The impact of an educational intervention on Home Support Workers' ability to detect early pressure ulcer damage.

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Volume 1 of 1

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August 2016.
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List of Abbreviations

NPUAP: National Pressure Ulcer Advisory Panel,

EPUAP: European Pressure Ulcer Advisory Panel

PPPIA: Pan Pacific Pressure Injury Alliance

DoH: Department of Health

DoHC: Department of Health and Children

CoN: Commission on Nursing

PUCLAS: Pressure Ulcer Classification

FETAC – Further Education and Training Awards Council

QQI: Quality and Qualifications Ireland

PHN: Public Health Nurse

CRGN: Community Registered Nurse

HSW: Home Support Worker

HSE: Health Service Executive

PU: Pressure Ulcer

CIHI: Canadian Institute for Health Information

ABA: An Bord Altranais

EBP: Evidence Based Practice

HCA: Health Care Assistant

HIQA: Health Information and Quality Authority

IHI: Institute for Healthcare Improvement

NMBI: Nursing & Midwifery Board of Ireland
SCI: Spinal Cord Injury

WHO: The World Health Organization

GP’ General Practitioner

PCT; Primary Care Team

BACCN: British Association of Critical Care Nurses

SKILL: Securing Knowledge Intra Lifelong Learning
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Abstract

Background: Internationally, pressure ulcers remain a significant health care problem. This has prompted a growing interest in why pressure ulcer prevalence remains, and a desire to investigate why the prevention process continues to fail. Skin assessment is an essential component in pressure ulcer prevention. Evidence suggests that patients may not receive the correct level of care to maintain their skin integrity. Skin assessment is not the sole responsibility of the registered nurse. Home Support Workers are directly involved in patient care and they play a pivotal role in completing a comprehensive skin assessment. Therefore, all health care workers completing a comprehensive skin assessment require education in order to fulfil this role.

Aim: To investigate the impact of an educational intervention on Community Home Support Workers’ ability to detect early pressure ulcer damage.

Method: A repeated measure design was employed to quantify the effectiveness of an educational intervention, consisting of one pre-test and two post-tests. This was followed by a workshop tasked with reflecting on the educational intervention.

Findings: Home Support Workers were asked to accurately classify 20 photographs of varying stages of skin severity at each measuring point. At the baseline, 58% of the photographs were classified correctly. In the post-test 1, the results were lower, with 55% of the photographs being correctly classified. In the post-test 2, correct classification increased to 58%, e.g. back to the original baseline scores. There was a moderate negative relationship between pre-training and post-test 2 scores ($r=-.44; n=27; p=0.02$). To capture the participants’ issues following the educational, words used by them were recorded, as they represented the terms and language that the participants placed on their main concerns and affirmations.

Conclusion: The educational intervention has been shown not to have a statistical significant positive effect on Home Support Workers’ ability to detect early pressure ulcer damage. There was a negative correlation between pre-training and post-test 2 scores. The workshop group findings exposed the challenges which exist relating to difficulties understanding relevant theoretical health concepts. These issues are fundamentally related to a low health literacy among the study participants.
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Chapter 1

Introduction

1.1 Introduction

Pressure ulcer prevention and management remains at the forefront of today's health care system, where there is an expectation of high quality care combined with value for money (NPUAP, EPUAP and PPPIA, 2014 and Moore et al, 2011). In order to gain an insight into pressure ulcer prevention it is necessary to clarify what exactly constitutes a pressure ulcer. It is defined as a localised area of skin and tissue damage caused by pressure and/or shear, usually over a bony prominence (NPUAP, EPUAP and PPPIA, 2014).

Pressure ulcers impact negatively on health outcomes affecting all areas of patient daily living (Gorecki et al, 2009 and Gorecki et al, 2010). The development of a pressure ulcer results in pain and discomfort, it can cause social isolation, and increases in hospital stays (Gorecki et al, 2009, Gorecki et al, 2010 and Mc Ginnis et al, 2015) The existence of a pressure ulcer can also lead to complications such as infection, with a risk of progression to sepsis and mortality (Backhaus et al, 2011). The financial implications associated with pressure ulcer prevention and treatment are significant (Demarre et al, 2015, and Dealey et al, 2012). Demaree et al (2015) stated that the cost of pressure ulcer prevention for an individual patient per day varied between €15.70 and €87.57 across health care settings. In fact, these figures do not represent full cost quantification. The cost of the nursing time or pressure ulcer prevention/treatment has not as yet been fully and precisely identified. The inclusion of this information is vital if one is to determine the full fiscal impact, and hence analyse the efficacy of various preventative strategies (Skerritt and Moore, 2014).

Prevalence and incidence are key quality indicators that are extensively used in pressure ulcer studies to establish and design effective measures for prevention (Baharestani et al, 2009). Across Europe, the United States and Canada,
disseminated prevalence rates range from 9% to 27% (Lahmann et al, 2006, Capon et al, 2007, Keelaghan et al, 2008 and Moore and Cowman, 2012). Furthermore, published incidence rates range from 1.8% to 20.4% (Moore et al, 2013). In addition, an Irish study in a community care multi-site setting documented prevalence rates of 4% (McDermott-Scales et al, 2009). Further analysis in a single primary care setting in Ireland resulting in a point prevalence rate of 0.04% (Skerritt and Moore, 2014). A more recent study by Jordan O'Brien et al (2016) reported that pressure ulcers accounted for 10% of the exiting wound aetiology across acute and community settings.

Currently, the delivery of services by care providers in the acute and community setting is challenging, with the predicted growth in the elderly population coinciding with an escalating occurrence of chronic disease and disability (Gethin et al, 2005, Moore and Cowan 2012 and Department of Health (DoH), 2012). A conclusive link between the risk of developing pressure ulcers and age progression has been proven (Moore and Cowman, 2012 and NPUAP, EPUAP and PPPIA, 2014). With Ireland’s growing elderly population, transformation provision in the community nursing services is fundamentally important in order to meet the challenges surrounding pressure ulcer prevention (McDermott-Scales et al, 2009 and Skerritt and Moore, 2014). The presence and progression of pressure ulcers in Ireland has not gone unnoticed by The Department of Health, and it has set out a strategic framework to reform Ireland’s health service to meet the population health needs (DoH, 2013). Pressure ulcer incidence has been submitted as a key performance indicator in the Health Service Executive National Service Plan 2015 (HSE, 2015). In practice this translates into significant challenges for health care providers to tackle pressure ulcer occurrence. From the available evidence it is clear that pressure ulcers remain a problem in the community setting, and this fact requires further exploration (McDermott-Scales et al, 2009, Paquay et al, 2010 and Skerritt and Moore, 2014).

Undeniably, the literature states that most pressure ulcers are avoidable (Moore and Cowman, 2012, Suriadi et al., 2008). Risk assessment is therefore the key initial step in the prevention/early treatment process (O’Brien and Cowman, 2011). This may involve assessment of skin, mobility, and nutrition needs; the results of which
are then included in the treatment or prevention strategy (Moore and Cowan, 2012). However, findings from a recently published study in a primary care setting in Ireland identified inconsistency in methodological approaches towards the prevention and management of pressure ulcers, leading to variations in outcome. (Skerritt and Moore, 2014). This variation in outcome is unacceptable for patient safety (Gethin et al, 2005 and Moore and Cowman, 2012).

In primary care at present the Public Health Nurse (PHN) is the caseload manager for child health and the elderly, with the support of the Community Registered Nurse (CRGN) (DoH, 2000). The pressure on community nursing in Ireland has increased due to the economic downturn; demographic changes; an ageing population with multifaceted needs; and swifter discharges with enhanced and intense packages of care being put in place (Hanafin et al, 2003 and Pye, 2015). Indeed, the Department of Health introduced enhanced and intense packages of care as part of its strategy aimed at improving patient safety, enhancing patient living conditions at home, preventing long term care, and avoiding hospital admissions (HSE, 2010). In primary care, to implement a care package, the PHN /CRGN assesses the patient’s care needs. On completion a care plan is initiated by the PHN/CRGN which outlines risks and care requirements. Following this, a care worker is assigned to care for the patient. The nursing staff delegate the fulfilment of these identified needs to the carer (HSE, 2010). Internationally, carers have been given a variety of job titles, for the purpose of this research project, the term Home Support Worker (HSW) will be adopted. The HSW’s job description was defined in 2006, and outlined as a supportive role for care delivery under the supervision of a qualified nurse (HSE, 2006)

In 2005 the HSE identified essential core competencies for all HSWs working in the Irish health service. This was known as the Securing Knowledge Intra Lifelong Learning (SKILL) project (SKILL, 2005). This recognised qualification for HSWs working in the HSE and is currently awarded by the Further Education and Training Awards Council (FETAC, 2013). Care skills are one core competency identified, for example, caring for the patient’s personal cleansing and hygiene (HSE, 2006). Because of this regular close physical proximity, HSWs have a greater opportunity to complete a skin assessment (Samuriwo, 2010 and Athlin et al, 2010). Moore &
Cowman (2012) clearly illustrated that skin assessment is a crucial component in pressure ulcer prevention. Moreover, skin inspection and identification of early skin damage is fundamentally important in the process of predicting pressure ulcer occurrence (Beeckman et al, 2007, Beeckman et al, 2008, and Beeckman et al, 2010). Universally, classification systems are a recognised benchmark to determine skin damage severity (NPUAP, EPUAP and PPPIA, 2014). Therefore, accurate classification of skin damage requires a clear understanding of skin aetiology, and it is crucial that care givers receive training before delegation of this duty is given for everyday practice (Beeckman et al, 2010).

However, the scarcity of evidence of HSW’s overall knowledge and competency levels in healthcare delivery is apparent (Mc Kenna et al, 2005 and Swedberg et al, 2013). This lack of clarity means nursing professionals are unable to determine which duties can and cannot be safely delegated. A continuous stream of research results regarding pressure ulcers means care providers must keep up to date with current practice (Beeckman et al, 2008) The National Best Practice and Evidence Based Guidelines for Wound Management, HSE (2009) states that education is essential to complete a comprehensive skin assessment. Worryingly, the HSW’s job description clearly states that nursing staff should not delegate any duty to a HSW whereby deficits in training are apparent (HSE, 2006). In addition, the Health Service Executive established a structured job description for HSWs, one duty assigned is to report any incident which may be detrimental to the health and safety of a patient (HSE, 2006). On examining the course content of the FETAC Level 5 relating to core competencies regarding pressure ulcers prevention and management, the knowledge and skill requirement is vague (HSE, 2006). Therefore, to follow HSE guidance, it is essential that an innovative educational programme is developed and measured for efficacy if knowledge deficits are to be alleviated.

However, due to financial and time constraints, Health Services tend to expect delivery of education components to be of a high quality with optimal accessibility e.g. using ICT. E-learning is one such innovative approach to education which satisfies these requirements (Beeckman et al, 2008, and Beeckman et al, 2010). The EPUAP developed an educational e-learning tool called PUCLAS (Pressure Ulcer Classification) (Defloor and Schoonhoven, 2004). The PUCLAS is an e-
learning tool, developed by EPUAP to improve knowledge and skills regarding classification of pressure ulcers. It aims to enhance the ability to differentiate between pressure ulcers and moisture lesions, and detect skin damage. It is illustrated by means of clear definitions, high quality photographs and video imagery. Beeckman et al (2010) completed an international randomised control trial study to assess the effectiveness of the PUCLAS tool, and found that the intervention group were consistently more likely to classify photographs of a combination of skin damage than the control group. However, currently there is no evidence to support the validity of this e-learning program for HSWs (Beeckman et al, 2010).

Indeed, skin assessment is an essential component in pressure ulcer prevention (NPUAP, EPUAP and PPPIA, 2014). HSWs have a greater opportunity to complete a comprehensive assessment (Samuriwo 2010 and Athlin et al, 2010). Yet, despite their regular involvement in supporting registered nurses in pressure ulcer prevention, little research to date has considered HSWs’ educational needs if they are to be enabled to competently complete a comprehensive skin assessment.

1.2 Research Question

The research question for this study was, ‘What is the impact of an educational intervention on community Home Support Workers’ ability to detect early pressure ulcer damage?’

1.3 Research Aims

The aim of this study was to investigate the impact of an e-learning educational programme on Home Support Workers’ ability to assess and detect early pressure ulcer damage in a community setting.

1.4 Research Objectives

The objectives of this study were:

- To complete a literature review of pressure epidemiology, cost of pressure ulcers, the evolving nature of healthcare delivery in primary care, the role of the HSWs and pedagogic approaches for HSWs
• To gain an insight into the HSWs’ ability to detect early pressure ulcer damage
• To examine whether the PUCLAS e-learning tool improved the HSWs’ pressure ulcer classification skills
• To determine recommendations for clinical practice
• To establish a means by which the quality and quantity of knowledge regarding pressure ulcer classification may be achieved.

1.5 **Significance of the study**

Pressure ulcers can be prevented by identifying those at risk, followed by the execution of an effective preventative intervention (Defloor et al, 2005). Skin assessment is one aspect of the preventative intervention. Within Primary Care at present, the increased volumes of patients with complex issues often means PHN/CRGN experience time restrictions regarding ability to assess all patients’ skin for damage. As a result, PHNs/CRGNs are dependent on HSWs to complete skin assessments, in order to prevent pressure ulcer occurrence.

Accurate skin assessment is multifaceted and requires in-depth knowledge and skills. Investment in education is required to fulfil this need. This study will test the usability and efficacy of this educational e-learning tool as a means of increasing the HSW’s ability to detect skin damage, and prevent pressure ulcer development. Furthermore, the results of this study can be used to implement strategies which have the potential to have positive impacts on the health and safety of an extremely vulnerable client within the community.

1.6 **Summary**

The projected rise in the elderly population in the community, and refocused management of chronic disease from hospital to community suggest that there will be an upsurge in the incidence of pressure ulcers, unless effective preventable measures are put in place. Pressure ulcers can be prevented by prompt detection, effective classification and targeted action. In the community at present, expectations regarding the role of the HSW are evolving, and the delegation of tasks is becoming evident for an already overburdened element of the workforce. Deficits in HSWs’ clinical knowledge and in the skills required for prompt detection and
effective classification of pressure ulcers are clear and supported by evidence. The implementation of an educational training intervention focusing on one aspect of pressure ulcer prevention will add to this body of research evidence. If the educational tool is successful, it will help clarify the exact competencies and skills of the HSW, and enable nurses to delegate responsibilities for skin assessment to a level commensurate with HSW scope of practice.
Chapter 2

Literature Review

2.1 Introduction

The aim of the study was to investigate the impact of an educational intervention on community HSW ability to detect early pressure ulcer damage. Internationally, pressure ulcers are a significant problem in the community setting (Jordan O’Brien, 2016 and Asmius and Liu, 2011). It is estimated that pressure ulcer prevalence figures in the community range from between 0.04% to 8.9%, with underreporting demonstrated as a common feature throughout the research studies (Skerritt and Moore, 2014 and Asmius and Liu, 2011). There is also a substantial cost associated with the development of pressure ulcers (Dealey et al, 2012). Also to be factored into costings are the considerable negative repercussions in terms of patient quality of life, such as pain and mental affliction, and inability to function independently (Gorecki et al, 2009 and McGinnis et al, 2015).

In Ireland, the importance of pressure ulcer prevention is highlighted in key policies by the Department of Health (DoH, 2015). In addition, pressure ulcers classified as a stage 3 or stage 4 are defined as an adverse event by the Health Service Executive (HSE, 2014). The SSKIN bundle is an internationally recognised evidence based model of care to help prevent pressure ulcer damage (HSE, 2014). This innovative model of care was adopted in Ireland and is currently been rolled out nationally (HSE, 2014). Skin assessment is the first component of this model of care. The purpose of visual skin assessment for any healthcare practitioner is to enable detection of any changes in the skin integrity (Samuriwo and Dowding, 2014). Visual skin assessment is an essential component in pressure ulcer prevention, and pressure ulcer classification systems are employed to provide a standardised description of the extent of any skin damage, and to help differentiate pressure ulcers from any other types of wounds (NPUAP, EPUAP and PPPIA, 2014).
Nationally, in the community setting, the blunt caseload ratio allocation for Public Health Nurses (PHNs) and Community Registered Nurses (CRGNs) appears to have a significant integral flaw (Pye, 2015). Changing demographics and a predicted rise in the number of older people living at home who suffer from chronic disease are likely to lead to an increased nurse workload (HSE, 2014). HSWs are not new to the community setting and are described as those who provide supportive services and personal assistance to dependent patients (Hewko et al, 2015). HSWs are often well positioned to make skin observation, for instance when attending to patients' personal hygiene needs (Athlin et al, 2010). However, evidence states that all health care workers completing a comprehensive skin assessment require education to fulfil this role (Samuriwo and Dowding, 2014).

One of the Department of Health key priorities in its vision for future health is a strategic framework to ensure the care needs of the individual are being met within the primary and community based setting, with a focus on demand-led services. (DoH, 2016). Therefore, it is imperative that every aspect of pressure ulcer prevention and treatment is investigated in order to comprehend the totality of its impact. Possession of research findings in this area can assist in providing justification to relevant government bodies that suffering with a pressure ulcer is a demand-led service. With that in mind, a search was conducted to discover research relating to detection of skin changes in patients at risk of developing a pressure ulcer. A review of the research has indicated several areas of importance: prevalence and incidence, cost of pressure ulcers, changing nature of pressure ulcer management in the community setting, and the role development of the HSW. Each of these will be discussed.

This chapter reviews the literature surrounding pressure ulcers. In doing so the writer has divided this chapter into six separate sections. The first section addresses the epidemiology of pressure ulcers, focusing on the community setting and primary care. The second discusses the impact of pressure ulcers on health and social gain across all healthcare settings. The third discusses the evolving nature of health care delivery in the community setting and primary care., with a focus on pressure ulcer management. Section four addresses the role development of HSWs. Section five discusses pedagogic approaches for HSWs, concentrating on skin assessment.
Finally, section six provides a discussion and summary, presenting the significant points raised within the previous sections.

2.2 Search Strategy

The search was performed using five electronic specialised databases for relevant literature between October 2015 and January 2016: CINAHL, Medline, PubMed, Cochrane databases, and Scopus. All search terms had the same limitations applied: English language, as the writer was not fluent in any other language; peer reviewed; and research articles. The search for relevant studies comprised the following key words and phrases: ‘pressure ulcer’; ‘prevalence’; ‘incidence’; ‘community setting’ or ‘primary care’; ‘cost’; ‘quality of life’; ‘health care assistants’, ‘nursing aides’ or ‘nursing assistant’; and ‘educational intervention’. These words were used to search study titles and abstracts in order to identify relevant literature, before conducting the research work. A hand search of relevant journals, conference proceedings, Government and organisational publications was also undertaken, and the websites of various wound care organisations were reviewed. A search of articles, bibliographies and guideline bibliographies yielded more relevant articles. Additionally, reference lists of the retrieved studies were manually searched. This was conducted to check for any relevant studies missed during the initial search. Over 4,400 search results were found, and following further in-depth analysis, over 300 search results, all with possible relevance to the research topic, were identified. Abstracts of relevant titles were read fully by the author. The final number of papers located was 154. The predominant theme emerging was the importance of knowledge and education for all health care workers in relation to prevention of pressure ulcers. The literature supported the importance of HSWs in the process of detecting skin changes, and emphasised the critical importance of educational programmes in order for them to competently execute this role.
2.3 Pressure Ulcer Epidemiology

2.3.1 Introduction


Prevalence studies not only quantify the problem at a specific moment or specified time. Possible trends can be generated within a healthcare organisation (Gottrup et al, 2013 and Hopkins and Worboys, 2015). Prevalence studies can recognise paucity in care pathways in a defined population, and allow health care practitioners to focus care services and delivery, definitively avoiding hospital admissions (Vowden and Vowden, 2009, Gottrup et al, 2013 and Hopkins and Worboys, 2014). Conducting pressure ulcer prevalence studies across diverse healthcare settings permits healthcare practitioners and healthcare organisations to compare and contrast findings, and highlight possible trends. These trends could incorporate changing demographics, raised awareness of possible co-morbidities, or highlight pressure ulcer classification movements. This can justify and estimate demand for resources within a small timeframe within a defined population (Gottrup et al, 2013,
Stevenson et al, 2013, Hopkins and Worboys, 2015 and Hall et al, 2014). Additionally, these identified prerequisites could possibly result in the development of educational training for all healthcare practitioners, or suggest the necessary skill mix required within a defined population (Stevenson et al, 2013 and Jordan O'Brien et al, 2016). Despite the fact that prevalence studies acknowledge current deficits in practice and highlight possible negative healthcare trends, there is evidence to support that inconsistencies remain in the measurement outcomes. Prevalence studies do not demonstrate the frequency of new pressure ulcers over time, and do not identify the cause and effect of a pressure ulcer. Prevalence studies do not evaluate the effectiveness of preventative measures to stop a pressure ulcer from occurring (Gottrup et al, 2013).

In contrast, incidence studies follow the patient over a specified timeframe and collect data related to cause and effect (Vanglider et al, 2009, Okuwa et al, 2009 and Woo et al, 2015). This provides a more appropriate assessment of the problem, and explores effectiveness and adherence to clinical guidelines. Furthermore, this comprehensive data can be the first step in a critical process at national level placing emphasis on areas of insufficiency for patient safety, highlighting risks and dictating health strategy (Vanglider et al, 2009, Okuwa et al, 2009 and Woo et al, 2015).

2.3.2 Prevalence

In the literature reviewed, prevalence rates varied among different countries and different healthcare settings. For the purposes of this discussion, prevalence data across community settings has been selected. Between 2007-2016, fifteen studies conducted in eight countries reported the prevalence of pressure ulcers in a community setting (Paquay et al, 2008, Okuwa et al 2009, Vowden and Vowden, 2009, McDermott-Scales et al, 2009, Asimus and Li, 2011, Meaume et al, 2012, CIHI, 2013, Stevenson et al, 2013, Gottrup et al, 2013, Hall et al, 2014, Skerritt and Moore, 2014, Woo et al, 2015, Hopkins and Worboys, 2015, Jordan O’Brien et al, 2016). The highest reported prevalence was 8.9% across a primary care setting in Australia, over a four-week period (Asimus and Li, 2011). The lowest prevalence reported rate was 0.04% across a single site primary care setting in Ireland, at one point in time (McDermott-Scales et al, 2009).
Internationally, the reported prevalence rates ranged between 2.4% to 8.9% across community settings in Australia, Canada and Japan (Okuwa et al, 2009, Asimus and Li, 2011 and CIHI, 2013). Within European studies, there were lower reported prevalence rates than studies elsewhere. However, results within these prevalence studies illustrated considerable variance in outcomes, with figures ranging between 0.7% to 6.8% (Paquay et al, 2008, Meaume et al, 2012 and Gottrup et al, 2013). In contrast to European mainland figures, in the United Kingdom (UK) variation in reported prevalence figures was not a significant feature. Prevalence figures recorded were between 0.7%-.31% across multiple geographically diverse community settings. In Ireland, prevalence studies were conducted across multi and single community sites. The reported prevalence figures of 0.04% to 4%, demonstrated significant variation, corresponding with illustrated findings within European studies. More recently in Ireland, Jordan O’Brien et al (2016) reported pressure ulcers accounted for 10% (n=46) of the overall wound aetiology encompassing a major urban area in Ireland.

