present in just one model and not a pattern seen across exposure variables no strong conclusions can be drawn. Previous studies involving psychiatric populations or those with SMI have found elevated odds of respiratory illness, cardiovascular disease and risk of death from cardiovascular disease which were not fully explained by smoking (46, 80, 104). Researchers have suggested antipsychotic medications, diet, exercise (80) smoking intensity (dose-response relationship), inhaling more deeply (as has been indicated in schizophrenia) (190, 191) and greater second-hand smoke exposure (46) may form part of the explanation. It should also be noted that in the current study, cardiovascular disease, which is known to have risk factors beyond smoking, accounted for the vast majority of smoking-related disease. High cholesterol was also responsible for a large proportion of this CVD and 66% of the overall smoking-related disease outcome variable was accounted for by those with high cholesterol alone. However, only minor changes were present in a few models when cholesterol was excluded as an outcome, and the overall pattern of results remained (see Appendix C). Respiratory disease and smoking-related cancers accounted for just 4% of the smoking-related disease outcome modelled. Other risk factors for cardiovascular disease such as physical activity were assessed in this study but may not have been accurate enough to account for all excess risk. For instance, while the IPAQ is said to have reasonable measurement properties for 18-65 year olds (184) its reliability with those aged 65 and over has been questioned (192). It is also possible that other risk factors that were not assessed may be more important.

Overall, individuals with MHD are known to die younger (38, 42, 193-195) and tobacco-related deaths specifically also seem to occur at an earlier age than in the general population (196). Given that the current study involved those aged 50 and over it is likely that a proportion of those with MHD are missing from the dataset as they have already died or were terminally ill and therefore not participating. Support for this is provided by the fact that for most MHD indicators (with the exception of medications) case respondents were significantly younger compared to the rest of the sample (data not shown). Only one of the studies cited above in describing excess morbidity and mortality was limited to an older population and it concerned those aged 65 and older and hospitalised for acute myocardial infarction (98). Another study, linking 1,213 inpatient records to death index data, found cigarette smoking contributed to an increased risk of death in

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schizophrenia patients particularly in those aged 35-54 years but that in older ages (55-69 years) mortality risk was actually lower for smokers (70). Similarly, Bandiera et al. found persons with MHD, including substance abuse, experience tobacco-related deaths at earlier ages than the general population but that after age 70 this pattern is reversed and tobacco-related deaths occur more often in the general population (196).

Although descriptive data indicated that former smokers had higher estimates of smoking-related disease and only former smoking (and not current) was predictive of smoking-related disease, as stated results from the mediation and moderation analysis show that past smoking did not explain the association between MHD and smoking-related disease. We should note in this older sample 38.1% were former smokers. Furthermore as stated this is a relatively healthy sample, missing those who have already died or were too unwell to participate.

**Strengths and Limitations**

Strengths of the current study include the large nationally representative sample of older adults. The TILDA study with its robust methodology provides a detailed and rich population weighted dataset and the necessary power to adjust for many confounders. This large representative sample means results can be generalised to the population (179). This study also included multiple measures of MHD from self-reported doctor diagnosed conditions to medication use to standardised scales.

This study was limited in that it is representative only of those aged 50 and over who are living in the community. Datasets which do not include younger people or other sectors of society, such as those not living in the community do not provide a full picture and are therefore likely to underestimate disease prevalence, particularly if those excluded tend to experience higher rate of disease and decreased life expectancy as is the case for those with severe mental illness (38). Osborn et al. accessed the UK General Practitioners Research Database and achieved a large nationally representative community sample of people with SMI which included those in long-term care. However, as they acknowledged, homeless people may not be well-represented and as such the estimated risk of CHD death may still be even greater than it appears (80). This is again especially relevant in the case of MHD given, as noted in the UK, the striking disparity of prevalence of psychiatric disorders in different subsections of the population (197). In addition to these challenges in gaining representative samples of those with SMI the exclusion of those in residential care is also an issue as while this covers only around 2% of those aged 50 and over, it represents a greater proportion of those in older age categories and people in residential care tend to have more chronic disease (198). Future research could look to include surveys of institutions and the homeless in addition to households.