Within the research studies’ overall findings, the most commonly occurring anatomical sites reported for pressure ulcers were the sacrum and heels. Furthermore, within these studies’ findings the most common pressure ulcer classification was stage 1 or stage 2. Overall pressure ulcers almost exclusively occur in the elderly population, predominantly female, with immobility, nutrition and incontinence all identified as associated risk factors. Ominously, Hall et al (2012) stated that 81% of patients identified as having a pressure ulcer also experienced at least one comorbidity.

2.3.3 Incidence

Based on the literature reviewed, it is evident that little is known about pressure ulcer incidence in community settings across Europe, as the majority of studies have focused on prevalence (Moore et al, 2013). The main body of knowledge relates to the USA, Canada and Asia. The highest reported incidence was 14.3% in a homecare setting in Taiwan (Tsai et al, 2012). The lowest reported incidence rates were 1.3% in Canadian and the USA (Takahashi et al, 2011 and Woo et al., 2015). In the USA, incidence figures vary across states, between 1.3%- 2.9% (Takahashi et al, 2011 and Bergquist-Beringer et al, 2011). Lower findings were reported in
Canada by Woo et al (2015), estimating incidence figures between 1.3%-1.4%. In contrast in Japan, Okuwa et al (2009) reported pressure ulcer incidence of 4.6%, and the highest reported pressure ulcer figure of 14.3% was reported in Taiwan (Tsai et al, 2012). As with prevalence studies, pressure ulcers largely occur in the older population, predominantly female, with immobility, nutrition and incontinence all identified as associated risk factors. Of the patients identified as having a pressure ulcer, 37% also experienced cardiovascular disease.

2.3.4 Disparity in figures

The literature revealed varied estimations worldwide for prevalence and incidence of pressure ulcers. This disparity in prevalence and incidence figures makes it difficult to make a direct comparison between studies. However, the studies provide an insight into the potential size and scope of the problem. Therefore, it is imperative that this variance be examined to enable accurate interpretation of the findings.

There was significant diversity in terms of the study design and data collection methods employed. Some studies were conducted within a wound care survey not exclusive to pressure ulcers. The study designs varied from prospective cohort studies, cross-sectional and observational designs. Prospective studies relied on medical databases or medical notes for data collection (Woo et al, 2015). This data collection method suggested that inconsistency in recording and documentation of pressure ulcers should not be overlooked, nor the possibility of under-reporting (Woo et al, 2015). Observational studies relied on visual skin assessment. This data collection process highlighted difficulties in ensuring that consistency and accuracy were accomplished throughout the collection process (Stevenson et al, 2013). Cross-sectional studies relied on self-administered questionnaires, once again questioning the precision of data collection. The method employed to classify and grade pressure ulcers is significant if a precise direct comparison between studies is involved. Since 2014, the NPUAP, EPAUP and PPPIA have come to an agreement regarding classification staging (NPUAP, EPUAP and PPPIA, 2014). However, analysis of the accuracy and consistency of the individuals completing the classification is lacking in the studies. Only one study demonstrated the inter-rater reliability testing (Asimus and Li, 2011). Limitations remain also with the study assessors or data collectors in terms of differences in level of training, i.e. when
performing clinical assessment (Stevenson et al, 2013). Additionally, stage 1 and stage 2 pressure ulcers were the most common classification recorded. Questions regarding the reliability and accuracy of this grading have been illustrated throughout the literature, which itself raises question marks over the reliability of the results (Asimis and Li, 2011). This reservation and ambiguity led Asimus and Li (2011) to exclude stage 1 classification from their prevalence study, and therefore there is the possibility that they underestimated prevalence rates. Nonetheless, their study included classification by aetiology and concluded that 70% of the overall pressure ulcers resulted in medical devices, and 32.4% of these devices were prescribed by the Occupational Therapist. This suggests that pressure ulcer prevention is not the sole responsibility of the nurse.

Generally, while most prevalence studies reported point prevalence, several reported period prevalence. Asimus and Li (2011) conducted a period prevalence over a four-week period, McDermott-Scales (2009) conducted a point prevalence over one day and Skerrit and Moore (2014) conducted a period prevalence study within a one-week period. Incidence studies showed a cumulative incidence in a percentage total, yet the time period for collating the data varied between 4-6 weeks to 4 years among the studies. Although the studies explored in this review are those conducted in community care settings, it cannot be assumed that the subjects are homogenous.

Variations in the population denominators could result in sample selection-related bias and may also contribute to variance in study outcomes (Stevenson et al, 2013). The diverse study care settings are noted throughout the findings, rendering unequivocal comparison difficult. It is evident that sample size is an essential consideration when examining the accuracy of outcomes for prevalence and incidence study findings. For example, in Ireland alone, three prevalence studies were conducted in community care settings (McDermott-Scales et al, 2009, Skerritt and Moore, 2014, and Jordan O'Brien et al, 2016). However, comparisons across all three studies is challenging, due to significant differences in the study population. For example, the mean average age ranges from 64-72 years, population samples vary between 118379 and 1187176, reflecting disparity in prevalence results (0.04%-4%). Nonetheless, these results could significantly assist in determining the
resources required specific to the population needs, skill mix and wound care provision within a defined population (McDermott-Scales et al, 2009, Skerritt and Moore, 2014, and Jordan O’Brien, 2016).

2.3.5 Summary

There is extensive recognition that the vast majority of pressure ulcers are avoidable, when targeted preventative measurements are implemented (Moore et al, 2011 and Skerritt and Moore, 2014). Many healthcare settings have developed and introduced guidelines to prevent pressure ulcer damage from occurring (HSE, 2009). National Government bodies have set targets for reducing the number of patients developing a pressure ulcer (DoH, 2015). Over the last number of years Healthcare organisations have developed a greater understanding of the actions needed to prevent pressure ulcers. However, pressure ulcers remain a significant healthcare problem.

One means of accurately evaluating adherence to pressure ulcer guidelines is to measure the precise rates of pressure ulcer occurrence. Prevalence studies report the number of existing pressure ulcers (Asmius and Li, 2011) and the rate at which pressure ulcers are occurring are reported within incidence studies (Woo et al, 2015). Conducting a prevalence or incidence study is considered time-consuming and costly. Currently, pressure ulcer prevalence studies are study of choice by most researchers within this field. Pressure rates in community settings vary from 0.04% to 8.9%, and incidence rates range between 1.2% to 14.3%. The most common anatomical sites for pressure ulcers are the sacrum and heels, the most frequent classifications are stage 1 and stage 2. A predicted rise in the number of older people is imminent, signifying that there will be a related increase in the numbers with a pressure sore, unless efficient preventative measures are put in place. Therefore, all healthcare practitioners should have a clear understanding of the differences in the methodological approaches within prevalence and incidence studies. Sufficient methodological rigour is necessary to ensure reliable, valid and comparable results. Study design, data collection, and sample selection are areas where significant standardisation is required. With superior methodological rigour applied, health resource allocation, skill mix and educational training requirements could be set for defined populations. Additionally, conducting prevalence and
incidence studies could highlight healthcare trends and shortfalls in patient care; patient safety; risk and thereby influence health policy.

2.4 Cost of Pressure Ulcers

2.4.1 Introduction

A comprehensive understanding of the effect of pressure ulcers both on the individual and the health service enables practitioners to evaluate the true extent of the problem (Gorecki et al, 2010). Organisational expenditure tends to be driven by fiscal considerations, often with insufficient regard given to the problem and the impact it has on the patient. This section examines pressure ulcers from the perspective of health and social gain, and begins with an economic appraisal. This is followed by a discussion on the effects which pressure ulcers have on health-related quality of life. Finally, there will be a summary reaffirming the salient points discussed.

2.4.2 Economic Impact of Pressure Ulcers

Pressure ulcers are associated with increased costs and resource expenditure, which effect Healthcare organisations (Brem et al, 2010, and Dealey et al, 2012). Presently, resources for healthcare are limited, and this is challenging considering current demographic trends globally. The predicted growth in the elderly population will lead to an escalation in the occurrence of chronic disease and disability, which decisively correlates with the chances of developing pressure ulceration. (Moore and Cowman, 2014, and DoH, 2014). Therefore, the principal focus concerning pressure ulcers should be on prevention, which is naturally less costly and less distressing for the patient (Schuurman et al, 2009 and Moore et al, 2011). The key focus in pressure ulcer prevention rests primarily on identifying risk, reducing pressure and minimising shear (Brem et al, 2010). When risk is ascertained, intervention can then be employed. Palfreyman and Stone (2015) conducted a systematic review to evaluate interventions for preventing or treating pressure ulcers. Worryingly, customary interventions employed by healthcare workers, such as repositioning, pressure relieving mattresses and pressure off-loaders were shown to be of limited effectiveness (Palfreyman and Stone, 2014). Additionally, research found that where a pressure ulcer occurs, the key focus was directed
Towards promoting wound healing via the application of wound dressings (Tricco et al, 2015). Recent systematic reviews have appraised the effectiveness of such wound dressings, and found that many did not contribute significantly to pressure ulcer healing (Palfreyman and Stone, 2015, Tricco et al, 2015). This supports the Moore et al (2011) theory that if pressure is not removed from the area effectively, the implementation of intervention treatments will be actioned imminently, which is not a cost-effective outcome. Consequently, it is imperative that healthcare providers have a true understanding of the financial impacts associated with pressure ulcers for healthcare systems.

Touche Ross (1993) provided one of the first reports in Europe estimating the annual expenditure on treating a pressure ulcer in a UK hospital. The authors estimated that a UK general hospital could potentially spend between £600,000 and £3 million on treating a pressure ulcer in one given year. Subsequent to this study, Bennett et al (2004) estimated that pressure management accounted for 4% of the total UK healthcare expenditure annually. In a more recent study in the USA, Brem et al (2010) estimated that a hospital patient who acquired a stage 4 pressure ulcer could cost on average $129,248 USD. The principal cost driver in these studies was the amount of nursing time required to care for this group of patients, but also cost associated with complications involved in the treatment of this wound aetiology, for example wound infection. Hence, recognising the prevention and treatment costs for pressure ulcers could assist the accomplishment of successful strategies in clinical practice. Economic analysis has become progressively more significant as the means of deciding between treatments and interventions in pressure ulcer management (Moore et al, 2011). Economic analysis research can indicate the constraints that determine the distribution of scarce resources, and evaluate the consequences of alternative interventions (Larg and Moss, 2011). On reviewing the literature, numerous types of economic analyses were evident. Cost minimisation studies were employed when researchers sought to compare two diverse healthcare approaches, measuring outcomes consistently and seeking to determine the least costly method.

Schuurman et al (2009) conducted a cost minimisation study to compare the cost of prevention and treatment of pressure ulcers in the acute sector involving two
different prevention strategies. The findings from this study demonstrated that using a technical prevention strategy was less costly than employing a human prevention strategy. These findings support previous studies’ findings, which verify that nursing time is the main cost driver (Touche Ross, 1993, Bennett et al, 2004, Brem et al, 2010 and Demarre et al, 2015). Moore et al (2011) conducted an economic analysis of the costs associated with the human approach. The study involved two different repositioning regimes. Findings demonstrated that the 30-degree repositioning technique made economic sense. Projected annual costs were estimated for the total study population, illustrating a cost saving of €510,00. This in itself suggests that a human approach should not be overlooked in future prevention and treatment strategy decision-making.

Cost-effectiveness studies measure spend in terms of cost per pressure ulcer prevented. Sanada et al (2010) investigated the effectiveness of a new incentive system by comparing the rate of healing of pressure ulcers and estimated a reduction in the cost of treating severe pressure ulcers of 1,776 billion yen per year. In a similar study Makai et al (2010) and Mathiesen et al (2013) investigated the cost effectiveness of pressure ulcer bundles in preventing the incidence of pressure ulcers. The incremental effects of the studies demonstrated a reduction of pressure ulcers by 10.5% (Makai et al, 2010), and 9.5% (Mathiesen et al, 2016). Three studies estimated the costs per quality-adjusted life years (QALYs). Padula et al (2011) investigated the cost-effectiveness of two treatment alternatives, a standard care prevention approach versus strict adherence to wound care guidelines. This study focused on QALYs gained from the prevention of hospital acquired pressure ulcers. The standard care had 29.5% mortality rate compared to 15.5% in the prevention group. Additionally, Pham et al (2011) compared current prevention practice with four quality improvement strategies. All strategies reduced lifetime risk, however, the second strategy, oral nutritional supplements, were not cost-effective.

Similarly, Hisashige and Ohura (2012) investigated the cost effectiveness of nutritional intervention on pressure ulcers healing, and measured QALYs gained. In contrast to Pham et al, (2011) findings in Hisashige and Ohura (2012) concluded that a nutritional intervention did save money, reducing pressure ulcer free days by 9.6 and 16.2 per person, and the study population illustrated increased QALYs.
Cost/benefit analysis is only concerned with the monetary impact, averaging costs per unit per local population or per nation. Internationally Graves and Zheng (2014) estimated that the total cost of pressure ulcers for a 1-year duration in hospital and residential care setting in Australia equalled US$1.65 billion. In the UK Bennet et al (2004) estimated the cost of treating a pressure ulcer varies between £1,064 for stage 1 to £10,551 for stage 4. One might argue that this figure is outdated, yet in 2012, Dealey et al (2012) estimated the cost of treating a pressure ulcer varies between £1,214 for stage 1 to £14,108 for stage 4. These findings are concerning, considering Demarre et al (2015) estimated the mean cost of pressure ulcer prevention in acute care and nursing homes in Belgium was €7.88 to €2.15 per day.

Information pertaining to the costs associated with pressure management in Ireland is sparse, indeed only one study has investigated this (Gethin et al, 2005). The costing was completed on one patient in a hospital setting with a stage 4 pressure ulcer and managed as an inpatient for a 5-month period. The management cost of this patient was €119,000, and it was inferred that there would be an overall costing of €250,000 for the planning and management of pressure ulcer care in the acute setting in Ireland (Gethin et al, 2005). Graves et al (2005) demonstrated that a patient who develops a hospital acquired pressure ulcer causes a significant resource drain on the hospital system. This research study estimated a median 398,432 bed days lost at a cost of AU$285 million over a period of one year.

The main driving force of costs in pressure ulcers care is cost of nursing time (Dealey et al, 2012). It is widely acknowledged that pressure ulcer care is multifaceted, and that a number of intrinsic and extrinsic factors cause an individual’s skin to break down (Coleman et al, 2013). Nurses and HSWs are required to dress wounds, reposition patients and complete regular comprehensive skin assessments. This direct care is labour intensive, yet vital for pressure ulcer prevention and treatment. However, a study conducted by Dealey et al (2012) demonstrated that the daily costs of treating a patient with a pressure ulcer in hospital or a long term setting ranged from £43 to £374 per day. Interestingly, nurse and HSW time to carry out this delivery of care was 90% of the overall cost.

Many economic analysis studies exist, and can be used to guide decision makers in the field of pressure ulcer management. There is also good evidence that certain
preventions and interventions are cost effective as part of a strategic approach to prevent pressure ulcers. Conversely, the majority of studies were conducted in the acute and long term care setting, yet findings in the literature where similar approaches to prevention and intervention were carried out in different care settings have yet to demonstrate cost-effectiveness. The main limitation is the broad diverse methodological variance of the attained data, making it problematic to generate comparison between studies and across settings. These inconsistencies in findings not only make it difficult to adopt a direct comparison, but there are further limitations with many of the studies. Time horizon of cost effectiveness studies differed throughout the studies. Within the literature reviewed regarding cost-effectiveness analysis, the time horizon in the model-based studies varied. Two studies had a time horizon of less than one year, and one had 3 years (Padula et al, 2011, Pham et al, 2011, Hisashige and Ohura, 2012 and Mathiesen et al, 2013). It is concerning that studies conducted within short time horizons can yield deceptive results, because we cannot distinguish the long-term effect of interventions in the context of cost effectiveness (Carter, 2014). Only two studies attempted to obtain indirect costs by adopting a societal perspective (Padula et al, 2011, Hisashige and Ohura, 2012). Their approach to capturing indirect costs cannot inform Healthcare providers whether an intervention benefits society in its entirety, therefore this methodology is not favoured by health economists. Yet, McMahon and Sin (2014) state that to truly identify economic costs, equally direct and indirect costs must be considered.

2.4.3 Evidence-Based Practice and Quality of Life

The three underlying features of evidence-based practice are research findings, clinical expertise and patient perspectives (Sacket et al, 2006). Therefore, an improved understanding of patients’ perspectives and their individual responses to particular treatments are an essential component in healthcare evaluation, and have been extremely influential in improving service provision (Gorecki et al, 2009). As such the impact that pressure ulcers have on an individual’s quality of life cannot be overstated. The World Health Organization appreciated the significance of measuring and understanding quality of life (World Health Organization Quality of Life Group, 1995). Subsequently, this led to the development of methods to measure quality of life. The concept of quality of life is multifaceted, and with this in mind,
quantifying quality of life adds layers of complexity for researchers when conducting studies. Hence, researchers employ a range of diverse approaches.

2.4.4 Measuring Quality of Life

Within the literature reviewed various research studies applied a phenomenological approach, endeavoring to gain insight and understanding into the patients’ own experience of living with a pressure ulcer (Hopkins et al, 2006, Kapp and Annells, 2010). The evidence gained from this research design can in turn assist the person living with a pressure ulcer to deal with the experience. Nonetheless, limitations to the phenomenology approach rest with the fact that the findings obtained are not reflective of every individual’s experience, and cannot be generalized further than the individual from whom the data was attained (Kapp and Annells, 2010). Additionally, researchers have chosen to explore quality of life by means of a pre-designed measurement tools (Thein et al, 2010, Gorecki et al, 2010, Lala et al, 2014, Lourenco et al, 2014, Sebba Tosta de Souza et al, 2015). The focus of these research studies is to identify certain factors relating to quality of life, specifically health. Hence, it is asserted that these research studies are exploring health-related quality of life (HRQoL) rather than the principal of quality of life in its entirety (Gorecki et al, 2011). Various instruments are used to measure HRQoL. Some instruments employed are generic, such as the Minimum Data Set Health Status Index (MDS-HSI) (Thein al, 2010), or Short Form Health Survey (SF-36), (Lourenco et al, 2014). These tools are broadly based and are dimension-specific measures, such as self-esteem. Recently, a theoretical new patient-reported outcome measure was developed by Gorecki et al (2010). This instrument is a disease specific conceptual framework for measuring HRQoL exclusively in pressure ulcers. The conceptual framework allows researchers to recognize that the disease alone in not the only factor affecting HRQoL, recognizing that contributing factors may affect the measured outcomes.

2.4.5 Pressure Ulcers and Quality of Life

Within this literature review the research studies concerning pressure ulcers and quality of life date from 2006 to 2015. Sample size in the studies range from six persons to 16,531. Four researchers chose quantitative data collection methods
using pre-designed data collection tools (Thein et al., 2010, Lala et al., 2014, Lourenco et al., 2014, Sebba Tosta de Souza et al., 2015). One researcher adopted semi-structured interviews to explore views and opinions of patients with a pressure ulcer (Gorecki et al., 2010). Two researchers applied a phenomenological approach (Hopkins et al., 2006 and Kapp and Annells, 2010).

In Canada, Thein et al. (2010) completed the Minimum Data Set Health Status Index (MDS-HIS) to determine the impact of pressure ulcers on HRQoL. Specifically, the MDS-HIS focuses on six attributes to define health status: cognition, self-care, mobility, sensation, emotion and pain. Thein et al. (2010) endeavored to establish the impact of pressure ulcers on HRQoL. Additionally, the authors sought to estimate the health status of residents in long term care (LTC), whether with or without a pressure ulcer. A total of 1,498 of respondents had a stage 2 or greater pressure ulcer. In those with experience of pressure ulcers, the findings demonstrated that having a pressure ulcers reduced the residents’ quality of life and negatively impacted on their life adjustment. However, the findings in this study does not stipulate how this quality of life is affected.

In Brazil, two studies Laurenco et al. (2014) and Sebba Tosta de Souza (2015) adopted the Short Form-36 questionnaire (SF-36). Laurenco et al. (2014) administered the SF-36 to 120 participants with or without a pressure ulcer, with a mean age of 38 years and living with a traumatic spinal cord injury in the community. In contrast, Tosta de Souza (2015) administered the SF-36 questionnaire to 110 elderly participants in multiple healthcare settings. Conversely, the purpose of both studies was to measure and compare the impact that a pressure ulcer had on individuals’ HRQoL. Both studies reported that having a pressure ulcer had significantly reduced the individuals HRQoL. Additionally, both studies indicated that individuals with a pressure ulcer had decreased self-esteem and experienced emotional difficulties. Yet, caution is warranted when interpreting findings in Lourenco et al. (2014), since the combination of pressure ulcers and individuals with a spinal cord injury in the same study possibly make it difficult for the individual to separate the effect of living with a spinal cord injury, and living with a pressure ulcer.

This was a conducive finding in a study by Callaway et al. (2015) demonstrating that individuals living with a spinal cord injury (SCI) generates a significant effect on the individual’s self-image and has a negative effect on self-esteem. This suggests that
the presence of a pressure ulcer in a patient with a SCI does not directly negatively affect self-esteem.

In the first Canadian study, Lala et al (2014) compared the impact on HRQoL in individuals with spinal cord injuries with and without a pressure ulcer using the Community Follow-up Questionnaire. In this study the authors found that of 1,137 individuals with a spinal cord injury, 33.5% reported as having a pressure ulcer. 65% of this number voiced dissatisfaction with their limited ability to perform their main activity of living, and thus reported a lower HRQoL. This finding concurs with previous research in this area, which asserted that more severe pressure ulcers have a greater effect on quality of life (Hopkins et al, 2006). However, Lala et al (2014) did not determine pressure ulcer severity or location. This in itself makes it difficult to truly determine that pressure ulcers alone have an effect on HRQoL.

Two studies were identified which adopted a phenomenological approach (Hopkins et al, 2006, Kapp and Annells, 2010). These studies were conducted in the UK and Belgium (Hopkins et al, 2006), and Australia (Kapp and Annells, 2010). A total of 15 patients who had a pressure ulcer participated in the studies. In both studies, findings concluded that having a pressure ulcer has a negative effect on the individuals’ quality of life. Pain was considered the most suppressing feature of the patient’s experience. Hopkins et al (2006) was the only study that illustrated the pressure ulcer classification, namely stage 3 and stage 4. Nonetheless, both studies worryingly documented that pain was exacerbated with the introduction of equipment and repositioning regimes, whether in hospital and home settings.

The final study by Gorecki et al (2010) established that existing literature within this area has profound limitations. Additionally, these researchers acknowledged that the impact of having a pressure ulcer on HRQoL is combined conceptually with the contributory factors which could possibly influence the outcome measures. In response to this discovery, Gorecki et al (2010) developed a comprehensive theoretical taxonomy of contributory factors that contribute to a pressure ulcer HRQoL. This theoretical taxonomy established a multitude of contributory factors that affect the individual experience and outcomes. The study used qualitative, semi-structured interviews, encompassing 30 patients in acute care, long term care and community. The aim of this study was to pinpoint contributory factors affecting
pressure ulcer related HRQoL. Gorecki et al (2010) found that the contributory factors involved six experiences of care and ten individual patient’s factors. It revealed that a patient’s perception of their healthcare worker relating to lack of competency and inconsistencies in pressure ulcer management contributed to a decrease in emotional well-being and resulted in a negative relationship. Additionally, this study’s findings demonstrated that contributory factors relating to non-compliance with pressure ulcer treatment rests firstly with the patient’s lack of involvement in treatment decision making, and the lack of faith in the competency of healthcare practitioners. Comparable findings from Hopkins et al (2006) and Kapp and Amell (2010) suggests pain remains a consistent theme. Worryingly, contributory factors linked with pain in the study by Gorecki et al (2010) are concerning. Although reported by the patient, incompetent formal assessment of pain by the healthcare practitioners lead to increased pain. This recurrent theme of inconsistency and incompetency of healthcare practitioners is perturbing, especially when this contributes to patients’ feelings of increased anxiety and decreasing emotional well-being.

Similarities also exist within the literature, particularly regarding dissatisfaction with the implementation of medical devices. This process is negatively associated with increases in discomfort and pain. Dissatisfaction with implementation of medical devices in terms of their association with increased discomfort and pain is also a persistent theme emerging within the literature (Hopkins et al, 2006, Kapp and Amell, 2010 and Gorecki et al, 2010). Additionally, Gorecki et al (2010) reported that repeated hospitalization contributed to feelings of isolation. This negative emotional feeling is unsettling, given that McGinnis et al (2015) demonstrated that pressure ulcers can result in extended hospital stays, and additional hospital admissions (McGinnis et al, 2015).

2.4.6 Summary

Economic analysis research shows that expenditure on pressure ulcer prevention and treatment is extensive. It is therefore prudent to say that pressure ulcer costs place a substantial financial burden on health care organizations. It is estimated that 4% of the UK annual health care budget is expended on pressure ulcer management. The principal cost driver is nursing time and complications associated
with pressure ulcers, such as wound infection. It does not include a financial estimate of the negative effects on the individuals’ quality of life, or the cost of litigation. As a result, figures for the entire economic cost of pressure ulcers have not been determined. Internationally, the numbers reported in the literature illustrate that the majority of pressures ulcer care is expended on treatment, increasing the cost for Healthcare organisations. Current research on cost analysis clearly shows that pressure ulcer prevention is better than treatment. Likewise, an awareness of the cost of pressure ulcer treatment can encourage government, health care organizations, and the health care workers to focus more on the implementation of preventative guidelines (Dealey et al, 2012, Demarré et al, 2012). In addition, evidence based costing for pressure ulcer prevention and treatment would undoubtedly assist accuracy in future economic, budgeting and resource planning evaluations. It would indicate deficits in current strategies and facilitate transparency of reporting. However, it is also necessary to quantify the impact on the patient’s quality of life.

To have an understanding of the impact that pressure ulcers have on the individual, healthcare practitioners need to have an insight into their lives. Healthcare organizations demand efficient health care delivery, and the patient’s perspective should not be disregarded. Within the literature, it has been reiterated ad infinitum that having a pressure ulcer has profound effects on an individual’s quality of life (Gorecki et al, 2010). This impact relates not only to the fact of having a pressure ulcer, but the treatment regimes employed by Healthcare practitioners, which often inflict additional suffering. Health care practitioners, by developing an understanding of the individual’s experience of having a pressure ulcer, can support the development of more patient-focused care plans. Patient reported outcomes are beneficial to Healthcare organizations and in turn will contribute to decreasing the incidence of pressure ulcers, alleviating some of the unnecessary suffering and reducing health care expenditure.
2.5 Evolving Nature of Healthcare Delivery in Primary Care

2.5.1 Introduction

Developments in healthcare policy have resulted in a changing emphasis within healthcare delivery over the last number of years. These reforms have primarily focused on a shift in health care delivery from the acute setting to the primary care setting. Pressure ulcers are a problem in the community setting, therefore it is imperative to explore how planning and care delivery is accomplished focusing on pressure ulcer care. (McDermott-Scales et al, 2009 and Skerritt and Moore, 2014) This section sets out to examine the evolving nature health care delivery in the Irish primary care setting. It is followed by a deliberation on the evolving role of community nursing, specifically how planning and service delivery in primary care is achieved, with a primary focus on pressure ulcer management.

2.5.2 Community Nursing in Ireland

Hanafin and O’Reilly (2015) acknowledged that health-care delivery is becoming more complex and is expanding beyond acute care settings. Primary care is recognised internationally as the most effective way to provide health services, as it aims to deliver high quality easily accessible services for the community in a timely manner (World Health Organisation (WHO), 2008). In general, the development of primary care has created positive outcomes with regard to targeting individual and population health needs (WHO, 2008). In Ireland there have been many further developments since the initial launch of ‘Primary Care: A New Direction’ strategy (DoHC, 2001). Primary Care Teams (PCTs) have been established nationally, working together to deliver local, accessible health and social care services to a defined population within a geographical area (DoH, 2015). This ideal approach has evolved from international health care organisations. It involves interdisciplinary team working in designated primary care areas, providing an effective care service at a local level (HSE, 2009). However, in practice this idyllic model in Ireland does not mirror that of our international counterparts. At present the Public Health Nurse (PHN) remains in a generalist role caring for all ages, with the support of the Community Registered Nurse (CRGN) within a primary care team (PCT) (Philibn et al, 2010).
Traditionally, public health nursing comprised the PHN providing the core nursing and midwifery care in the community. More recently, the CRGN supports and contributes to primary and secondary care (DoHC, 2000). Following the 1970 Health Act, home help services and health-care assistants were introduced (DoH, 1970). These home support services are now well developed and closely allied to the public health nursing service, yet little knowledge is known regarding how their role enhances primary care (Hanafin et al, 2002). Within primary care in other countries, roles are clear and transparent. This enables a more structured and integrated service to meet the population health needs, and facilitates easier cost-benefit analysis of each element (Scott, 2013). In primary care in Ireland, ambiguous job descriptions can cause inter-professional challenges and tensions (Cioffi et al, 2010 and O’Neill and Cowman, 2008). However, it is extensively acknowledged within the literature that teams of knowledgeable professionals working together can produce a high quality and efficient health service (Sheng et al, 2010, HSE, 2009 and Borrill et al, 2003). A study by Giltenane et al (2015) illustrated that role confusion and increasing trends towards specialist roles were prevalent. Furthermore, lack of consensus in client care management strategies, and differences in priorities set can result in waiting lists for specialist services. This can potentially lead to further tension within teams, and can lead to the population being exclusively supported by the PHN service within the primary care team (Cioffi et al, 2010). As health systems come under strain due to expanding populations, changing demographic profiles and the global economic recession, the incentive to innovate and deliver a more efficient and accessible PHC service has taxed the minds of governments and health care planners alike (Hanafin and O’Reilly, 2015).

In response to these challenges, one community care area in Ireland restructured from a generalist, geographically based service, to a more specialised team-based model (Hanafin and O’Reilly, 2015). Two distinct teams were formed, one team dedicated to child health, welfare, and protection, with public health nurses continuing to hold individual caseloads. A second team encompassed a team leader, PHNs, CRGNs, and HSWs provided clinical nursing care to all eligible persons in that community. This latter innovation proved successful indeed. HSWs conveyed that working as part of a team empowered them to report concerns, and the reassurance of eliciting a prompt response was central to the positive
experience encountered. Hanafin and O’Reilly (2015) clearly state that this approach can work in urban primary care areas. Nonetheless, dissatisfaction was expressed by the PHN function relating to the loss of their generalist role. That said, the WHO (2008), clearly state that primary care should be focused on meeting the population health needs rather than the practitioners’ needs.

Giltenane et al (2015) explored the PHNs’ experience of their role in PCTs. Resource deficit, especially regarding nurses’ time, was clearly highlighted. Nationally, the average PHN caseload ratio is one PHN to three thousand community population (HSE, 2011). This blunt ratio allocation method would appear to have a significant inherent flaw, as areas with an ageing population, with increasing chronic and complex needs, are likely to need an increased nurse workload. Currently staff allocation is determined by geographical population rather than population health needs (Giltenane et al, 2015). Skerritt and Moore, (2014) highlighted that 374 hours a week were spent on wound care provision in a primary care setting, and pressure ulcers accounted for 22% of the overall wound aetiology discovered. Therefore, there is a need to continue to provide meaningful data over time, from which service managers and planners can make informed decisions regarding budget and resource allocation on a demand rather than headcount basis.

It is clear that there are barriers to working in primary care teams in Ireland. Yet, working in primary care teams has great benefits as noted in the research literature, and can work well when caring for chronic disease and complex cases (Kringos et al, 2010). Pressure ulcers are prevalent in primary care, and therefore it is essential that clinicians are prepared for this increase in demand on the clinical aspect of nursing. Priority must be given to how pressure ulcer care is planned and delivered, by investigating compliance with every prevention measure (Samuriwo and Dowding, 2014).

2.5.3 Pressure Ulcer Prevention and Management in Primary Care.

There has been a concentrated effort to reduce the number of incidents of healthcare acquired pressure ulcers in Ireland (Moore et al, 2013). Some of the published research has critically appraised and systematically explored literature relating to the scope of the problem, risk factors and intervention therapies (Gorecki et al, 2010,
Coleman et al., 2013, Moore et al., 2013, Gillespe et al., 2014, and Demarre et al., 2015). However, more research is needed into where and how the process of preventing pressure ulcer fails. This can only be achieved by investigating compliance with every pressure ulcer prevention measure (Samuriwo and Dowding, 2014).

In Ireland, the prevention of ulcer grades 3 and 4 is part of the government’s key indicators of quality care, focusing on a change in staff culture. (DoHC, 2015). There has been a concentrated effort in Ireland to measure and reduce the number of incidents of pressure ulcers. It is internationally recognised that pressure ulcer management is multifaceted (NPUAP, EPUAP and PPPIA, 2014). There are a number of determining factors that can cause an individual’s skin to break down (Coleman et al., 2013). Multiple evaluated risk factors emerge, with mobility as the strongest predictor (Lahmann and Kottner, 2011). The SKIN bundle is an internationally recognised evidence-based health improvement bundle to help prevent pressure ulcer damage (Resar et al, 2012, Whitlock, 2013). This care bundle stresses the requirement that every patient receives the care they need, every time they need it. The SKIN bundle was developed by representatives from the Institute for Healthcare Improvement (IHI) (Resar, 2012), and Assention Health (Gibbons et al, 2006) as a blueprint for evidence-based best practice to prevent pressure ulcer damage.

It examined the following key elements:

- **Surface**—ensuring patients are assessed and have the most appropriate mattress and seating.
- **Keep moving**—turning patients as per the plan when in bed, or maintenance and enhancement of mobility.
- **Increased moisture management**—managing continence or ensuring that the moisture environment is adequate.
- **Nutrition**—providing the appropriate nutrition to meet patient needs.

The Scottish NHS introduced an additional ‘S’ for skin inspection, to ensure regular checking of the skin was performed, and identification of skin damage discovered to reduce the risk of further deterioration of the skin (Healthcare Improvement
Scotland, 2011). The SKIN bundle was brought from the USA to Wales, and subsequently to Ireland as part of the ‘Pressure Ulcer to Zero’ pilot project (HSE, 2014).

Demarre et al (2012) stated that even when preventive measures are in place it is important to have knowledge and insight into the factors that independently modify these preventive measures. Although an afterthought, skin observation and classification at regular intervals are essential components of pressure ulcer risk assessment, particularly over bony prominences (NICE, 2014). Globally, to maintain and regulate the description and nature of skin damage, pressure ulcer classification systems are used to ensure differentiation between pressure ulcers and any other type of wound (NPUAP, EPUAP, PPPIA, 2014). Skin assessment is the first element included in the evidence-based improvement bundle for pressure ulcer prevention. Worryingly, evidence suggests that patients may not receive the appropriate level of care to safeguard skin integrity (NPUAP, EPUAP and PPPI, 2014, and Samuriwo and Dowding, 2014). Thankfully, O’Brien and Cowman (2011) make the point that the majority of pressure ulcers are considered to be preventable if suitable measures are executed to uphold skin integrity. Nonetheless, dissatisfaction lingers following a systematic review conducted by Samuriwo and Dowding (2010), demonstrating that there is evidence to suggest that patients may not obtain a suitable level of care to preserve their skin integrity.

Furthermore, Athlin et al (2010) points out that skin assessment is an integral part of nursing yet, Samuriwo (2010) argues the point that skin assessment is not the sole responsibility of the nurse. Both studies affirm that HSWs have a greater opportunity to complete a comprehensive skin assessment (Samuriwo 2010 and Athlin et al, 2010). Complexity of accurate skin assessment rest with the fact that it is multifaceted. Initially, it is of the upmost importance that healthcare workers correctly assess the depth of tissue damage (Bruce et al, 2012). Next, there must be swift action following this assessment, to employ prevention, intervention and treatment measures (Demarre et al, 2015). One must determine the accuracy of pressure identification in company with continuous assessment by means of regular skin inspection. The evidence irrefutably shows that all health care workers
completing a comprehensive skin assessment require education to fulfil this role (NPUAP, EPUAP, PPPIA, 2014).

Presently, in primary care in Ireland the implementation of a care package to assist patients with diminished ability to maintain activities of daily living follows a structured process (HSE, 2010). Following completion of a risk assessment regarding pressure ulcer development by the PHN/CRGN, the patient’s care needs are identified, and subsequently a care plan outlining care requirements is initiated by the PHN /CRGN. HSWs are then in turn directly involved in key aspects of pressure ulcer prevention, such as skin assessment (Aithlin et al, 2010). As the literature states, the HSW’s job description was defined in 2006, and outlined as a supportive role for care delivery under the supervision of a qualified nurse (HSE, 2006). Alarmingly, Samuriwo and Dowding (2014) highlighted that it can take up to three weeks for nurses to consider the effectiveness of the skin care regime implemented to protect their patient. Currently, there is minimal evidence to support the knowledge and competency levels of HSWs in regard to this multifaceted area of care.

This would indicate that nursing professionals should apply caution to which duties can and cannot be delegated. (Mc Kenna et al, 2005 and Swedberg et al, 2013). It is therefore imperative that the HSW role is examined to establish if they hold the key competencies necessary to accomplish the role entrusted to them. The evidence supports the view that HSWs are motivated to provide such care, and it is essential that we formalise this role so that both the patient and health care practitioners know what level of care to expect (Moore and Price, 2004, Samuriwo, 2010). Additionally, competency in skin inspection and classification can contribute hugely to patient safety. These findings highlight the need to investigate and examine how we can attain the competency for HSWs to complete a comprehensive skin assessment in primary care.

2.5.4 Summary

Internationally, there are numerous challenges facing the primary care sector, which impacts community nursing. A notable lack of clarity regarding all health care practitioner roles within primary care is evident. This is concerning, considering the increased emphasis on moving care from the hospital to the primary care setting.
The Public Health Nursing service has been subject to review over the last number of years, as the PHN/CRGN scope of practice has broadened. However, the resources and systems necessary to implement this increased workload have not kept pace. In Ireland pressure ulcers are prevalent in the community setting. The Government has commenced a focused effort to prevent pressure ulcers from occurring. As a result, an evidence-based model known as the SSKIN bundle has been adopted from the UK, aimed at preventing pressure ulcer damage. It comprises five key elements, each essential for pressure ulcer prevention. Skin assessment is the principal component of this model of care. Currently in the community setting the HSW has the best opportunity to complete this essential duty. Within the Irish setting, little is known regarding HSW knowledge or ability to detect skin changes. As healthcare professionals within the chain of responsibility we are obliged to only delegate duties if we are certain that the delegatee is safe and competent to undertake them. Timely and accurate skin assessment can reduce the incidence of pressure ulcers and diminish the risk of patient harm.

2.6 The Role of Home Support Workers

2.6.1 Introduction

The role and activities of the HSW are widely debated in the literature. Thus far this workforce remains unregulated, unregistered and is not required to have any formal training (Cavendish, 2013). Undeniably, the evolution of the HSW role in the 21st century has been guided by changes in healthcare delivery, fiscal limitations and attrition of the qualified nurse workforce (Kyle et al, 2015 and Humphries et al, 2012). In reality, inconsistency surrounds their job title, role boundary, recruitment procedures, professional development and degree of training. It is evident from the research that if unaddressed, it will affect patient safety (Swedberg et al, 2013). In the UK, the enormity of the unsatisfactory standard of patient care discovered by the Francis Report (2013) illustrated the need to monitor unregistered healthcare workers in their delivery of care. In the context of this changing healthcare climate, a comprehensive understanding of the HSW role is essential, as they work as part of a multidisciplinary team to assist in the provision of health and social care. This section sets out to examine the historical context and expansion of this caring role.
This will be followed by a discussion of role development and how it effects current care delivery. It will finish with a summary of the significant points identified.

2.6.2 Evolution of HSWs

In the UK, following findings of unsafe care by the Francis Report (2013), the Secretary of State asked Camilla Cavendish to complete an independent review into unregistered care workers across all health care settings (Cavendish, 2013). Cavendish (2013) found that this workforce makes up one third of the caring workforce, with many associated titles, and concluded that largely this element remains unregulated. In Ireland, the HSE (2014) reported that the overall number employed in the caring workforce was 15,208. Nationally the role of the generic worker is not a new concept, commonly referred to in the acute setting as Healthcare Assistants (HCA) and with the introduction of care staff in the community in 1970’s, referred initially as ‘Home Helps’ (DoH, 1970). The absence of national registers for HSWs in Ireland means that little is known about this workforce. However, the HSE (2014) demonstrated that HSWs delivered 47,061 hours of care to patients living in the community in a one-year period in Ireland. Internationally, HSWs are described as those who provide supportive services and personal assistance to frail elderly people or acute or chronically ill patients (Hewko et al, 2015).

Worryingly, in Ireland the growth in the number of people aged over 65 years is advancing by 20,000 per year (HSE, 2014). These demographic trends will increasingly challenge the healthcare system as the demand for care will increasingly come from the elderly. In addition, throughout the last decade nursing practice has evolved. Qualified nurses have expanded their scope of practice, undertaking roles once performed by medical staff (Alcorn and Topping, 2009 and McCloskey et al, 2015). This has not gone unnoticed, and evidence illustrates that globally the growth of the HSW’s role has become a key focus of health workforce reform to alleviate problems associated with workforce shortages (Willis, 2012). Tasks once undertaken by registered nurses are now delegated to HSWs. This was reflected by a study conducted by McCloskey et al (2015) demonstrating that across seven nursing homes in Canada, 56.8% of direct patient care undertaken during one day was carried out by nursing assistants. Reforms to nursing education have also influenced the growth and reliance on HSWs (Willis, 2012). The introduction of
the degree programme for student nurses revealed that student nurses no longer undertake basic care duties, and this void was being filled by unqualified staff (Willis, 2012).

Therefore, across the healthcare system in Ireland we are becoming dependent on a rapidly growing caring workforce to provide quality care for patients (Larsson et al, 2013). Even though caregivers demonstrate that providing quality care for their patients is truly rewarding, dissatisfaction remains resulting from time pressure, lack of supervision, poor communication, and lack of training (Swedberg et al, 2013, and Coffey and Whithead, 2015). This has resulted in an increase in mental and physical stress for HSWs, which leads to high-turnover and increased levels of absenteeism (Holmberg et al, 2013). Worryingly, the Cavendish Report (2013) in the UK reported a national estimate of 30% turnover for care workers in the home setting. Larsson et al (2012) suggests that caring for patients in their own home can lead to lonely working conditions, with high variation in conditions rendering working in the community very demanding. While this role has been established for some time, there is an ambiguous understanding of who makes up the workforce (Hewko et al, 2015), what they truly do (Waldie, 2010) and what competencies they hold (From et al, 2012, Francis Report, 2013, Cavendish, 2013). Literature findings for this workforce have been published in relation to educational interventions (Ingleton et al, 2011, Murray, 2012, Pesut et al, 2015, Weir, 2015, and Kyle et al, 2015); job satisfaction, (Holmberg et al, 2013, and Van der Linde, 2014); role development, patient safety and quality of care (James Butler-Williams et al, 2010, Larsson et al, 2013, Lovatt et al, 2015, and Swedberg et al, 2013).

2.6.3 Role Development

The UK officially recognised that the HSWs role was to support the registered nurse by undertaking auxiliary tasks (UKCC, 1988). However nowadays this is no longer viewed as credible, as the extended role of the registered nurse has led to HSW role development (Hewko et al, 2015). In the community setting in Ireland, HSWs are undertaking more direct care under the direction and supervision of the registered nurse (DoHC, 2001). Findings within the literature suggest that the HSW’s caring role and tasks performed vary depending on the country or clinical area in which they are employed. This leads to role confusion (Annersten-Gershater
et al, 2013, Annear et al, 2014 and Hewko et al, 2015). Swedberg et al (2013) demonstrated that patient safeguarding and quality of care given could not be guaranteed or uniform, given the confusion regarding the exact nature of the HSW role. Additionally, the lack of regulation prompts role confusion for the public, and can lead to a lack of confidence among patients and professionals as to the skills and knowledge of this workforce (Alcorn and Topping, 2009 and Liu et al, 2011).