This study also largely relied on self-reported doctor diagnosed conditions and involved an older population introducing issues including under diagnosis of conditions and under-reporting. This older sample in particular may potentially under-report conditions and medications due to memory but also due to stigma and social desirability bias (199), particularly in the case of questions around mental health within the context of a face-to-face interview. A 2007 national survey in Ireland revealed just over half of respondents agreed with the statement ‘If I was experiencing mental health problems, I wouldn’t want people knowing about it’ (200). Self-report data in relation to smoking has however been shown to be accurate in most studies (201).
In addition to potential underreporting, psychiatric medications such as benzodiazepines can be prescribed for short term conditions such as insomnia or as muscle relaxants for pain and thus would not necessarily indicate MHD. Furthermore the role which psychiatric medications themselves can play in terms of weight gain and metabolic effects is also a factor (202). Nonetheless the similar pattern of results across models (including those based on self-reported doctor diagnosed MHD and scale scores) provides reassurance that this alone was not responsible for the increased risk of disease in those with indicated MHD after controlling for smoking.

Arguably some models were overfitted due to the inclusion of the CAGE questionnaire (for consistency of models) as a covariate when modelling the presence of smoking-related disease based on self-reported doctor diagnosed alcohol/substance abuse however removal had little impact on results (data not shown).

As with all observational studies we cannot rule out the potential for residual confounding. Finally, the fact that it was not possible to include cancers of the lip, the renal pelvis and acute myeloid leukaemia is a further limitation.

Conclusion
Among older community living adults in Ireland indicators of MHD was associated with a higher prevalence of current smoking and self-reported doctor diagnosed cardiovascular disease, respiratory diseases and smoking-related cancers. This increased risk of smoking-related disease remained even after adjusting for smoking status.

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Declaration of Interests
The authors declare no conflicts of interest.

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Appendix 34: Study 2 Policy Brief

Supporting Patients Who Smoke

POLICY BRIEF

June 2017

EXECUTIVE SUMMARY

The smoking prevalence at St Patrick’s University Hospital is considerably higher than both the general population and that found in general hospital settings in Ireland. Many of these patients want to quit and would like smoking cessation advice while in hospital but currently very few report receiving advice on smoking during their stay.

INTRODUCTION

Smoking is around twice as common in those with mental illness. People with mental health conditions also die on average 10 to 20 years younger than the general population and smoking has been reported as the largest contributor to this premature mortality. A recent study has shown that in Ireland older people with mental health difficulties are more likely to smoke and more likely to suffer from smoking-related diseases. In Ireland tobacco dependence is undertreated in general, but especially among those with mental health issues. Psychiatric hospitals were exempted from the smoke-free regulations and psychiatric facilities rank among the lowest in terms of delivering cessation services.

METHODS AND RESULTS

From January to October 2016, 246 inpatients across all 8 adult wards were interviewed. Overall 34% (84/246) were smokers and these were contacted again 3 months later to see if they were still smoking.

Just 25% of participants reported they did not want to quit. Over a third of patients who smoke had made a quit attempt in the past year (38.1%) and 25% had tried to quit more than once. When asked if they would like to receive smoking cessation advice while at hospital 47.6% said yes.

When followed-up three months later a considerable number had since quit (16.7%) or cut down (26.4%). Those who received advice on ways to quit from a doctor or healthcare professional appear more likely to have quit.

CONCLUSIONS

Given the major impact of smoking on health, and the desire of these vulnerable patients for more services, there is an urgent need to provide better quality smoking cessation care to people with mental health problems.

RECOMMENDATIONS / IMPLICATIONS

- Education and training of staff
- Initiation of a smoking cessation programme whereby for every patient both smoking status and readiness to quit are assessed and recorded upon admission (with follow-ups during admission and on discharge as necessary).
- Provision of and support and free Nicotine Replacement Therapy for those ready to make quit attempt during stay.
- Establishment of weekly smoking cessation groups/classes for interested patients to attend.
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