Studies have shown how the role of the HSWs is developing beyond its original scope, and not always to the benefit of the patient. In the UK, Carlisle et al (2007) conducted a survey regarding the HSW role within General Practices (GP) teams for diabetes screening. Findings reported that role progression was apparent, illustrating that full diabetic screening for four patients within the practices was allocated to HSWs. The British Association of Critical Care Nurses (BACCN) conducted a national survey across critical care units. Findings demonstrated that 68% of HSWs documented blood results, 48% undertaking basic aseptic dressings and 29% caring for tracheostomy sites, clearly illustrating role progression (BACCN, 2003). However, with this role progression there is great variance of opinion regarding role development for this cohort of workers. Waldie (2010) suggested that concerns were voiced by professional staff that non-qualified staff may not recognise subtle changes in the patient’s condition (Waldie, 2010). In addition, registered nurses expressed feelings that carer role development was leading to erosion of their role. In the UK, Brant and Leydon (2009) reported negative feelings and strong views expressed by GP’s and Practice Nurses, particularly surrounding safe delegation. Nonetheless, Sund-Levander (2012) disputes this variance of opinion, and demonstrated that this caring workforce competently observed subtle changes for patients indicating clinical signs of infection in the acute setting. Similarly, in the UK in the acute care setting, James Butler-Williams (2010) revealed that care workers could efficiently report an unquantifiable change in a patient’s condition, and that they categorically can contribute to acute patient care within a general ward. Additionally, care workers not only clinically contribute to holistic care but also contribute to psychological care in the community setting. Lovatt et al (2015) identified that HSWs provide emotional support for patients in end stage life. This is an enhanced key aspect of their role. Adding further to differences of opinion
regarding role progression, in Australia Annear et al (2014) illustrated that HSWs are involved in student nurse learning.

Unmistakably, evidence within the literature suggests that routine nursing tasks could be delegated, decreasing costs without reducing the quality of care received (Carlisle et al, 2007, James Butler-Williams, 2010, Ingleton et al, 2011, Annerston-Gershater et al, 2013, and Sund-Levander, 2013). This could enable registered nursing staff to carry out the more complex delivery aspects of care. Undeniably, the literature focuses primarily on quantifying the tasks HSWs undertake, and their competency to accept duties. However, these studies do not measure patient outcomes relative to role development (Carlisle et al, 2007, James Butler-Williams, 2010, Ingleton et al, 2011, Annerston-Gershater et al, 2013, and Sund-Levander, 2013). Therefore, it would be unjust to categorically state that delegation of nursing tasks to HSWs can occur without any loss of effectiveness. The Nursing Midwifery Board of Ireland (NMBI) Code of professional Conduct is explicit on the issue of accountability (NMBI, 2014). Nurses are accountable for ‘inactions’ or ‘omissions’ of care, therefore nurses are expected to delegate care delivery in a safe manner and provide clinical governance for this delegation. Furthermore, for registered nurses to delegate tasks to a HSW appropriately and safely, they need to have an understanding of the HSW role, and their competency to fulfil it. Annear et al (2014) stated that HSWs helped student nurses appreciate the importance of direct care, and recognise complex health issues, such as skin assessment. Skin assessment is one aspect of pressure ulcer prevention and is predominantly completed by this caring workforce (Athlin et al, 2010). However, there is little attention been placed on the HSWs role in pressure ulcer management. Notably, BACCN (2003) demonstrated that 63.5% of care staff undertake pressure ulcer care with supervision, and 40.3% of care staff complete this role unsupervised across multiple critical care settings. This is concerning, as nationally, a pressure ulcer is considered to be serious reportable event (HSE, 2015). Within the literature, evidence shows that education is one aspect required to fulfil a comprehensive skin assessment to detect skin changes (NPUAP, EPUAP and PPPIA, 2014). Therefore, it is imperative to explore and discuss current training and education available for this caring workforce, focusing primarily on skin assessment.
2.6.4 Summary

HWSs are often requested to carry out duties beyond their competency level. This can potentially put a patient at risk. The clinical support this unregistered workforce currently received requires attention. Presently, registered nurses concentrate on the management of care delivery, and less on its direct delivery, making delegation and supervision significant components of their role (Liu et al, 2011). The lack of clarity regarding the HSW role makes it difficult for the registered nurse to know which tasks to delegate. This trepidation could possibly lead to a reluctance to delegate, and if not addressed, have knock-on effects on HSW role development. Without question, progression in developing this caring role is complex (Carlisle et al, 2007). Indeed, to liberate this care role to provide greater healthcare, increased investigation, analysis and planning are critical. Yet, currently within the literature very little attention is being focused on their role in pressure ulcer management.

2.7 Pedagogical Practice for HSWs

2.7.1 Introduction

It has been postulated that teaching and learning are often not HSWs primary considerations (Hayes. 2015). Both the Francis Report (2013) and Cavendish Review (2013) categorically recommended educational approaches as the best way forward to enhance knowledge. Gaining insight into learning and teaching strategies, and the situations most likely to be encountered on the ground, provides educators with the opportunity to understand how HSWs learn (Hayes, 2015). In addition, it is necessary for educators to have an awareness of the most suitable strategic processes required for educational attainment to occur (Murray, 2010 and Pesut et al, 2015). This section sets out to explore the three domains of learning. This is followed by an overview of the evolving role of education in this caring profession. Next, an analysis of the educational needs of HSWs relating to pressure ulcer care and the teaching methods existing within literature will be discussed. Finally, the limitations encompassing pedagogical practice for HSWs will be examined. A summary will be concluded, synthesising all the significant points identified.
2.7.2 Learning Theories

To ensure HSWs learn to their full capacity, a full understanding of the ways they learn is important (Van Der Linde, 2014, and Beeckman et al, 2011). Historically, learning was about the docile receiving of knowledge, such as the teacher-centred approach (Thomas et al, 2014). Presently, educators endeavour to provide justification of the way in which learning relates to people and situations, and refer to three domains of learning: the ‘cognitive domain’, the ‘psychomotor domain’ and the ‘affective domain’ (Hayes, 2015). The cognitive domain refers to the theoretical knowledge supporting healthcare practice. For example, a HSW undertaking skin assessment must know the multi-layers of the skin, in order to underpin the extent of the skin damage. This is termed as cognitive knowledge. Next, the HSWs must be competent to accurately complete skin assessment. Pressure ulcer classification systems are used to support description of the extent of any skin damage (NPUAP, EPUAP and PPPIA, 2014). Therefore, the HSW must be skilled in their ability to accurately assess the extent of skin damage through the application of the pressure ulcer classification system (Beeckman et al, 2010). This is termed the psychomotor skill. (Hayes, 2015). Finally, the term affective domain places emphasis on HSW values, issues and attitudes, and are perceived to have a critical influence on how they behave and act (Willis, 2012). Within the literature no studies referencing HSW attitudes or values relating to pressure ulcer prevention were found. However, Samuriwo (2010) found that the greater value a nurse placed on pressure ulcer prevention, the more likely they were to prevent a patients’ skin from deteriorating.

2.7.3 Education

Nursing education dates back to the 1800s. As hospitals developed in the 1900’s, nursing students were employed as part of the workforce within the hospital, while learning how to become a nurse (Roberts and Glod, 2013). Internationally, through the 1950’s and 1960’s nurse education advanced quickly, moving away from the hospital-based teaching to degree teaching in university centres. In contrast in Ireland, up until the 1970’s nursing education was slow to develop as a result of the poor economic climate (O'Dwyer, 2007). It was not until the late 1970’s when Ireland entered the European Economic Community (EEC) that a noticeable change in nursing education became apparent. The Working Party on General Nursing Report
was completed by the DoH (1980), and as in other progressive countries, it recognised the need to transform the nursing educational system for Ireland. In 1989, the EEC proposed an expansion of the theoretical aspect of nursing, and an end to the internship role (O’Dwyer, 2007). These proposals did not go unnoticed by the Irish nursing governing body, An Bord Altranais. In 1991, this led to a Consultation Document on Nurse Education, which similarly addressing the need for changing the future of nursing education (ABA, 1991). That said, Ireland remained one of the last countries in the developing world to transform from the traditionalist educational system to a university sector-based approach.

Traditionalist training remained in place, regardless of need and recommendations for transformation in nursing education (Condell, 1998). This resistance to change was caused by a lack of organisational structure to facilitate this innovative style of education and also the absence of a leadership style to drive this innovative educational model forward. It was not until the year 2000 that nursing education became revolutionized in Ireland, and by 2002 the first nursing degree programs were introduced (Tracey, 2005). This was a four year graduate programme, offering a balance of theory and practice, and finally mirroring the approach of our international counterparts. It has led to a shift from hospital-based teaching to university centred learning. Unfortunately, it has resulted in nursing staff shortages and a greater dependency on carers to fill the resulting void (Mc Kenna et al, 2005).

2.7.4 Formal Training

In the UK and Ireland, vocational qualification is a national framework, comprising a system of awards for all care workers (Mc Kenna et al, 2005). These qualifications are awarded on the basis that the HSW can competently undertake a number of skills relevant to their work practice. As already stated in Ireland, a competency framework was established by the HSE to identified core competency skills for all health and social care support staff (SKILL, 2005). This was known as the Securing Knowledge Intra Lifelong Learning (SKILL) project (SKILL, 2005). This recognised qualification for HSWs working in the HSE and is currently awarded by the Further Education and Training Awards Council (FETAC, 2013). FETAC integrated with Quality and Qualifications Ireland (QQI, 2013), providing external quality assurance for the developed programmes. In 2013, eighteen Centres for Nursing and Midwifery
Education (CNME) collaboratively developed a further standardised education and training programme for HSWs working in the Irish healthcare settings (Kyle et al, 2015). This programme is awarded as a FETAC level 5 award, equivalent to the Leaving Certificate in Irish secondary schools (Kyle et al, 2015). Eight core modules were deemed the most appropriate by a consensus approach, twelve are role specific. Kyle et al (2015) makes the point that these core modules are not repeated, and assessment of knowledge gained occurs on one occasion only.

Cavendish (2013) expressed frustration with the copious money spent on vocational qualifications, without clear evidence to support their validity. Concern was voiced by Francis (2013) and Cavendish (2013) with regard to the variations that still remained post completion regarding competency of this workforce, and questioning the reliability of course contents. Yet in Ireland, all settings that provide care, whether public or private, are subject to inspection and regulation (HIQUA, 2012 and NMBI, 2015). Care skills is one of the core modules within the FETAC programme, and within this one learning outcome for pressure ulcer care is for HSWs to merely have an understanding of pressure ulcers. However, evidence clearly states that all health-care providers should have knowledge and confidence in the core skills required to undertake pressure ulcer prevention, such as skin assessment (NPUAP, EPUAP, PPPIA 2014). With this in mind it is necessary to explore the educational needs of this cohort of workers, with a focus on skin assessment.

2.7.5 Educational Needs

The majority of pressure ulcers are considered to be avoidable if adequate preventative measures are put in place (O’Brien and Cowman, 2011). Pressure ulcer care is multifaceted, and knowledge of pressure ulcer prevention is crucial for the initiation of preventative care (Moore et al, 2011). In Ireland, the SSKIN is the new model of care presently being implemented in the primary care setting to prevent avoidable pressure ulcers (HSE, 2014). Skin assessment is the principal component of this innovative model of care. Globally, the description of the extent of skin damage is supported and standardised by the utilisation of pressure ulcer classification systems (NPUAP, EPUAP, PPPIA, 2014). Findings in the literature suggest that skin assessment is a common process employed to detect pressure
ulceration (Asimus an Li, 2011 and Skerritt and Moore, 2014). Samuriwo (2010) and Athlin et al (2010) make the point that skin assessment is not exclusively the responsibility of the nurse, and clearly indicate that HSWs do play a fundamental role. There are no Irish studies to date that examine knowledge amongst HSWs relating to skin assessment in any care setting. Therefore, it is essential to examine current research findings to gain insight into knowledge among HSWs relating to skin assessment and pressure ulcer classification to identify the educational needs.

Three studies seeking to gain insight into HSW knowledge with regard to skin assessment and pressure ulcer classification skills were undertaken in various countries in Europe, across acute, long term care and community settings (Kallman and Suresud, 2009, Demarre et al, 2012 and Guinnerberg et al, 2015). The main focus of the research studies was to describe and compare knowledge of pressure ulcer prevention among registered nurses and nursing assistants. Accuracy of skin assessment was measured through the utilisation of the pressure ulcer classification tool (EPUAP, 2007). All three studies used a quantitative approach, employing pre-designed self-administered questionnaires (Kallman and Suresud, 2009, Demarre et al, 2012 and Guinnerberg et al, 2015). However, the variety in and reliability of the instruments to collate the data make comparison of findings difficult. Furthermore, employing pre-designed self-administered questionnaires for data collection cannot verify that study participants have not conferred or reviewed the literature to support their responses. Despite this limitation, Kallman and Suresud (2009) reported results for accurately classifying various stages of skin damage for nursing assistants at 68%, notably 10% lower than for registered nurses. In contrast, in the acute setting and long term care setting, Guinnberg et al (2015) and Demarre et al (2012) estimated that the overall accurate response of pressure ulcer classification for nursing assistants was 56%-24.4% respectively, notably, 1%-2% higher than for registered nurses. This time lapse between studies and modification in test results illustrates a trend in role development for nursing assistants. This is represented by the positive increase in accurate scores for pressure ulcer classifications. Samuriwo (2010) and Aithlin et al (2010) reported similar findings, signifying that the HSW role is progressing, and skin assessment is completed routinely by them. Nonetheless, both studies indicated that skin assessment and pressure ulcer classification were among the lowest scoring outcomes within overall...
knowledge evaluation. Therefore, there is a need to explore the current educational teaching methods if this deficit in knowledge for lifelong learning is to be understood and reduced.

2.7.6 Teaching Methods

The literature suggests that each person has their own preferred learning style, such as blended learning or competency based learning (Rees et al, 2009 and Pesut et al, 2015). Yet, Hayes (2015) suggests that successful teaching must include sufficient diversity so that all students benefit from the experience. Teaching different knowledge skills and behaviours requires different approaches. Thomas et al (2014) suggests that many healthcare workers learn best through a number of teaching approaches, indeed submissive or teacher-centred approaches did not feature in this scoping review. Hayes (2015) suggests that the educator could provide HSWs with case-based studies to facilitate them to express their experiences, and give them the opportunity to critically reflect on any adverse events in their practice. This teaching style corroborates transformative teaching, in that HSWs can make meaning through experiential learning as well as theoretical knowledge (Cavendish, 2013). In pressure ulcer prevention, evidence suggests that educational programmes for nurses and HSWs can increase knowledge in pressure ulcer prevention and treatment (Beeckman et al, 2011 and Murray, 2012). Studies by Beeckman et al, (2008), Beeckman et al, (2011) and Moore, (2010) have shown that the benefits of pressure ulcer education include a better understanding of the causative factors, a knowledge of wound related characteristics, and a greater awareness of the needs of patients. Unfortunately, a limited amount of research has explored or evaluated educational methods for pressure ulcer prevention and treatment among HSWs.

However, recently three international studies were conducted investigated the impact of educational interventions, within intellectual disability (Van Der Linde, 2014), palliative care (Pesut et al, 2015), and primary care, specifically GP practices (Weir, 2015). Two studies adopted a mixed approach. Pesut et al (2015) conducted a pre-/post design with semi-structured interviews, exploring the learning experience and knowledge attainment following an educational intervention, focusing on end stage life for this caring profession. In contrast, Weir (2015)
conducted a quantitative descriptive design, with a group discussion seeking opinions about the educational method, and its impact on role development. Both studies concluded that positive outcomes occurred when a range of teaching methods were employed. Didactic content, case-studies, video footage, role play and practical workshops, indicative of the transformative method, were adopted by the researchers (Pesut et al, 2015, Weir, 2015). Notably, the sample sizes were small in both of the above studies, with between 12-35 participants in total. Therefore, caution needs to be employed interpreting the positive results demonstrated. Additionally, the study conducted by Pesut et al (2015) did not involve a control group, which inhibits meaningful comparison. Another limitation to these studies was that the researchers did not directly test the study subjects to gain insight into the knowledge acquired. This once again raises the questions of study subjects deliberating with their fellow colleagues, and questions the reliability of the studies’ positive outcomes. Finally, Van Der Linde (2013) used a quantitative descriptive design to measure the outcome of the educational method in terms of job satisfaction, pre and post training. The outcome of the training programme was positive, but once again there were notable limitations. There was no control group and the sample size was small. A similar weakness in all three studies is the absence of patient perspective measurements, and therefore no data was forthcoming to show if any educational training improved the quality of care.

The transformative teaching approach is alluring, yet, current economic problems, and financial and time constraints often result in Healthcare organisations envisaging educational delivery through lower cost, remotely accessed means (HSE, 2015). Many areas of modern living are effected by technological innovations (Cook et al, 2005). The introduction of the internet in 1991 has effected many features of modern life and has also influenced the nursing educational system (Cook et al, 2009). Likewise, the development from the traditionalist apprenticeship education system ensured a change from conservative teaching approaches to transformative ones, such as e-learning. (Koch, 2014). Although the teacher-centred approach remains in nursing education (Cook et al, 2010) the evolution of the internet has given rise to experimental learning by means of computer-assisted learning (Bredesen et al, 2016). In nursing, educational classroom information and communications technologies are an everyday recognisable feature (Cook et al,
Computer-assisted learning has become a common feature in the nursing education curriculum. A large number of studies have been conducted in relation to the benefits of computer-assisted learning (Fernandez Aleman et al., 2010). Cook et al. (2009) conducted a meta-analysis and demonstrated that internet-based learning has a positive effect across a variety of health professionals. However, these studies examined the effect of the computer-assisted learning within a particular topic, or explored the opinions of the usability of the computer-assisted learning tools in comparison to traditional teaching styles.

E-learning is one such innovative approach to education and is available wherever ICT permits. It can be used in isolation without face to face contact with an educator, or in conjunction with face-to-face teaching (Beeckman et al., 2008, Beeckman et al., 2010). The PUCLAS is an e-learning tool, developed by EPUAP for improving knowledge and skills regarding classification of pressure ulcers. Information is presented by means of a clear definition of relevant terms and use of high quality photographs and video footage, and can be independently completed by the healthcare worker (Defloor et al., 2005). Hayes (2015) clearly states that measuring the extent of learning as participants advance through the process is an effective means of evaluating progress, both for the HSW and the educator. Two studies have investigated the effectiveness of the PUCLAS tool among Registered Nurses and student nurses (Beeckman et al., 2008, Beeckman et al., 2010). Beeckman et al. (2008) employed a repeated measure design to investigate if the PUCLAS tool increased knowledge of classifications skills among registered nurses and student nurses. There was an increased inter-observer reliability from pre-test ($k$=0.24, IQR=.21) to post-test 1 ($k$=0.65; IQR=0.12). Similarly, in an additional study Beeckman et al. (2010) conducted a randomised control trial, testing the effectiveness of the PUCLAS educational tool among Registered Nurses. Findings demonstrated an increase in scores following the e-learning intervention: pre-test (44.6%; $p$=0.82) to post-test (62.8%; $p$=<0.0001). To date this e-learning tool has never been validated as a suitable tool for HSWs.

However, education, while central to pressure ulcer prevention and treatment, is not in itself merely sufficient (Murray, 2012). Cavendish (2013) argues that following an educational course, organisational components need to be in place, such as peer
and managerial support, and adequate finances to support attendance. This is positively reflected in a study conducted in Australia by Murray (2012). This researcher developed a tailored programme for nursing assistants, not solely to increase knowledge but also to sustain knowledge in pressure ulcer care. Multiple learning methods were employed as suggested by Hayes (2015): visual aids self-reflection, case studies and practical skills. To ensure maximum attendance, management offered each educational session twice, and a short time-frame (30 minutes) was incorporated, as recommended by the Cavendish Report (Cavendish, 2012). The study design employed by Murray (2012) was a before and after study to gain insight in knowledge obtained among HSWs. Similar to Kallman and Suresud (2009), Demarre et al (2012) and Guinnberg et al (2015), a pre-designed questionnaire was employed as the data collection tool, posing questions regarding the reliability of outcomes. However, the study by Murray (2012) not only measured the sustainability of knowledge, but also examined patient outcomes by means of pressure ulcer incidence. Findings demonstrated that there was a decrease in pressure ulcer injury from 11% to 7% over a one-year period. Murray (2012) justifiably stating that the educational method significantly contributed to pressure ulcer prevention. The Cavendish report has illustrated throughout the review that a rigorous mechanism is necessary to ensure that the training provided leads to a competent caring workforce (Cavendish, 2013). The accurate and prompt timing of skin observation and classification is necessary to ensure high quality of care is delivered in a safe manner (Guinnberg et al, 2015). As health educators and professionals, validated education and training are key elements to ensure that this caring workforce is fully competent to undertake advanced preventive measures in pressure ulcer prevention in primary care.

2.7.7 Summary

It is imperative that educators gain an understanding of how people learn, as well as what they have learned. All three domains of learning: cognitive, affective and psychomotor, are equally important for HSWs to engage in lifelong learning. Currently, formal education for HSWs in Ireland occurs through a plethora of core models, none of which properly address the multifaceted educational requirements of pressure ulcer care or skin assessment. European studies have demonstrated
that there is a knowledge deficit in this workforce in terms of its ability to detect pressure ulcer damage. All of these studies incorporated a survey design, no studies have directly tested HSWs competency to detect pressure ulcer damage. Therefore, questioning the reliability of the data gained.

Learning styles for HSWs have changed over the last number of years. Time and fiscal constraints mean Healthcare organisations are forced to look at alternative teaching methods to ensure training is received in cost-effective way. E-learning is an innovative teaching method and not unknown to this caring workforce. However, there is scant evidence of training specific to pressure ulcer care using this method. Questions still remain regarding the competency of this workforce in detecting skin changes.

### 2.8 Summary of literature review

Pressure ulcers are a significant healthcare problem confronting practitioners across all healthcare settings. Prevalence and incidence studies with a high methodological rigour are needed to provide concise estimations of the scope of the problem. This will inform healthcare organisations and influence decision making regarding effective strategies, and guidelines for the prevention and treatment of pressure ulcers. In addition, these epidemiological studies will allow healthcare workers access to resource allocation and staff training requirements in order to effectively confront the problem. Currently, there is variance noted throughout the literature regarding methodological approaches, with a dearth of epidemiological studies conducted in the community. Healthcare delivery is becoming more complex and exists beyond acute care settings. Primary care is recognised internationally as the most effective way to provide high quality easily accessible services. Therefore, internationally, consensus is required in regard to methodological approaches for rigorous and reliable strategies to tackle the problem.

There is a limited amount of research available on the true human and financial cost of pressure ulcers. That said, judging by the available literature, the cost is substantial. As the forecast growth in numbers of elderly is realised, the strain on the healthcare budget will increase. It is evident that prevention is less costly than treatment, however economic analysis state that treatment costs continue to
escalate. Many economic analysis-based studies exist, with the majority conducted in the acute and long term care setting. As with prevalence and incidence studies, there is variation in the methodological approaches used. This causes problems comparing studies across settings, and hinders the ability to identify and implement accurate outcome from a cost effectiveness perspective. Nurses are responsible for ensuring that care is evidence-based, therefore it is necessary to obtain an insight into the personal costs of living with a pressure ulcer. Exploring the experience of living with a pressure ulcer allows the researcher to understand how the patient feels. This can allow the healthcare practitioner to develop patient-focused approaches to care delivery. The impact of health and social gain is becoming increasingly influential in strategies to reduce the cost of pressure ulcer occurrence.

Primary care at present is experiencing challenges: a change in demographic structure, evolving legislation, quicker discharges and increase in case complexity. This has occurred at a much faster pace than the growth in the community nursing staffing levels. As a result, there is an increased reliance on HSWs to extend their role. Nonetheless, pressure ulcers remain a problem in the community setting, and primary care have embraced the innovative model of care to prevent pressure ulcers, known as the SSKIN bundle. The first ‘S’ in this acronym stands for skin assessment, and research has confirmed that within primary care skin observation is currently undertaken by the HSWs. A key factor in pressure ulcer prevention is skin observation and accurate classification. The lack of clarity and role confusion regarding the HSW role in general remains a consistent factor throughout the literature. A dearth of evidence and research into skin assessment and the knowledge needed to fulfil this role is apparent. Insufficient awareness of HSW competency levels means that nursing professionals are unable to determine which duties can and cannot be delegated. This can have detrimental effects on decision making for planning and delivery of quality and efficient care to prevent and manage pressure ulcers to all patients in primary care.

There is an abundance of transformative teaching methods for HSWs in other clinical areas. It is clear that further effort is required to improve knowledge regarding skin observation and classification among nurses and HSWs alike to ensure patient safety. There is also a lack of recognised training programmes specific to skin
observation and classification for HSWs, which puts patients’ quality and safety at risk. Healthcare organisations expect educators to meet expanded training needs regardless of financial and time restraints.

HSWs require education to provide them with the skills to fulfil the role of skin observation and classification, therefore it is fundamental that research into HSWs knowledge is carried out. This can be accomplished by ensuring any rigorous educational intervention tackles all deficits in relation to inaccurate skin detection. The PUCLAS e-learning tool is one such validated innovative approach for improving knowledge and skills regarding skin observation and classification of pressure ulcers. An assurance is urgently needed as to whether this e-learning program results in an increase in knowledge regarding early skin detection.
Chapter 3

Methods

3.1 Introduction

This chapter aims to examine the quantitative approach suitable for the study. The research question and aims are also explored. The rationale for the choice of quantitative methodology is provided. Sample selection and negotiation of access plus ethical consideration are discussed. Finally, this chapter will address the issue of establishing rigour in a quantitative study.

Nursing research can be achieved within two theoretical approaches: quantitative and qualitative (Gerrish and Lacey, 2010). Qualitative research allows researchers to explore human experiences in personal and social environments, to obtain a detailed understanding of the factors influencing these experiences within a scientific process (Miller, 2010). Quantitative researchers support the scientific truth. The cause and effect of phenomena is tested by gathering evidence directly or indirectly through the senses rather than through meaning or experience (Watson, 2015). This deductive approach captures reasoning and logic, and gives assurance regarding unequivocal knowledge of the world. Therefore, the quantitative approach lends itself to this study where testing the cause and effect of an educational intervention was required.

It is proposed that quantitative methodology was most suited for the study enquiry. This methodology is extrapolated from the literature with the application of Gerrish and Lacey (2010) guidance to collect and analyse the quantitative data obtained. Quantitative design studies can be described in two main categories: experimental and non-experimental (Watson, 2015). Experimental research enables the researcher to manipulate some aspect of the phenomenon under study and observe the effect (Claydon, 2015).
The simplest form of experiment used in healthcare is a before and after study design. (Kwong et al, 2011). This study design is also known as pre-/post-test design. As the researcher is testing an educational intervention and observing the effect, a repeated measure design was employed. This method allowed the researcher to test the study subjects’ knowledge before, and monitor the outcomes at two measuring points post intervention. The pre-test aimed to gain insight into the HSWs’ ability to detect early pressure ulcer damage. The first post-test tested the effectiveness of the educational intervention as an instruction method. The final post-test evaluated the effectiveness of the educational intervention over time.

### 3.2 Rationale for Research Question

Principally, research projects are initiated with the vision of addressing a research problem, or resulting from an issue requiring further evidence within clinical practice (Gelling, 2015). Novice researchers may begin with ideas that are far-reaching, or with research questions that are inappropriately focused (Quick and Hall, 2015). One of the ongoing key challenges demonstrated is the inability of healthcare workers to accurately detect skin changes (Beeckman et al, 2008, Kallman and Suresud, 2009, Beeckman et al, 2010, Gunniberg et al, 2015 and Doughty et al, 2012). However, to undertake efficient skin assessment, an understanding of the aetiology of pressure ulcer development, the key factors predisposing the individual to risk, and the recognised strategies necessary to combat the risk of further deterioration are all essential (NPUAP, EPUAP and PPPIA 2014).

Currently in the community setting, visual skin assessment is the only method used to identify skin changes, it remains a key trigger for the initiation of preventative measures. Worryingly, visual skin assessment is predominantly undertaken by HSWs, with little evidence to support their proficiency to perform this role (Samuriwo, 2010). Therefore, it is essential to measure HSW knowledge regarding this specialised clinical practice, then apply appropriate educational interventions and teaching techniques to address any deficiencies identified (Hayes, 2014). However, before planning a research study, the researcher needs to have a defined question, and an assurance that the chosen question can be answered (Gerrish and Lacey, 2010). The genesis for this study research question lay in the scarcity of evidence and lack of clarity regarding HSW ability to detect early pressure ulcer
damage in the community setting. Currently, in Ireland there are no educational interventions for improving HSW knowledge and skill in conducting accurate skin assessment. Furthermore, in Ireland there have been no research studies conducted in relation to HSWs knowledge in detecting skin changes. Internationally, the writer has not found any research studies employing this research design to test HSWs.

3.3 Research Question

The research question in this study was:

“What is the impact of an educational intervention on community Home Support Workers’ ability to detect early pressure ulcer damage?”

3.4 Research Purpose and Aim

The Health Research Board strategy (2016) states that intervention studies should also be community-based, and should include preventative care. However, this evidence needs to meet the needs of the healthcare systems presently, and should not only focus on new evidence for the future. The aims of this study were:

- to gain an insight into community HSWs’ ability to detect early pressure ulcer damage.
- to examine whether the PUCLAS e-learning tool improved the HSWs’ pressure ulcer classification skills in a community setting.
- to determine recommendations for clinical practice, and establish a means by which the quality and quantity of knowledge regarding pressure ulcer classification may be achieved.
- to enhance the HSWs’ ability to detect early pressure ulcer damage, and thereby implement enhanced prevention with the advice of the Public Health nursing service.
3.5 Evidence-Based Practice and the Role of Research

In Ireland the purpose of the health service is to improve the overall health and well-being of the nation, delivering high-quality safe services that are cost-effective (DoHC 2012). The healthcare sector is the biggest employer in Ireland, with the HSE employing approximately 100,000 people (HRB, 2016). These figures illustrate the huge opportunity for research and innovation as a potential force for change in healthcare delivery to provide more efficient and effective clinical care (HRB, 2016).

The founder of modern nursing, Florence Nightingale, emphasised the value of nursing research during the Crimean War. In the past, a trial and error approach in providing patient care was based on custom and practice (Gerrish and Lacey, 2010). Currently, the nursing profession has moved away from relying solely on research based practice, focusing more on the concept of evidence-based practice (Sackett et al, 2006). Evidence-based practice comprises three elements: research findings, clinical expertise and patient perspectives (Sacket et al, 2006). The main goal of research findings is to improve quality of care and knowledge, therefore these findings have a pivotal role to play in evidence-based practice (Mallion and Brooke, 2016). Research studies are only one form of evidence that healthcare practitioners may use to guide their practice. (Mallion and Brooke, 2016). Another form of evidence is the clinical guidelines formulated by professional bodies. In relation to wound care in Ireland, the National Best Practice Guidelines for Wound Care are in place to support the clinician in providing evidence-based wound care in all healthcare settings, including the community setting (HSE, 2009). Additionally, in Ireland the introduction of care bundles for practice has begun (HSE, 2014). For example, the SSKIN bundle is an evidence-based model of improvement to help prevent pressure ulcer damage. This model of care is based on the following key elements identified as predisposing risk factors for pressure ulcer development: skin inspection, surface, mobility, incontinence and nutrition (Resar et al, 2012, Whitlock, 2013 and HSE, 2014).

The Nursing and Midwifery Board of Ireland (NMBI) endorse the expectation that nurses and midwives will deliver evidence-based practice in all settings (NMBI, 2014). A number of obstacles have been identified by nurses when trying to implement evidence-based practice. In the past, time limitations, high staff turnover
and heavy workloads were all barriers identified (Bonner and Sando, 2008 and Brown et al, 2009). Baird and Miller (2015) reported that community nurses indicated that they felt that the lack of time to read research articles was also a barrier. They did, however, have time to read polices and guidelines, and felt that these were helpful in maintaining the knowledge and skills necessary to support their practice. Further evidence suggests that barriers pertaining to the implementation of evidence-base practice might rest with negative attitudes, lack of knowledge or lack of academic skills (Melnyk et al, 2004). However, these findings should no longer be relevant, given the recent international changes in nurse education (Mallion and Brooke, 2016). Johnson et al (2010) concurred with these findings, and stated that currently nursing education includes research modules to support nurses in evaluating evidence. Nevertheless, Chang et al (2010) and Foo et al (2011) confirmed that difficulties in understanding the research process remain. Frustration is expressed by nurses regarding their inability to critically appraise the evidence, which prevents their application of this evidence to their practice. It should be noted the implementation of evidence-based practice alone does not solely rest with nurses. The lack of organisational support and cultural resistance to change ritualistic practices, even with the presentation of scientific evidence, prevails (Baird and Miller, 2015).

The literature suggests that nurses’ knowledge and skills in evidence-based practice have developed. However, some of the barriers relating to the implementation of evidence-based practice remain unchanged. Nurses’ attitudes towards evidence-based practice are generally positive, although this does not always translate into a change in ritualistic practices. The change in nursing education alone is not sufficient. The age profile of existing nursing workforces suggests that a large percentage did not complete research as part of their nursing studies. Furthermore, the lack of organisational support to effect change in clinical standards and support staff in implementing evidence-based practice is apparent.
3.6 Overview of Philosophical Issues

3.6.1 Paradigm

In this section a brief overview of research methodologies considered will be outlined. The choice of methodology is guided by the underlying theoretical paradigm and the research topic. From a philosophical standpoint, quantitative research supports the concept that there is a natural order to the world. Furthermore, the cause and effect of phenomena is tested, and this concept is known as positivism (Gerrish and Lacey 2010). Conversely, qualitative researchers believe that there is no natural order to the world, reality is not motionless, rather it is subjective, and unique to the individual. This concept is known as constructivism. Mixed methods research involves the use of qualitative and quantitative data in a single research project (Halcomb and Hickman, 2015). Mixed method research enables nurse researchers to explore complex phenomena in detail. Currently, healthcare systems are becoming more complex, people are living longer, in combination with a rise in chronic and complex diseases (Lavelle et al, 2013). As healthcare systems strain under the burden of this increase in complexity, it can often lead in difficulty obtaining valuable evidence (Glogowska, 2011). Therefore, researchers are required to find alternative research methods to investigate these multifaceted aspects of health (Andrew and Halcomb 2006, Creswell and Plano Clark, 2011). There has been an increased concentration on mixed method research in Social Science education and health (Glogowska, 2011 and Bowers et al, 2013). A postgraduate student undertaking a mixed method research project commands a broader range of research skills than using either qualitative or quantitative methods alone (Halcomb and Hickman, 2015). Nevertheless, mixed method designs have the potential to expand nursing knowledge and to inform professional nursing practice over a broad range of complex healthcare issues.

What is evident from the literature in this research enquiry is that many studies have addressed the impact of training or educational interventions from a qualitative design (Mc Kenna et al, 2005, Hancock et al, 2005, Lovatt et al, 2015 and Nash and Fitzpatrick, 2015). These designs employed an inductive approach to generate new knowledge and maximise the potential to gain insight about HSW views and experiences that occurred throughout the training process. The researcher's
decision to use a quantitative process was supported by the fact that the writer hoped to quantify the impact of the educational intervention in a deductive method.

3.6.2 Methodology

Using this deductive process allows the researcher to report a change in outcome following a change in an intervention (Kwong et al, 2011). This is in contrast to a qualitative design which places values on the attributes of subjectivity (Nash and Fitzpatrick, 2015). The writer is mindful that a quantitative research method could potentially leave minority and vulnerable voices unheard (Weir, 2015). However, qualitative research is concerned with exploring the experience, and generating an understanding of what it is like to use an educational intervention (Hancock et al, 2005 and Moran et al, 2015). The problem with this type of approach is that the information gained cannot be generalised beyond the HSW from whom the data was obtained. Before planning a research study, the researcher needs assurance that the chosen question can be answered using the selected research methods (Watson, 2015). Therefore, the study research question directed the researcher to employ quantitative methodology to measure the impact of the educational intervention. This is in keeping with studies conducted by Beeckman et al (2008). Beeckman et al (2010), likewise employing a quantitative approach to assess the impact of the PUCLAS tool for nurses and student nurses. Quantitative research can be described in two main categories; non-experimental and experimental (Watson, 2015).

3.6.3 Survey designs

Non-experimental research includes correlation and descriptive designs, and is intended to describe or examine relationships (Gunniberg et al, 2015). Surveys are frequently employed in nursing research and are customarily employed in prevalence and incidence studies (Moore et al, 2013). These often consist of questionnaires, or they may be conducted by observation (Stevenson et al, 2013). Surveys cannot easily distinguish between cause and effect, in contrast to experiments, but they are effective for collecting large amounts of data to describe samples and populations (Skerrit and Moore, 2014 and Jordan O’Brien et al, 2016). Surveys can be either cross-sectional or longitudinal studies (Demarre et al, 2015).
and Woo et al, 2015). Cross-sectional studies are relatively easy to conduct, consisting of a snapshot of the problem at one point in time. Notably this design is the most popular one employed for pressure ulcer prevalence studies (Hall et al, 2014) Longitudinal studies are complex, due to the duration of the study. This type of design is fitting when conducting pressure ulcer incidence studies (Woo et al, 2015) However, time and costs are an inhibiting factor for conducting successful longitudinal studies. The scarcity of incidence studies was a distinguishing feature found by Moore et al (2013) while conducting an integrated research review exploring the incidence of pressure ulcers across several European countries. However, to ascertain the trustworthiness of the educational intervention the writer wanted to test the study subjects baseline skills in detecting early pressure ulcer damage. The results of the first post-test were used to evaluate the effectiveness of the PUCLAS tool. The results of the second post-test were used to evaluate the effectiveness of the PUCLAS tool over time. Surveys examine or describe therefore, the use of a survey in the researcher’s study was inappropriate.

3.6.4 Experimental Designs

Experimental designs are often cited as the most rigorous of all research designs. In this approach, an experiment is carried out to test a hypothesis or a research question. (Gerrish and Lacey. 2010). An experiment is a study where the researcher can manipulate the independent variable. This design method was used fittingly by Kwong et al (2011), who conducted an experimental design to test the knowledge gained by all healthcare workers in a nursing home following a pressure ulcer prevention programme. There was a significant statistical difference in knowledge scores and skills scores gained regarding pressure ulcer prevention post educational intervention ($p <0.001$). There are many types of experimental design in healthcare, the simplest type being a pre-/post-test design. On the other end of the spectrum, randomised control trials (RCT) are rated near the top of the hierarchy of evidence (Centre for Reviews and Dissemination, 2009).

3.6.5 Randomised Control Trials

RCTs are surpassed in the hierarchy of research design only by systematic reviews with meta-analysis (Gerrish and Lacey, 2010). RCTs are considered to be the ultimate approach for testing the link between cause and effect, due to their
particular features involving randomisation and use of control groups. Randomisation is employed to minimise bias in allocating participants to a group and this decreases detachment (Watson, 2015). A control group is included to allow the researcher measure the variable in order to give reliable data to compare with the intervention group, thereby enhancing scientific acceptance of the study results.

Kaplan et al (2011) suggest that the quality of research evidence in health care should not confine itself purely to RCTs. Beeckman and Heche (2011) add to this variance of opinion with consideration to wound care, and support the fact that findings from a single study only may not deliver appropriate evidence to address the deficit in wound care practice. Conversely, the Health Research Board (HRB) (2016) state that it is imperative that research conducted is relevant to everyday practice. This assertion could lead researchers to support the Kaplan et al (2011) suggestion that healthcare systems over-rely on RCTs as the gold standard for evidence-based practice. However, RCTs proximity to the top of the hierarchy of evidence cannot be overlooked (Watson, 2015). Beeckman et al (2010) conducted a randomised control trial to assess the effectiveness of the PUCLAS tool to improve nurse classification skills. The RCT was made up of multiple sites across multiple countries. This supreme design was costly and time consuming. Therefore, owing to time constraints and cost, the researcher was not able to avail of a large sample size, or randomly assign participants to a control group.

3.6.7 Quasi-Experimental

Experimental research includes a control group and an intervention group with random sampling. A study that lacks one of these key elements is known as quasi-experimental (Parahoo, 1997). Schindler et al (2013) conducted a quasi-experimental study involving 399 infants. Infants in the control group received standard skin care and the intervention group received a defined skin care bundle. Ethical approval was received from the relevant institutional board. This control group allowed the researcher to measure the variable, and give reliable data to compare with the intervention group. This enhanced the scientific acceptance of the study results, with a significant drop in pressure ulcer incidence from 18.8% to 6.8% over a 3-year period. However, ethical approval was granted for the writer’s study on the premise that all study subjects receive the educational intervention
regardless of taking part in the knowledge testing. Therefore, the option of assigning study subjects to a control group was not possible.

3.6.8 Pre-/Post-Test Design

A before and after test design is the simplest form of an experimental design. This design reports a change in an outcome (should one exist) following the introduction of an intervention (Gerrish and Lacey, 2010). This design was employed by Beeckman et al (2008) to examine the ability of the PUCLAS tool to increase the classifications skills of qualified nurses and nursing students. However, the study consisted of four measuring points. The pre-test was used to gain insight and applied as the reference point for the healthcare workers’ ability to classify pressure ulcers. The results of the first post-test was used to evaluate the effectiveness of the educational tool as an instruction method. The subsequent measuring points were used to evaluate and to support the effectiveness of the educational intervention over time. This design lends itself to this study.

3.7 Study Design

This research study used a positivist, quantitative method, which can be described as a set of systematic, disciplined measurements employed to retrieve information (Watson, 2015). The writer chose to conduct a repeated measure design, to quantify the effectiveness of the ‘PUCLAS 3’ e-learning tool, consisting of one pre-test and two post-tests. This study is the first in Ireland to gain insight into community HSW ability to detect early pressure ulcer damage. A repeated design method allowed the researcher to initially test HSW knowledge, reduced the risk of conferring. It investigated the impact of an educational intervention and also measured the sustainability of any knowledge gained. The pre-test, the educational intervention and the first post-test were executed on the same day. The second post-test took place two weeks later. The results of the pre-test were used to gain insight into HSW ability to detect early pressure ulcer damage. The results of the first post-tests were used to evaluate the effectiveness of the ‘PUCLAS 3’ e-learning tool as an instruction method. The results of the second post-test were used to evaluate the effectiveness of the e-learning programme over time.
3.8 Research Methods

3.8.1 Population and Sample

Sampling is necessary in social research to reduce the cost and also reduce the time for the researcher to collect that data (Hedt and Pagano, 2011). The target population that forms the focus of this research study was all HSWs working and employed through commissioning arrangements by the HSE in all primary care areas in Ireland involved in direct patient care. Resources and time available to the researcher often determine the selection of both the setting and subjects (Kwong et al, 2011). Therefore, it is necessary to apply a sampling technique to assist the researcher to select a subset of the target population. The challenge remained for the researcher especially when undertaking a research study as part of an academic qualification, with limited financial, human and time resources. Therefore, with the goal of conserving these resources the researcher employed a non-probability sampling method known as convenience sampling. The convenience sample for this study are HSWs meeting the inclusion criterion and locally accessible to the researcher. Furthermore, due to the repeated measure design method employed, this convenience sample enabled the researcher to collate the data with minimum financial implications.

The writer is aware that this sampling method can introduce bias due to systematic differences and lead to under representation of the target population (Kandola et al, 2014). Within the literature Kallman and Sureuds (2009) employed a cross-sectional survey design to investigate knowledge among HSWs. This research study randomly selected the location and also randomly selected the study subjects. Population surveys provide more representative samples employing and decreasing the likelihood of selection bias (Hedt and Pagano, 2011). However, limitations were recognized in testing people’s knowledge by self-administered questionnaire with no guarantee that that HSWs did not confer with each other or consult media or literature. Therefore, the benefits of gaining insights and testing HSWs ability to detect early pressure ulcer damage and decreasing the likelihood of conferring and provide more representative results was a difficult task. Furthermore, this design not only measured the efficacy of an educational intervention but measured the
sustainability of knowledge gained and rendered this selection of sample choice paramount.

This study was a preliminary study, convenience sampling was employed due to resources and costs to employ an alternate sampling technique such as random sampling was not achievable. Moreover, visual skin assessment is the only technique in the community to detect skin changes and HSWs are the most likely to complete this comprehensive assessment. The researcher was aware of the probability of selection bias by selecting a convenience sampling technique. Nonetheless the researcher believed it was fundamental to undertake the study to strengthen rather than weaken our knowledge about this vital group of healthcare workers. The researcher could have conducted a cross-sectional, multi-site, self-administered questionnaire in a random sample of multiple primary care teams. However, the risk of conferring and looking at media could not be excluded.

3.8.2 Negotiation of Access

Ethical approvals were sought and granted from the Clinical Research Ethics Committee of the HSE Dublin North-East and the Clinical Research Ethics Committee of the Royal College of Surgeons in Ireland Ethics Committee (See Appendix 1 & Appendix 2). The study setting selected for this research proposal was in a large primary care setting, comprising of both urban and rural populations. This setting is currently subdivided into 12 primary care teams made up of multidisciplinary team members. The Home Support Department is co-located autonomously in the primary care setting. Permission to access the participants was obtained from the Home Support Manager in the primary care setting. A copy of the access letter provided by the Home Support Manager at the study site is provided (see Appendix 3). Access to the population was through a gatekeeper appointed by the Home Support Manager. The gatekeeper invited the selected study population to attend a staff meeting where the study details and consent process were conveyed to the study population in its entirety. Historically, the vast geographical areas encompassing primary care have been an influencing factor prohibiting HSWs to attend training or meetings (Cavendish, 2013). Therefore, four staff meetings were arranged in total by the gatekeeper to ensure full attendance of potential study subjects. Hancock et al (2005), stated that ambiguous information regarding
proposed training is a detrimental factor in how HSWs' reach an informed decision of whether or not to participate in training. The gatekeeper expressed concerns regarding her proficiency to give clear information in regards to the details of the research study. Therefore, the researcher provided the information regarding the study details and the consent process.

A total of 150 packages including the inclusion/exclusion criterion leaflet, invitation letter, information leaflet and consent form (see Appendix 4 and and Appendix 5) were given to all study subjects that attended the meeting. All HSWs were asked to take all the relevant information home, and to deliberate with friends and family if participation in the study was the right choice. The HSWs were informed that if they decided to take part in the research study to complete the consent form and return to the home support department in a sealed enveloped provided for attention of the researcher within 48hrs. Of the 150 potential study subjects 39 replied with written consent.

3.8.3 Intervention

The educational intervention of choice was the PUCLAS e-learning tool. It was developed following the EPUAP position statement on pressure ulcer classification and IAD differentiation. PUCLAS provides an overview of causative factors (Defloor et al, 2005). This tool aims to further support clinical teaching and learning about pressure ulcer classification and IAD differentiation (Beeckman and Schoohoven, 2015). It has been developed as a solution for the on-going major difficulties experienced by healthcare professionals when classifying pressure ulcers and in making a distinction between pressure ulcers and skin lesions caused by urinary and fecal incontinence. This tool comprises four separate modules, each made up of specific learning outcomes and assessment tools (Appendix 6). An updated version of pressure ulcers classification which concurs with the latest international guidelines is included within the e-learning tool. Additionally, the most recent terminology for IAD is provided, with high quality graphic images developed by the PUCLAS Workgroup of the EPUAP (Beeckman and Schoohoven 2015).
Permission to use the PUCLAS e-learning tool was granted by Professor Dimitri Beeckman. The flow of study intervention from obtaining consent to the final post-test is illustrated. (See, Appendix 7).

3.9 Data Collection

Data collection commenced when all ethical approval was granted and the study subjects had given written consent (Gerrish and Lacey, 2010). The setting for data collection occurred in a private computer classroom. This classroom could only accommodate a maximum capacity of nine study subjects for each educational session and measuring point. The study subjects expressed feelings of anxiety participating in the study. Reassurance was given that the results from the study would be demonstrated collectively, and all data collection was coded. Each study subject had the use of their own computer. The venue was comfortable, quiet and calm, and had adequate heating and lighting. The venue remained consistent throughout all three measuring points.

The questionnaire is one of the commonly employed methods of data collection in nursing (Guinnberg et al, 2015). It provides the researcher with a swift and cost effective method to collect data. The researcher designed two pre-designed questionnaires. Firstly, a pre-designed questionnaire was designed to obtain baseline information regarding HSWs demographic details (Appendix 8). Secondly, a pre-designed questionnaire to measure the accuracy of correct response was employed. (see Appendix, 9). Watson (2015) makes the point that error in measurement must not be overlooked in quantitative research. It can be systematic or human in nature. Systematically an error could occur when the instrument measures differently at different measuring points. In this research study the pre-designed questionnaire to measure the accuracy of correct response remained consistent at each testing point. All the data was coded. Each study subject name has a unique ID code before entering the private classroom, this number code remained throughout the study.

Previous to the study, a set of 20 photographs consisting of varying stages of skin severity were validated by 4 pressure ulcer experts. All experts agreed collectively on the clarity and the classification of each photograph. This was a conducive
method employed by Beeckman et al (2008) and Beeckman et al (2010). In keeping in line with methods employed by both research studies to gain baseline information of HSWs ability to accurately assess varying stages of skin severity, the HSWs classified one set of 20 photographs. The photos were separately enlarged and projected on white background. All study subjects were asked to look at each individual photograph and record the response they thought was correct by employing the NPUAP, EPUAP and PPPIA (2014) classification system. The number of accurate responses was collated individually per participant. The study subjects then attended the PUCLAS e-learning intervention within the same private classroom. Observations were made and recorded to establish the time duration of each study subject to complete the e-learning tool. Following the e-learning intervention the HSWs group were asked their opinions about the satisfaction and challenges experienced in relation to the PUCLAS e-learning tool. All comments and feedback from the participants was recorded by means of written notes. During both post-tests the study subjects were asked to classify one set of 20 photographs. This data collection method process is similar to Beeckman et al (2008), in that the sequence of the photograph images was altered at both post-tests to reduce the risk of recognition.

Nominal measurement was employed to classify the demographic data. Interval measurements were used to collate the accuracy of correct responses, the zero point is the lowest level of accurate response and 20 point is the highest level. Watson (2015) also points out that multiple data collectors can cause error in collection. In this research study the researcher was the only person to test all the study subjects and collected all the data at every measuring point. No issues arose in relation to completing the pre-designed questionnaire or concerns voiced regarding problems viewing the photographic imagery at any stage throughout the research study. All data was entered solely by the researcher at each measuring point on to an excel spreadsheet. All pre-designed questionnaire data was destroyed after each data entry. Written field notes which augmented the survey data were coded and all data was stored in a locked filling cabinet and on a password safe computer. The data collated was only shown to the researcher’s supervisors.
3.10 Data Analysis

Quantitative data analysis enables the researcher to systematically organize and present data in a quantifiable format (Gerrish and Lacey, 2010). Data was analyzed, stored and presented using SPSS 22.0 (SPSS Inc. Chicago, IL, USA). Descriptive statistics were employed in this study to provide scores which enabled the participants to be sorted in relation to specific attributes, such as age, gender, and length of service (Bettany-Saltikov and Whittaker, 2014). Questions regarding demographic attributes were numerically coded and their frequency and percentages were calculated. Descriptive analysis was used to summarize, describe and explain the data. All three measuring points are evaluated through the calculation of overall mean values. Further statistical analysis was used to interpret the data, and make inferences from the information collected (Gerrish and Lacey, 2010). Additional analysis was conducted, using a paired samples t-test, to evaluate the impact of the educational intervention on participant scores.

To capture participants’ issues following the educational intervention, and to augment the survey, unstructured notes were taken by the researcher during the workshop. Words used by the participants were recorded as they represented the terms and language that the participants placed on their main concerns and affirmations. This process was initially to collect the words spoken and describe them, but this lead to the researcher being stimulated to complete further tests on the collected quantitative data. As a result of this further analysis, using Pearson’s product moment coefficient, was completed to explore if any correlation was evident between length of service and pre-training, and pre-test/post-test 1/post-test 2 scores. The P values were calculated to determine the presence or absence of statistical significance, with p set at ≤0.05 in keeping with statistical rigor.

3.11 Pilot Study

A pilot study is designed to provide preliminary evidence and allow the researcher to assess study viability, but also to allow for any modifications necessary to complete a successful study (Gerrish and Lacey, 2010). The writer conducted a small pilot study which involved three study subjects. It was effectively a trial run in preparation for the major study, to ascertain if the study participants easily
understood this pre-designed questionnaire. (Watson, 2015). Furthermore, the writer sought to examine the suitability of instruments employed when obtaining the knowledge, evaluate the aims and objectives of the study and minimize error in measurement. This process allowed the writer the opportunity to modify the pre-designed questionnaire. Additionally, it facilitated a determination to be obtained on the average time needed for completion of the e-learning educational intervention. In fact, no modifications were needed in regard to the pre-designed questionnaire. Although the quantitative method guided this research study, the qualitative findings from the workshop/discussion group obtained rich descriptive data and will be presented in this thesis simply augmenting the primary quantitative data. Numerical data was entered onto an Excel spreadsheet solely by the writer at both measuring points, and computer data was locked in a filing cabinet and password protected. Due to time limitations, only two measuring points were completed, pre-test and post-test 1. Therefore, this data was not included in the main research results.

3.12 Rigour

Throughout this research study rigour in quantitative research has been acknowledged in terms of reliability and validity, represented by Gerrish and Lacey (2015). Reliability is the extent of measurement the chosen instrument within the study consistently measures each time. Conversely, the extent to which the measurement made by the instrument measures what the researchers intend to measure, is known as validity (Watson, 2015). Internal consistency, is a feature of reliability, principally involves the extent to which all the items in the questionnaire measure the same thing. The questionnaire was prepared by the principal researcher. The first pre-designed questionnaire comprised of questions relating to demographic information regarding the study subjects. The second pre-designed questionnaire employed was used consistently for each measuring point, pre-test, post-test 1 and post-test 2. Watson (2015) makes the point that internal inconsistency can be caused by ambiguous questions in the questionnaire. However, the pilot study was carried out to gain insight to ensure that pre-designed questionnaire obtained the measurements necessary for the researcher to meet the objectives of the study.
During each testing the study subjects were asked to detect early pressure ulcer damage. by employing the NPUAP, EPUAP and PPPIA (2014) classification system. This classification is widely used for application in research for teaching. This testing of knowledge has been undertaken previously, and the intra-rater reliability of using two-dimensional photographic imagery was questioned by Beeckman et al (2010). In this research study no study subject expressed any confusion in relation to the photographic imagery. Beeckman et al (2010) recommended clinical observation of skin assessment by each individual participant as an alternative. Consequently, this type of data collection was not an option for the researcher due time and budgetary constraints.

The educational tool of choice was the PUCLAS educational tool. This was developed by the EPUAP, in cooperation with the Nursing Sciences Departments of the University of Ghent and the Radboud University Nijmegen Medical Centre developed the e-learning tool (Defloor et al, 2005). The reliability and validity of the PUCLAS educational tool as an instruction method to improve knowledge of classification skills has been evaluated in studies by Beeckman et al (2008) and Beeckamn et al (2010). Firstly, a repeated measure design was conducted and findings of increased knowledge of classifications skills among registered nurses and student nurses. There was an increase inter-observer reliability from pre-test ($k=0.24, \text{IQR}=.21$) to post-test 1 ($k=0.65; \text{IQR}=0.12$). Similarly, in an additional study Beeckman et al (2009) conducted a randomised control trail, testing the effectiveness of the PUCLAS educational tool among registered nurses. Findings demonstrated an increase in scores following the e-learning intervention: pre-test (44.6%; $p=0.82$) to post-test (62.8%; $p=<0.0001$). This e-learning tool has never been validated a suitable tool for HSWs, therefore making it difficult to compare and contrast findings.

3.13 Ethical Considerations

Ethical guidance for the study was obtained from the World Medical Association (WMA) Declaration of Helsinki. Research was performed in strict accordance with these guidelines. The Declaration of Helsinki (WMA, 2013) states that it is the researcher’s responsibility to protect the health of their participants, safeguard the integrity of the study and ensure dignity, self-determination, privacy and
confidentiality for participants. Additional guidance was obtained from the Nursing and Midwifery Board of Ireland (NMBI) Code of Professional Conduct and Ethics (2014), and the Health Service Executive (2006) Guide to Good Research Practice publication. The writer’s aims were to adhere to the fundamental principles of ethical considerations as described by Gerrish and Lacey (2010), stipulating five key areas for consideration: autonomy, non-maleficence, beneficence, justice and professional-patient relationships.

3.13.1 Autonomy

Autonomy is defined as a method of self-governance. It is the ability to act freely in making informed decisions (Gerrish and Lacey, 2010). Dependent or unequal relationships include those between employers and employees, and may influence HSWs’ decisions to participate in the study (HSE, 2006). As the study population was a vulnerable group, extra care was taken in the consent process. The HSWs were invited to discuss their participation with family and friends able to support them in making their decision. Furthermore, participant HSWs had the option to decline an invitation to participate in the study or withdraw at any time. Reassurances regarding any possible discrimination or exclusion from other training opportunities or future educational interventions were given. It was also guaranteed that no changes to current employment practice with the HSE would occur.

3.13.2 Non-maleficence

The principle of non-maleficence refers to healthcare professionals’ responsibility to cause no harm (Gerrish and Lacey, 2010). The Cavendish report (2013) indicated that HSWs had expressed dissatisfaction with employer expectations that they complete training in their own time, as naturally this reduced the incentive to partake. With this mind the writer assured all participating HSWs that they would be paid as normal, even though they away from work. Furthermore, the writer assured them that they would be remunerated for travel costs from the HSWs’ original base (as agreed by HSE) to the education session and back (See Appendix H).
3.13.3 Beneficence

Beneficence can be defined as the implementation of positive action to benefit others (Gerrish and Lacey, 2010). The writer’s intent was to assist the HSWs ability to detect early pressure ulcer damage, and thereby implement enhanced prevention with the advice of the Public Health nursing service. The knowledge gained by the research study will contribute to the overall evidence-based practice about HSWs in the community. It will also provide insights into practice and indicate if changes to current practice are required. Subsequently, this insight will be utilised to inform and improve healthcare. This research study may highlight additional areas which require development of evidence-based outcomes.

3.13.4 Justice

Justice in research is explained as the fair and equal treatment of all participants (Gerrish and Lacey, 2010). The inclusion criteria incorporated all HSWs employed through commissioning arrangements by the HSE in the targeted primary care area involved in direct patient care. All races, religions, genders and ages within the population were included where they met the inclusion criteria.

3.13.5 Professional-Patient Relationships

This concept is divided into four components: veracity, privacy, confidentiality and fidelity (Beauchamp and Childress, 2009). Veracity ensures that the participant has a complete understanding of the study in a comprehensive and objective manner (Beauchamp and Childress, 2009). This was evident in findings by Hancock et al (2005) and also was highlighted in the Cavendish report (2013), where some HSWs reluctance correlated with the lack of objective and extensive knowledge about the study. The writer’s contact details were clearly shown on the information leaflet and two phone calls were received requesting more clarity regarding the study.

Privacy in terms of research is described as the participant having a right to privacy of their person and their information (Beauchamp and Childress, 2009). In research, assurance regarding confidentiality is vital, as is protecting the information retrieved and the identity of the participant (Gerrish and Lacey, 2010). Confidentiality and privacy was achieved by making it impossible to link the study subjects to the data.
A second gatekeeper was assigned to allocate a unique study number to all HSWs consenting to participate in the study. The gatekeeper was the only person able to link names of participation to study ID numbers and had no further role to play in the research study. Each HSW who consented to participate in the study received their unique study number on the first day of the study from the gatekeeper. The writer had no part in this process, and only had access to study ID numbers. Each study ID number remained with the HSW throughout the duration of the study. Individual results were collated by the writer, using the ID number to determine differences in knowledge before and after the education intervention. Once the data was entered from the paper surveys onto computer, and verified for completeness and correctness of data entry, these paper surveys were destroyed. Any study related soft copy data was stored in a locked filing cabinet, accessible by the writer only. Under the RCSI processes, the data will be retained on a secure RCSI server for a period of 5 years’.

Participants taking part in the study needed to be able to trust the writer, known as fidelity. In order to address this important aspect of fidelity, the writer must choose the participant’s interests over the writer’s interests (Beauchamp and Childress, 2009). Participants were advised that withdrawal at any time throughout the study was an option, and that they were not required to answer any questions if they did not wish to do so. In total nine study subjects withdrew, with sick leave accounting for three of these.

Guided by all the ethical principles outlined above, this research study was designed to ensure ethical compliance. Ethical approval for the study was sought and granted from the Clinical Research Ethics Committee of the HSE Dublin North-East and the Royal College of Surgeons in Ireland Ethics Committee (See Appendix 1 & 2).

3.14 Summary

The purpose of the study was to investigate the impact of an educational intervention on community HSWs ability to detect early pressure ulcer damage. This was performed using a repeated measure design. This design was chosen as the writer wished to test the study subject’s knowledge before and after the educational intervention. The pre-test, gained insight into current knowledge levels, post-test 1
tested the effectiveness of the educational intervention as an instruction method. Finally, post-test 2 tested the sustainability of knowledge gained post intervention. A positivist, quantitative method was used as the writer wished to quantify the impact of the educational intervention, to report a change in an outcome following a change in an intervention. This data was then analysed to assess the presence or absence of a relationship.

Non-probability, convenience sampling was used as the writer wished to directly test the knowledge with repeated testing, enabling the researcher to collate the data with minimum fiscal implications. Thus, the inclusion criteria were all HSWs fitting the inclusion criteria, local accessible to the researcher. All HSWs who met the inclusion criteria were invited to participate. Data was collected through the study subjects number of accurate responses of various stages of skin severity by employing the NPUAP, EPUAP and PPPIA (2014) classification system. Then, data was analysed using a Statistical Package for Social Sciences (SPSS) programme. Further analysis was conducted, using a paired samples t-test, to evaluate the impact of the educational intervention on participant scores. Correlation between length of service and pre-training, and pre-test/post-test 1/post-test 2 scores was determined using Pearson’s product moment coefficient. Significance was determined through the calculation of p-values. Descriptive analysis was used to summarise the qualitative data.

Reliability and validity were safeguarded primarily through the use of validated tools. The writer was the only person testing the participants consequently eliminating inter-rater issues. The study was designed and accomplished in meticulous accord with the World Medical Association Declaration of Helsinki (2013). Ethical approval for the study was sought and granted from the Clinical Research Ethics Committee of the HSE Dublin North-East and the Royal College of Surgeons in Ireland Ethics Committee (See Appendix 1 & Appendix 2).
Chapter 4.

Results

4.1 Introduction

Skin assessment is an essential component in pressure ulcer prevention, and evidence suggests that patients may not receive the correct level of care to maintain their skin integrity (NPUAP, EPUAP and PPPIA, 2014 and Samuriwo and Dowding, 2014). Skin assessment is not the sole responsibility of the nurse in the community. HSWs have a greater opportunity to complete a comprehensive assessment (Samuriwo, 2010 and Athlin et al, 2010). However, evidence shows that all health care workers completing a comprehensive skin assessment require education to fulfil this role. Internationally, pressure ulcer classification systems are used to support and standardise descriptions of the extent of any skin damage, and differentiate pressure ulcers from other types of wound (NPUAP, EPUAP and PPPIA, 2014).

Findings in the literature state that 69 % of pressure ulcer risk was detected through NPUAP, EPUAP and PPPIA, 2014). skin assessment in a community setting in Ireland (Skerritt and Moore, 2014). However, underreporting of pressure ulcer prevalence was stated as a significant limitation in the process (McDermott-Scales, 2009 and Skerritt and Moore, 2014). This prompted a growing interest in why pressure ulcer prevalence remains and how the skin assessment fails. This can only be achieved by investigating compliance with every prevention measure (Samuriwo and Dowding, 2014). HSWs are directly involved in patient care and play a pivotal role in completing comprehensive skin assessments. The purpose of this study was to assess the impact of an educational intervention on community HSW ability to detect early pressure ulcer damage.

In order to assess the impact, study data was collected from a total of 27 HSWs. The study consisted of three measuring points: 1. pre-education; 2. immediately
post-education; and 3. two weeks post-education. During each measuring point, the HSWs were asked to look at a total 20 photographs of varying stages of pressure ulcer damage. Each participant recorded their answers using the European Pressure Ulcer Advisory Panel classification system (NPUAP, EPUAP and PPPIA, 2014). The initial measuring point or pre-test was recorded to establish a baseline score. Then, two further measurements or post-testing were completed to evaluate the impact of the educational intervention (PUCLAS 3). A workshop, tasked with making a subjective evaluation of the PUCLAS 3 e-learning tool content, was completed following the educational intervention. This aimed to ascertain and record participant satisfaction levels and challenges encountered.

In the results chapter, descriptive statistics regarding length of service and previous pressure ulcer training have been illustrated using frequency distributions presented in diagrams. Furthermore, all three measuring points have been evaluated by calculating overall mean values and presenting this data as overall percentages on a histogram. The frequency distribution of correct responses for all three measuring points was presented in a diagrammatic format. Additional analysis was conducted, using a paired samples t-test, to evaluate the impact of the educational intervention on participant scores.

\( P \) values were calculated to determine the presence or absence of statistical significance, with \( p \) set at \( \leq 0.05 \), in keeping with statistical rigor. Further analysis, using Pearson’s product moment coefficient, was completed to explore if any correlation between length of service and pre-training, and pre-test/post-test 1/post-test 2 scores was evident. The outcome of this analysis was described and again \( P \) values were calculated to determine the presence or absence of statistical significance, with \( p \) set at \( \leq 0.05 \) in keeping with statistical rigor. Finally, the workshop evaluation findings, such as participants’ comments were categorized and tabulated.

4.2 Findings

The flow of participant data from eligibility, consent, pre-test, post-test 1 and post-test 2 through to analysis can be seen in Figure 1. Thirty-six participants provided consent, yielding a response rate of 24%. The total number of study subject
withdrawals from the study was 9 (25%): Of the withdrawals, three (33%) withdrew at pre-testing due to sick leave; and six (67%) withdrew at post-test 2. Of the post-test 2, one (17%) was due to annual leave and five (83%) withdrew giving no reason. The final total study sample consists of twenty-seven participants, yielding a final response rate of 18%.

**Figure 1: Flow of Participants through the study**

*Flow of Participants through the Study*

- Assessed for eligibility (n=150)
  - Eligible for inclusion (n=150)
  - Invited to consent (n=150)
  - Provided consent (n=36)
    - Declined to consent (n=112)
  - Pre-Test and Post-Test 1 (n=33)
    - Withdrawal (n=3)
  - Post-Test 2 (27)
    - Withdrawal (n=6)
  - Analysed (n=27)
4.3 Demographics

A total of 27 participants were involved in the study. The majority of the participants were female (96.3%, n=26), with a mean length of service of 15 years (SD 6.7 years, min 8 years, max 32 years). Within the sample group 33% of the total (n=9) have ≤10 years of service, 26% (n=7) have 11-15 years of service, 18% (n=5) have 16-20 years of service, 15% (n=4) have 21-25 years of service, 4% (n=1) have 26-30 years and 4% (n=1) 32 years of service (see Figure 2).

Figure 2: Length of Service
Within the sample group, 56% (n=15) had previously received training regarding pressure ulcers management, and 44% (n=12) stated that they had never previously received pressure ulcer training (see Figure 3).

![Previous Pressure Ulcer Training](chart)

**Figure 3: Percentages of Previous training**

### 4.4 KEY FINDINGS

#### 4.4.1 Baseline Knowledge

Baseline knowledge was measured for all twenty-seven study subjects. The answers to all 20 photographs were coded as ‘correct’ and ‘incorrect’ at the data entry stage. The mean overall pre-test score was 12 (SD 2, min 6, max 16). Nine respondents (33%) classified 6-10 pictures correctly, 12 respondents (45%) classified 11-13 pictures correctly, and 6 respondents classified 14-16 (22%) pictures correctly (see Figure 4). The writer observed that the HSWs experienced difficulty in differentiating between classification stages, in particular between stage 4 and stage 1, and especially where necrotic tissue or eschar was evident.
The mean overall post-test 1 score was 11 (SD 2, min 6, max 16). Nine respondents (33%) classified 6-10 pictures correctly, 14 respondents (52%) classified 11-13 pictures correctly and 4 respondents classified 14-16 (15%) pictures correctly (see Figure 5). Once again the writer observed HSWs experiencing difficulty differentiating between stages 4 and stage 1, especially where necrotic tissue or eschar was evident.
The mean overall post-test 2 score was 12 (SD 2, min 7, max 16). Six respondents (22%) classified 7-10 pictures correctly, 16 respondents (59%) classified 11-13 pictures correctly and 5 respondents classified 14-16 (19%) pictures correctly (see Figure 6). On observation, ability to differentiate between stage 4 and stage 1 was not noted, however, incorrect answers resulted in stage 4 classification were the most common error type.
Figure 6: Percentage correct responses at post-test 2

Figure 7 provides a comparison of the percentage correct responses at pre, post 1 and post 2 tests. Overall, at pre-test, the study subjects accurately detected the severity of skin changes on 58% of occasions. Overall, at post-test 1 the study subjects accurately detected the severity of skin changes on 55% of occasions. Overall, at post-test 2 the study subjects accurately detected the severity of skin changes on 58% of occasions.
Figure 7 Percentage accurate detection of the severity of skin changes, Pre, Post 1 and Post 2 tests

Figure 8 outlines the frequency of correct responses at pre, post 1 and post 2 tests. In the pre-test, nine respondents classified 6-10 pictures correctly, 12 respondents classified 11-13 pictures correctly and 6 respondents classified 14-16 pictures correctly. In the post-test 1, similarly nine respondents classified 6-10 pictures correctly. There was an increase to 14 respondents accurately classifying 11-13 pictures correctly and a decrease to 4 respondents accurately classifying 14-16 pictures correctly in post-test 1. In contrast, in post-test 2, there was a decrease to six respondents classifying 7-10 pictures correctly, an increase to 16 respondents classifying 11-13 pictures correctly and an increase to 5 respondents classified 14-16 pictures correctly.
4.4.4 Evaluation of the Education Intervention on Study Subjects Scores

Table 1 presents the mean values of pre-test and post-test 1 and post-test 2. A paired-samples t-test was conducted to evaluate the impact of the education intervention on participants’ scores. There was a reduction in scores from the pre-test (M=11.56, SD=2.439) to post-test 1 (M=10.96, SD=2.457), t (1.072), but this was not statistically significant (p=.294). The mean decrease in scores was .593 (95% CI: -.544 to 1.729). The eta squared statistic (.04) indicates a small effect size.

Further paired-samples t-tests indicated that there was an increase in scores from post-test 1 (M=10.96, SD=2.457) to post-test 2 (M=11.56, SD=2.359), t (-1.039), but this was not statistically significant (p=.309). The mean increase in scores was -.593 (95% CI: -1.765 to .580). The eta squared statistic (-.08) indicates a small effect size.

Figure 8 Frequency of correct responses
Table 1. Mean Values: Length of Service, Pre, Post 1 and Post-test 2

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of Service</td>
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<td>8</td>
<td>32</td>
<td>15.44</td>
<td>6.733</td>
</tr>
<tr>
<td>Pre test</td>
<td>27</td>
<td>6</td>
<td>16</td>
<td>11.56</td>
<td>2.439</td>
</tr>
<tr>
<td>Post-test 1</td>
<td>27</td>
<td>6</td>
<td>16</td>
<td>10.96</td>
<td>2.457</td>
</tr>
<tr>
<td>Post-test 2</td>
<td>27</td>
<td>7</td>
<td>16</td>
<td>11.56</td>
<td>2.359</td>
</tr>
</tbody>
</table>

4.4.5 Correlation between length of service, pre-training and repeated measured test scores

The relationship between length of service and pre-training, and pre-test/post-test 2 scores was assessed using Pearson’s product moment coefficient. There was a moderate negative relationship between pre-training and post-test 2 scores ($r=-.44; n=27; p=0.02$).

4.5 Qualitative Findings

Some qualitative data was collected by the researcher, augmenting the survey data. Due to the depth of qualitative information, the researcher has collapsed what was said during the workshop into a number of themes. Gerrish and Lacey (2010) state that qualitative research is an approach which explores human behaviour, experience, perception, motivations and intentions. Therefore, the phenomenon may have many different interpretations and as a result, the writer sought to understand them from the perspective of the participants, by taking account of interactions between the participants in the study. Following the education intervention, feedback from the participants was recorded by means of written notes. In total twenty-seven participants took part in the workshop discussion following the education intervention. Participants expressed key comments of satisfaction and challenges experienced regarding the educational intervention.
4.5.1 Satisfaction

All twenty-seven participants shared comments in the workshop. Four participants commented that they were ‘very nervous’ about partaking in the study, and that they ‘feared’ they would not be able to use the computer. Many of the participants described using the ‘mouse’ as difficult, and would prefer touchscreen ‘like my phone’. Furthermore, these participants described the usability of the tool as an:

“easy way of moving to the next page by the arrow marked NEXT, which was great”.

HSELanD is aimed at all staff in the Irish health services who wish to avail of e-learning programmes and tools to improve their knowledge. However, HSWs have no access to HSELanD at present. Six participants commented on this with statements such as:

“we have no access to computers in work, and would have to travel miles to get to a computer……. we would need to see this again and again to take it all in”.

Positive remarks regarding the PUCLAS 3 e-learning tool included “very colourful” and “great photographs”. Overall participants expressed satisfaction regarding the photographic imagery.

Eight participants also commented on visual imagery relating to the anatomical areas in which pressure ulcers can occur, one representative quote being:

“great to see how many areas of the body you can get a pressure sore on”.

Ten participants commented on being satisfied with not being in a classroom environment:

“it was great that there was no writing….. it was great that there was no written exam at the end”.

The time taken to complete the e-learning programme varied. Overall the majority of participants took approximately one hour, whereas some participants took 1 hour
40mins and expressed that they had ‘not enough time’. Two participants took only 40 mins to complete and they spent the remaining time revisiting the photographic imagery. Interestingly, all participants took written notes during the programme, and many looked for ‘handouts’ at the end of the e-learning education session.

4.5.2 Challenges

All twenty-seven participants commented on the challenges faced relating to the volume of information, in particular difficulties understanding the terms used throughout the e-learning education. The e-learning tool was described as:

“very difficult to read…many words I have never heard of before”.

As stated above, each participant took written notes, and they shared the key words they found challenging. These key words were noted and due to volume, are displayed in Table 2.

**Table 2 Challenging Key Words**

<table>
<thead>
<tr>
<th>MODULE 1</th>
<th>MODULE 2</th>
<th>MODULE 3</th>
<th>MODULE 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aetiology</td>
<td>Classification</td>
<td>Bullae</td>
<td>Necrosis</td>
</tr>
<tr>
<td>Bony Prominence</td>
<td>Edema</td>
<td>Denudation</td>
<td>Diffuse</td>
</tr>
<tr>
<td>Shear</td>
<td>Induration</td>
<td>Stratum Corneum</td>
<td>Multifactorial</td>
</tr>
<tr>
<td>Confounding</td>
<td>Blanchable</td>
<td>Erythema</td>
<td>Lipids</td>
</tr>
<tr>
<td>Reperfusion</td>
<td>Hyperaemetic</td>
<td>Perineal Skin</td>
<td></td>
</tr>
<tr>
<td>Ischemia</td>
<td>Incontinence-Associated-Dermatitis</td>
<td></td>
<td></td>
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<tr>
<td>Tissue Deformation</td>
<td>Eschar</td>
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<tr>
<td>Ischemia</td>
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<td>Deformation</td>
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<td>Microclimate</td>
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<td>Low Albumin</td>
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<td>30 Degree Tilt</td>
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</table>

The participants commented that when they take part in any academic study, each module lasts a number of weeks. Other participants described their previous experience in pressure ulcer training as:
“we know about the different layers of skin........and what a pressure sore is…that’s it”.

However, all participants expressed feelings of being overwhelmed by the amount of content in the e-learning programme. As one participant put it, “It’s way beyond me”. Many of the participants described the challenge of “remembering” all the information included in the e-learning package. They disliked the use of ‘big’ words. Participants commented on how the descriptions regarding the extent of skin damage were difficult to understand. They stated that descriptions of the differences in a pressure ulcer and incontinence associated dermatitis were very difficult to understand. However, the visual imagery which demonstrated the differences had a greater positive impact.

One participant said:

“as soon as I saw that picture I knew my Lady does not have a pressure sore”.

Many participants felt that the e-learning tool contained great information, but the challenge was to put it into practice. Many commented that, in order to be meaningful and worthwhile, they would require “supervision…like in the old days”. Many expressed the sentiment that they felt a sense of isolation and lack of support from within the Health profession, e.g. “…on my own…”; “…reporting…..and no response”.

These sentiments are echoed in:

“I miss working closely with the nurse...I would meet her on the street and we would pop into with patient’s home if I thought something was not right”.

Overall many positive and negative challenges were encountered by this e-learning tool. The author believes one comment from a participant summarised the positive and negative feedback particularly well:

“some of this was over my head, yet it should be mandatory… I need to be constantly reminded… I am on my own out here… I need to know”.

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4.6 Summary

A total of twenty-seven participants were involved in this study. The majority of the participants were female (96.3%, n=26), with a mean length of service of 15 years (SD 6.7 years, min 8 years, max 32 years). Repeated measures for all twenty-seven study subjects were completed. Baseline knowledge (pre-testing) and post-testing was measured on the same day. Post-test 2 was measured two weeks following the educational intervention. During each measuring point, HSWs were asked to look at a total 20 photographs of varying stages of pressure ulcer damage. Each participant recorded their answer using the European Pressure Ulcer Advisory Panel classification system, and each answer was coded ‘correct’ or ‘incorrect’.

There was a reduction in scores from the pre-test (M=11.56, SD=2.439 to post-test 1 (M=10.96, SD=2.457), t (1.072), but this was not statistically significant (p=.294). Further paired-samples t-tests indicated that there was an increase in scores from post-test 1 (M=10.96, SD=2.457) to post-test 2 (M=11.56, SD=2.359), t (-1.039), but this was not statistically significant (p=.309). There was a moderate negative relationship between pre-training and post-test 2 scores (r=-.44; n=27; p=0.02).

Within the discussion group all twenty-seven participants participated. Satisfaction was expressed by the participants regarding how effortless the e-learning tool was to operate. Time variations for completion of the e-learning tool were evident, ranging between 40 minutes to 1 hour 40 minutes. Satisfaction was also expressed regarding use of visual and photographic imageries, in contrast to the traditional teacher-centred approach. All twenty-seven participants commented on challenges experienced relating to difficulties understanding the theoretical health concepts and degree of content. Furthermore, all twenty-seven participants commented on how the e-learning tool as a stand-alone educational intervention lacks clinical supervision.

4.7 Conclusion

The purpose of this study was to assess the impact of an educational intervention on twenty-seven HSWs’ ability to detect early pressure ulcer damage. Mean knowledge scores reduced from pre-test to post-test 1 and returned to base line at post-test 2. The relationship between pre-training and post-test 2 scores showed a
negative relationship. This was found to be statistically significant. The workshop discussion group participants’ main comments were satisfaction with, and challenges experienced, regarding the educational intervention. The findings from this discussion have highlighted the confusion and lack of understanding surrounding all areas of skin detection. The participants expressed the need for education to ameliorate this deficit, in particular their ability to comprehend and retain the new knowledge needed to complete a comprehensive skin assessment. These verbal statements were supported by the quantitative findings.

Within the findings the PUCLAS 3 e-learning programme has not been shown to have a statistical significant positive effect on HSW ability to detect early pressure ulcer damage. HSWs have identified what they perceive as areas of importance regarding their role in skin assessment. Clearly the HSWs require further education on aspects of the role they play regarding skin assessment. Thus a question that arises from the study findings revolves around finding ways to bridge the gap of knowledge between what is known in theory and what is practiced clinically on the ground.
Chapter Five

Discussion

5.1 Introduction

This chapter will discuss findings from this research project, which sought to assess the impact of an educational tool on community Home Support Worker’s (HSWs) ability to detect early pressure ulcer damage. Following data analysis and review, it became clear that these findings should be addressed under five headings: environment, practice knowledge, knowledge gained, health literacy and participant reflection. First, an overall summary of the study findings is presented. This is followed by a discussion of the five underlying themes. All of these will be discussed, with particular reference to how they relate to current research and existing literature. Furthermore, an examination of the research methods employed will be conducted, addressing the impact on the study’s outcome. To end, a summary of the newly uncovered information will be presented, and a conclusion provided.

A total of 27 participants were involved in the study. The majority of participants were female, with a mean length of service of 15 years. Within the sample group 56% had received previous training regarding pressure ulcer care. Several points of interest emerged while the writer was engaged in the process of data collection and analysis. The baseline knowledge obtained at the pre-test demonstrated that HSWs have not sufficiently able to detect early pressure ulcer damage. There was a reduction in scores from pre-test to post-test 1. While there was a subsequent increase in scores from post-test 1 to post-test 2, this only resulted in a return to the pre-test mean score. This leads the writer to contemplate whether the e-learning tool was an effective learning method for HSWs. Further analysis demonstrated a negative correlation between all previous training and post-test 2 results, which supports this possibility. However, it could also pose the question: what are the reasons underlying HSW inability to apply any new knowledge?
5.2 Environment

5.2.1 Irish Context

Historically, the home support service has its origins in the establishment of the home-help service in 1972 (DoH, 1970). The principal aim of this service was to provide domestic care, such as housekeeping. As noted by Hewko (2015), this was viewed as a traditionally female role. The majority of HSWs taking part in this study were female (96.3%). As a caring profession the percentage of female roles are comparable to those within the nursing profession (Hollup, 2014). Florence Nightingale, the founder of nursing at the time of the Crimean war in the 1800's, recruited middle class female carers, mostly from England, to look after soldiers injured during battle (Evans, 2004). European countries adopted Florence Nightingale’s model of nursing, discarding the idea of men in the nursing profession (Mackintosh, 1997). This suggested that nursing was a predominantly female profession that was seen as subservient to the predominantly male medical profession of the time (Evans, 2004). This in turn was representative of a society in England where, at the time, females were submissive to males. Internationally females still dominate the nursing profession, and the gender imbalance remains (Hollup, 2013). As noted in the literature, and even following the equality revolution of the 1960’s, the presence of the males within nursing remains at only 10% of the overall nursing population (Popper-Giveon et al, 2015).

In Ireland, the Central Statistics Office (CSO) (2013) demonstrated that 92.1% of the nursing profession are female. Nursing practice is gender isolated, impelled and supported by cultural traditions in nursing, however the professional role of nursing is regarded as non-gendered (Evans, 2004, Hollup, 2014 and Popper-Giveon et al, 2015). Several studies looking at the roles of male versus female nurses. Keselman (2014) showed that the male nurse progressed faster and with reduced practice experience to other roles in nursing, such as management and teaching (Hollup, 2014). This is further compounded in all types of society by the fact that women are slower to progress up the career ladder as they take time out to become mothers and home makers (Bellemore, 1992). Historically, much of the research focused on men working in traditional female roles such as nursing (McIntosh, 1997, Evans, 2004). Pini (2004) suggests that men present themselves as powerful and wish to
portray themselves as having superior knowledge. When looking at male roles in these female professions, the issue of power and role of superiority must be considered (Popper-Giveon et al, 2015). Herakova (2012) argues that male nurses’ occupational choices push them to the limits of masculinity. At present the Healthcare workforce includes males of various nationalities, some of whom were previously employed in military or other mainstream masculine roles. They are now engaged in what is deemed feminine work, often as it is one of the few forms of available employment (Hollup, 2014 and Popper-Giveon et al, 2015). For example, in Israel, 38.6% of all ethnically Arab nurses were men, encouraged to enter the nursing profession due to a lack of alternative employment opportunities (Popper-Giveon et al, 2015). In Mauritius, where 50% of all nurses were men, nursing is considered to be of high-status with clear career progression.

However, in the UK, 84% of the carers in health and social care are female (Cavendish, 2013). Interestingly, only one male participant offered to take part in this study and that is of concern. Had enquiry allowed for all HSWs to participate in private interviews or through a questionnaire, the rationale for their lack of engagement may have been uncovered. Another issue of concern relates to the role played by men in the caring profession in different ethnicities within a population (Chan et al, 2013). More enquiry is required to find out if this is due to economic circumstances, or based upon a passion to be involved in the caring profession (Hollup, 2014). Either way the discourse needs further exploration. If we are focused on achieving patient satisfaction as much as patient outcomes than we need to explore the routes by which men can become effective carers in contemporaneous Ireland (DoH, 2015).

5.2.2 Ageing Workforce

The mean length of service within this study was 15 years. In the UK, Cavendish (2013) reported that the average age of carers are 35-45 years old, working in social care and healthcare. This report stated that the social care division totalled 1.225 million carers, with 50% working in domiciliary care within peoples’ homes. In addition, Cavendish (2013) stated that there is no sign of an ageing workforce within social care in the UK. However, caution needs to be applied when interpreting this
statement. Within this workforce there was an annual turnover rate of 19.8%. Of the 1.225 million, 59% spent only between 2- 6 years in post. (Cavendish, 2013).

The World Health Organization (WHO) (2006) working together for health have recognized a concurrent theme of an ageing workforce. Internationally what we know is that we cannot address the reduced resources of the future with the solutions of the past. We need to look at the scale of the increasing need and the resources available to meet that need (WHO, 2006). This is a global crisis and as such is being addressed globally. Many countries throughout the world are looking at the workforce not only in terms of recruitment and retention of nurses, doctors and allied health professionals, but also at the skill mix that could support and facilitate the growing need. (WHO, 2016). In Ireland the Department of Health (2016) launched the Interim report on the ‘Taskforce for staffing and Skill Mix’ in acute medical and surgical wards (DoH, 2015). There is currently a pilot project in place in three hospital of differing sizes to measure the effect of the ranges. They are looking at the range of nurse-to-patient hours required and also at the range of nurses and other skill mixes required to meet the needs of the patients.

In Ireland, the social care division is unclear, what is known is social care workers in the publicly funded health sector complete a 3-year Level 7 degree. This cohort of workers, plan and provide professional care to vulnerable individuals (Lalor and Share, 2009). Social Care Workers adopt a needs-led approach to negotiate clients’ presenting problems and offers support to the client rather than offering health care needs. This profession is hoping to have statutory registration by 2017 (Health and Social Care Professional Council, 2013). However, the integration of this role into the Irish health service is not clear. It is mentioned in the health polices in practice but is seen more in the social inclusion and disability sectors than in health (HSE, 2014) In contrast, HSWs are employed through commissioning by the HSE and are required to undertake FETAC level 5 training course, yet the duration and completion of this course are unspecified (QQI, 2014). The HSW’s job description was defined in 2006, and outlined as a supportive role for care delivery under the supervision of a qualified nurse (DoH, 2006), in spite of that the HSWs division is placed in social care (HSE, 2014). What we do not need is a fragmentation of the current service but instead an integrated service that allows the patient to have a
continuum of care delivered by a professional competent and confident workforce to deliver that care (DoH, 2016).

5.2.3 Safe Delegation

Within the sample group only 56% of HSWs had attended some previous training regarding pressure ulcer management. Moore (2010) suggests that any practising healthcare worker requires training for effective pressure ulcer prevention. Samuriwo (2010), makes the point that pressure ulcer care does not rest exclusively with the nurse. HSWs are directly involved in patient care, and play a pivotal role in completing comprehensive skin assessments (Samuriwo, 2010). Skin assessment is merely one vital component of pressure ulcer prevention and it alone requires detailed training and expertise (Beeckman et al, 2010). Kallman and Sureuds (2009), and Demarre et al (2012) voiced their concerns about the manner in which training in the completion of a comprehensive skin assessment was provided for registered nurses and HSWs. These findings are not surprising, particularly when pressure ulcer management is so multifaceted. Kallman and Sureuds (2009) and Guinnberg et al (2015), demonstrated that within their sample group of nurses and HSWs, only 32% to 34% had attended previous training. Importantly, the methodology for testing their knowledge was different, which makes direct comparison with this study more difficult. This does not concur with the NPUAP, EPUAP and PPPIA, (2014) recommendations, which state that knowledge and practice are equally essential if a comprehensive skin assessment is to be accomplished. If this situation continues, there is a risk that the standardisation and fluency in health care language will become diminished with regard to skin assessment, and a streamlined communication system amongst healthcare workers will be impeded. This issue will continue to arise if HSWs are not educated and trained within the governance and competence of the health system (HSE, 2006).

For staff to oversee and maintain competence, it requires a structure of professional development within the health system (Francis, 2013). Those that work together should train together as part of the scope of practice (NMBI, 2014). The delegator must ensure that the delegatee is competent and confident to receive the delegated task. In this role the nurse must ensure that the HSW is trained to the level required, and is monitored (Gravlin and Bittner, 2010).
Communication is essential for effective delegation of any delivery of clinical care (Mueller and Vogelsmeier, 2013). Young et al (2012), stress that flawless communication is key to identifying, reporting and recording skin changes, allowing uniformity in methodological approaches. This is in line with the recommendations of Skerritt and Moore (2014), who stated that homogeneity in methodological approaches can lead to improved results and pressure ulcer prevention. Effective communication within nursing begins with mutual respect for colleagues. Anthony and Vidal (2010), state that nursing staff must clearly communicate the delegated task in question, and ensure that the HSW has a clear understanding and knowledge of the importance of the task. This will result in positive outcomes. The evidence proves the if inadequate skin assessment is completed in the community this could lead to a serious reportable event, for instance a stage 3 or stage 4 pressure ulcer (HSE, 2015). Findings from this research study within this sample group suggest that less than half of HSWs have sufficient knowledge to competently complete a comprehensive skin assessment in the home environment. If inconsistencies in methodological approaches to pressure ulcer prevention persist, this will result in inadequate patient safeguarding within the home, and a loss of faith in Healthcare workers’ ability to provide effective care provision (Masotti et al, 2010). Currently, there is no accreditation for HSW upskilling in pressure ulcer care (Hewko et al, 2015). In addition, clear career progression and remuneration are needed to reward accreditation.

5.3 Practice Knowledge

Despite the HSWs daily involvement in skin inspection, the research findings point to an insufficient ability to accurately identify and assess early pressure ulcer damage, with the overall score for study subjects being 58% (M=11.56, SD=2.439). The indicators in this pre-test highlight the general trend in relation to how HSWs are currently performing skin assessment in the community setting in Ireland. However, due to the small sample size, any generalised conclusions in relation to the findings must be drawn with caution. Although only an observation, the writer noted that the HSWs experienced difficulty differentiating between stages 1 and stage 4, especially where necrotic tissue or eschar was evident. Accurate recognition of a stage 1 pressure ulcer is vital for timely implementation of
preventative and therapeutic measures in pressure ulcer management (Bruce et al, 2012). Difficulty in differentiating between stage 1 and stage 4 is not an uncommon finding. Aydin and Karadag (2010) concluded that nurses have difficulty recognising stage 4 where there is no disruption of the skin integrity. If a stage 4 pressure ulcer is misidentified the resulting deficiencies in patient care could mean that not all the skin damage is reversible (Aydin and Karadag, 2010).

Within the Irish community, if a nurse makes this clinical decision to delegate the responsibility to the HSW, and the HSW undertakes this delegated task of skin assessment, then they are taking on the decision making authority to know what to do if an adverse outcome occurs (Gravlin and Bittner, 2010). If the HSW is unable to differentiate between a stage 1 and stage 4 pressure ulcer, this could possibly lead to an adverse event. This serious reportable event could lead to extensive pain and suffering for a patient. Hopkins et al (2006) illustrated that pain intensifies the greater the severity of the pressure ulcer is and reduces the quality of life for that patient. The sample size in this study is small, yet, this could possibly highlight trends in relation to how HSWs are currently performing skin assessment within the community setting in Ireland. It is important to note that if the nurse delegates to the HSW then they must be confident that the HSW is competent to take on this duty. If not, then it is a failing on the nurse’s behalf in addition to the HSW. In Ireland the healthcare provision in the community setting is in a state of flux, due, primarily, to an ageing population which is living longer and has complex needs, in tandem with a drive to keep patients at home (DoH, 2015). The population’s health needs have grown at a fast pace, and Lang (2010) makes the point that no research has been carried out on the safety and competency of the HSWs’ to capably care for patients in the home setting, such as skin assessment.

5.3.1 Person-Centred

Within the current discourse from the Department of Health in Ireland (DoH, 2015) and subsequently the World Health Organisations (WHO, 2016) global strategy on human resources for health directions, care provision is the vision of offering person centred care. In practice this means there should be delivery of service that is generic in provision but individually specific. Studies by McDermott-Scales et al (2009), Skerritt and Moore (2014), and Jordan O’Brien et al (2016) found that
pressure ulcers are a common feature within the community setting in Ireland. Training for skin assessment is notably intermittent, vague and in this study produced an overall score of 58% for the accurate detection of skin damage for study subjects. Additionally, the service delivery is not individually specific. Internationally, dissatisfaction is expressed in relation to training and educational inadequacies for HSWs working within a wide range of clinical areas of care, such as palliative care, chronic disease management and dysphagia management (Dryden and Addicott, 2009, Llott et al, 2013, Pesut et al, 2015). In Ireland the formal training of HSWs is conducted as part of the Fetac Level 5 (Kyle et al, 2014). Many of these courses are delivered outside of formal institutions. Credibility and the extent of exposure to competent environments and practices is open to question. In the UK, Cavendish (2013), expresses discontent with the manner in which training for HSWs is outsourced to private companies not directly linked to nursing expertise. Worryingly, training is completed without any formal knowledge measurement to ensure that on completion of formal education HSWs have the ability to carry out their duties in a competent manner.

Swedberg et al (2013) and Mc Kenna et al (2005) outline that current recognised HSW courses are once off and in some cases involve no clinical supervision. Cavendish (2013) expressed continuing dissatisfaction with the current systematic approach to educational training, not solely with the lack of training or theoretical components, but also an uneasiness surrounding how this training design can lead to a propensity to introduce one size fits all industrial-style training, which is not person-centred. Justification for these deficits by employers include time and budgetary constraints. This reasoning contradicts the Department of Health workforce planning document (DoH, 2016), which places a key focus on ensuring that the correct workforce is in place to supply the patients’ needs in their home. If the skill mix is to be developed in the community, then the service must assess the population needs and deliver the service accordingly (DoH, 2016). For HSWs this may mean development of skills specifically for a young child health care service, for an ageing demographic, or for patients along the lifespan with complexity of needs. Therefore, the service to society will dictate which type of HSW will evolve. In the UK, an example of a good career pathway for HSWs can be seen in the Department of Health’s 2011 establishment of Community Children’s Nursing
Teams service. This service has nurses and HSWs delivering intensive care to very young babies with complex needs in the home setting. The HSW begins working with the baby in the acute setting, gains the skills and knowledge needed, the trust of the parents and then progresses to care for the child as required (Carter and et al, 2012). Although we want a nationally consistent health service with appropriate staffing and skill mix, we also need to be regionally and locally specific. This will involve adapting to trends and needs as deemed necessary. In this way we will develop person-centred care services.

5.3.2 Practice Role

There was variance noted in the frequency of accurate responses. For instance, in this study, 22% of respondents classified 14-16 pictures out of 20 correctly. Cavendish (2013) recognised this variance in HSW quality of work, which occurred due to the presence of pockets of excellence. In contrast the DoH (2015) could view this indicator as a possible discrepancy in practice. In this study 33% of HSWs classified 6-10 pictures correctly. In line with these findings Beeckman et al (2008) expressed dissatisfaction with registered nurses’ and student nurses’ ability to accurately assess various stages of skin damage using the EPUAP classification tool. Discontent with outcomes is compounded by the fact that all staff in the Beeckman et al (2008) study were familiar with the classification system, whereas in this research study HSWs were not familiar with the classification tool. This unfamiliarity could explain the negative effects on pre-test results.

However, Hayes (2014) believes that HSW work experience in itself cannot be ignored, and stated that learning through practice is a valuable means of education. Swedberg et al (2013) noted that self-learning is not to be disregarded in the community setting: large geographical areas and unreasonable staff ratios lead favourably to this approach. In a recent strategic document by the DoH (2016), patient safety is noted as of utmost importance. However, caution must be exercised if self-learning is common practice for HSWs, as this can lead to peer learning (Swedberg et al, 2013). Peer learning could lead to a proliferation of poor practice (Francis, 2013), and a workforce with wide disparities in knowledge (Hewko et al, 2015) operating with little clinical supervision (Westberg and Tafvelin, 2013). Therefore, patient safety in a ‘learn on the job’ approach must be questioned. If a
poor standard of care is evident, this will not comply with the three values underpinning the professional practice of nursing and midwifery: compassion, care and commitment (DoH, 2016). Nonetheless, the existence of pockets of excellence do warrant further exploration in terms of career pathway development and progression. Internationally, expanding and developing the role of the HSWs is central to ease problems associated with nursing shortages (WHO, 2006). This has been identified in the UK in community based rehabilitation centres (Moran et al, 2015), in the army within critical care (Carter, 2011), and in pressure ulcer prevention strategies such as skin champions (Ellis and Price, 2015). The need to develop the HSW role has been acknowledged with the introduction of compulsory certified training in the UK (Cavendish. 2013), and, for example, the further development of practitioner level within the endoscopy setting (Gardiner and Coulten, 2008).

As already outlined in the UK, the establishment of Community Children’s Nursing Teams service has developed the HSW role, delivering complex care to babies in the home setting (DoH, 2011). The pathway begins for the HSW through gaining skills and knowledge in relation to complex care requirements. This progresses upwards as competencies develop. After a period of time opportunities become available to enter the children’s nursing course, an opportunity that would not have been afforded to them earlier in their adult lives (DoH, 2011). Therefore, the skilled workforce is ‘grown’ into the service. Recruitment is usually from among local staff and this aids staff retention post qualification. The process of combining certified training with career progression while meeting population health needs, places real value on the HSW’s role.

5.4 Knowledge Gained

During the study HSW ability to accurately assess varying stages of skin severity did not improve post-training. There was actually a reduction in scores from pre-test (M=11.56, SD=2.439) to post-test 1 (M=10.96, SD=2.457). Studies investigating the effect of the PUCLAS 3 tool have shown that this e-learning improves performance. Findings in a study which employed similar knowledge testing methods showed that there was an increase inter-observer reliability from pre-test (k=0.24, IQR=.21) to post-test 1 (k=0.65; IQR=0.12) (Beeckman et al, 2008). Similarly, a study by
Beeckman et al (2010) indicated that there was an increase in scores following an e-learning intervention: pre-test (44.6%; \(p=0.82\)) to post-test (62.8%; \(p<0.0001\)). One suggested explanation for this increase in test scores in both studies was that the theoretical content was unambiguous. Findings for post-test 1 by Beeckman et al (2008) and Beeckman et al (2010) suggest that the increase in test scores could be because the supplied knowledge is partially memorised, and this cannot be excluded when interpreting the data. However, this does not concur with the writer’s research study. It strengthens the theory of the possibility of theoretical uncertainty among HSWs, and questions the e-learning tool as a suitable instruction method for them.

Weir (2015) recommends that all HSWs should, like their fellow healthcare colleagues, be taught the fundamentals of all care in order to reduce variations in standards and increase efficiency. Cavendish (2013) concurs with this finding, and is opposed to the idea that HSWs would have difficulty understanding certain theoretical concepts, suggesting that this assumption may often result in HSWs being denied the opportunity to learn in a shared manner. Skin assessment is one area of pressure ulcer prevention and management that has a basic core of knowledge (Beeckman et al, 2010). Thus, Gunningberg et al (2015) recommended that basic learning relating to skin assessment could be shared. It is imperative that health educators explore ways of transferring core knowledge regarding skin assessment in a shared manner, without compromising the quality and continuity of care for the patient (Swedberg et al, 2013).

The PUCLAS 3 e-learning tool, developed by Beeckman and Schoonhoven (2015), is the online instruction method employed in this research study. It has been developed as a solution for the ongoing difficulties experienced by healthcare professionals when assessing skin damage and classifying pressure ulcers. It can be independently operated, e.g. from any location using any computing device. This innovative, validated e-learning tool explores skin assessment in a comprehensive manner, and the information included is considered appropriate for all healthcare workers to understand and learn the skills required to confront this complex condition. Hence, the core knowledge for skin assessment is targeted, and questions of flexibility are addressed by the fact that it enables independent learning.
However, the theoretical content could be regarded as ambiguous for this writer’s study, which can be inferred by the variance in the frequency of accurate responses in post-test 1. There was a decrease of 6% in pockets of excellence, where just 15% of respondents classified 14-16 pictures correctly.

Beeckman et al (2008) discussed the probability of decreased scores, identifying the target groups’ familiarity with computer technology as a factor. They advised that consideration must be applied to the fact that familiarity and therefore competency will be, at least in part, a function of age. This finding was echoed in a recent adult skills study completed by the National Adult Literacy Association (NALA, 2012). Problem solving testing by computer based assessment was completed amongst 5,983 Irish adults. Of those who participated, 42% scored below level 1 - this being the weakest literacy skill level. In this writer’s study, 32% of the study subjects had ≥ 16 years of service. There is a high probability that these participants had experience in only didactic teaching methods. This has ramifications for HSW familiarity levels with regard to computer based technology, and as such, could also be a causal factor in the negative post-test 1 results. However, since the introduction of the world wide web in 1991, many areas in modern life have been affected, for example the ways in which we communicate, with a dependence on the mobile phone for communication being one aspect of this evolving technology (Cook et al, 2008 and Koch, 2014). In Ireland, this is reflected in a national survey on technology use. The Central Statistics Committee (CSO) (2012) demonstrated that 5.5million people living in Ireland in 2011 had a mobile phone, indicating that there is a familiarity with some form of computer-based technology.

Additionally, Beeckman et al (2010) made the point that difficulties in assessment accuracy could be caused by photograph imagery being only two-dimensional, and that non-blanching erythema could not be fully represented. These influential factors should not be disregarded when interpreting the data in regard to incorrect responses. To alleviate this one would need to clinically assess participants undertaking skin assessment. However, to do this for every HSW in the community would require an inordinately large amount of time and resource allocation (Cavendish, 2013). One solution in such circumstances is the availability of telehealth (Marineau, 2007). This can assist in the delivery of care, communication
to the nurses and others in ‘real time’ and also as a form of personal supervision when wanting to discuss and ‘audit’ a case, scenario, outcome or generally counsel a member of staff to support them in practice (Taylor et al, 2015). This is particularly critical when working in rural or remote areas (Rutledge et al, 2014). One major obstacle to this however is the availability of broadband in the country. Not only is the availability of ‘wifi’ in health centres almost non-existent (HSE, 2015), but ICT infrastructure within community practice is a hindrance to the progression of key roles or services.

5.5 Health Literacy

Although HSWs do not need to be educational theorists, Hayes (2015) suggests that it is important to understand what HSWs know and how they best learn. In this research study there was a moderate negative relationship between pre-training and post-test 2 scores, posing questions regarding the underlying reasons why HSWs might not be able to apply new knowledge. It is evident from data analysis findings that HSWs are having difficulty understanding unfamiliar health terms and theories. Additionally, this has had an impact on HSW ability to transfer new knowledge, as reflected in post-test 1 relative to pre-test scores, and in the negative correlation between previous training and post-test 2 results. These findings illustrate similar attributes to those discussed by the National Adult Literacy Association (NALA) (2012) and O’Connell et al (2010) regarding individuals’ struggles with health literacy. Although health literacy is a new concept, the NALA (2012) discussions make it very clear that individuals with low health literacy can be literate, yet functionally illiterate in relation to healthcare issues where unfamiliar terms and theories are employed.

In the USA, a national survey revealed that the educational systems that prepare individuals for life, influence health literacy levels (Kutner et al, 2003). Kerr (2016) states that low health literacy is higher among individuals who did not complete high school. Suggesting that the increase in the number of years of formal education gained increases your health literacy levels, Kerr (2016) indicates that the biggest percentage of American adults with limited literacy are native-born English speaking Caucasians. Throughout the literature it has been illustrated that HSWs have a variety of educational backgrounds (Hewko et al, 2015). In the UK, Cavendish
(2013) highlighted that many HSWs have never taken a numeracy or literacy test. In Ireland, the NALA (2012) has indicated that some of the reasons for the variation in educational opportunities nationally may perhaps be because free secondary school was not available until 1967, and thus, many adults left school early. The NALA (2012) indicated that the lowest literacy skills are evident in adults aged between 55-65 years. Given the length of service profile of the study participants, this could explain in part the negative correlation findings in the study, where some HSWs have 30 years of service, and access to formal educational opportunities in their formative years may have been limited.

In the UK, there is also no minimum educational qualification required to enter this caring workforce (Cavendish, 2013). Similarly, there is no minimum educational requirement within the HSE for those who wish to begin working as a HSW (HSE, 2006) The FETAC level 5 is recognised as an equivalent standard to the Leaving Certificate (Kyle et al, 2015). Yet, the FETAC level 5 modules do not directly test knowledge gained, unlike the Leaving Certificate. This could camouflage problems with regard to deficiencies in learning attainment. Without direct testing the risk of conferring or seeking advice from an external source cannot be overlooked (Kallman and Surseud, 2009). This was also a significant finding cited by Murray (2012) and Cavendish (2013), who outlined dissatisfaction among nursing staff within clinical settings regarding the negative correlation between the qualifications received and HSW ability to display competence in the work place. In the USA, Kerr (2016) stated that low health literacy is higher among adults who spoke a language other than English before starting school. Nationally, the HSW function is ethnically diverse, and the care relationship between this workforce and the elderly population has been examined by Walsh and Shutes (2013). Language proficiency and communication difficulties were significant challenges for employers in hiring migrant workers. Walsh and Shutes (2013) identified that language abilities compromised the delivery of basic care for the elderly population. In the UK the black and minority ethnic (BME) groups account for 15% of the carers working in health and 29% in social care division. The division of these roles is a new phenomenon in Ireland and is seen within the HSE National Service Plan as a particular role being developed (HSE, 2015).
5.5.1 Improving Health Literacy

NALA (2012) advocate the use of visual aids where low health literacy is evident, recommend testing readability of information materials, and the use of signage to help individuals navigate their learning experience. In one instance in this study, a HSW effectively used visual imagery to supplement the text. On reflection, the writer cannot simply interpret this as a straightforward answer, but instead could consider this action a camouflage for low level health literacy. Schladen et al (2011) also acknowledged the fact that health information is written in a format that is complex and unsuitable for people with low health literacy. Bryant (2011) and Kerr (2016) illustrated that visual imagery helps individuals with low health literacy to focus attention and underpin what is read. Bryant (2011) states that the theoretical content should be suitable for the intended population, that visual imagery content should be simplistic, and graphs should be avoided. Schladen (2011), in a study focussing on individuals living with a SCI, acknowledged that visual imagery has the potential to counteract this. Schladen et al (2011) explored the use of online visual imagery by means of ‘YouTube’ to inspire individuals with spinal cord injuries to engage in seeking knowledge in many areas, such as pressure ulcer management. The researchers monitored the appropriateness of the content by analysing the individual’s attention patterns to specific modules, seeking longevity of engagement, thus allowing them to conclude the appropriateness of the theoretical content.

The need to transform teaching styles for HSWs across all areas of clinical practice to maintain knowledge retention has been widely acknowledged in the relevant literature (Murray, 2012, Llot et al, 2013, Cavendish, 2013, Hayes, 2015 Pesut et al, 2015). Thomas et al (2014) believe that individuals learn better through a number of approaches, rather than didactic or stand-alone e-learning. Historically, Hayes (2014) argues that learning was teacher-centred, submissive in nature and not accommodating of the three fundamental domains of learning: knowledge, practical skills and attitudes. Hayes (2015) illustrates that there is an inherent focus on written dissertations in HSW education, with little self-reflection, critical examination, or storytelling to reproduce the ambiguity and uncertainty they face every day. However, Cavendish (2013) and The Francis Report (2013), recommended adopting a transformative learning style which accommodates different knowledge
and skill levels, and thus requires implementation of some of these diverse approaches to ensure all HSWs benefit. Furthermore, Thomas et al (2014) suggested that breaking down learning into manageable modules is necessary if rounded learning is to take place. Murray (2012) and Cameron et al (2014) found that different levels of healthcare workers require supplementary training suitable to their level of responsibility. Due to the diversity of registered and unregistered staff obtaining the educational interventions great attention was given to the language employed. In addition, Thomas et al (2014) recommended the use of mnemonics, and this learning style has been recognised by a wound specialist in the UK. (Trueland, 2016). As part of the ‘Stop the Pressure’ campaign, they have started to focus on the community and the complexities of teaching healthcare workers in that setting (Trueland, 2016). The training involves using memory prompts, simplistic in nature yet effective for memorising knowledge, and empowering staff to report effectively, for instance ‘react to red’, indicating that any reddening over a bony prominence should be reported. Efficient reporting is also acknowledged and progression is measured by the introduction of the safety cross to illustrate the number of pressure ulcer free days (Thomas et al, 2014 and Trueland, 2016). Throughout the literature, shared learning and breaking down the learning into small sections was acknowledged as instrumental to the success of training outcomes.

Historically in Ireland HSWs have traditionally been drawn from the Home Help service, which predominately practiced domestic care (Murphy et al, 2015). At present, changing demographics and an ageing population with complex needs which require formal care mean the HSW role has evolved at a much faster pace than the skill specifications for the role (Swedberg et al, 2013). Therefore, it could be inferred from post-test 1 scores and from the theoretical challenges described by participants, that the skin assessment process contains many terms and concepts which are unfamiliar to the HSW. Taken in combination with their relatively new healthcare environment and job description, these may lead to functional illiteracy. This is concerning, as a thorough comprehension of skin assessment is necessary in order to increase competency and thereby enhance patient safety (Samuriwo and Dowding 2010). Identification of low health literacy, as identified by this study, exists in areas other than skin assessment. O’Connell et al (2010) makes the point that healthcare terminology is a barrier to anyone new to the healthcare environment,
and low levels of health literacy are more likely to result in an inability to make sound health decision in the workplace. Swedberg et al (2013) demonstrated that in situations where patients were receiving home care with substantial complex care needs, HSWs were performing advanced care needs where they were not competent to do so, leaving patients at risk in their own homes. Worryingly, O’Connell et al (2010) corroborates this finding and suggests that this could lead to unintentionally harmful ritualistic practices in health care. Low health literacy impairs the access of Healthcare workers to healthcare knowledge by placing them on the outer aspect of the normal societal flow of information that integrates the workforce (Delk-Bryant, 2011). In Ireland the HSW workforce is already segregated. They work in the social care organisations, not primary care, so integration is hampered from the outset (HSE, 2014).

5.6 Supplementary Data

All twenty-seven participants expressed key comments of satisfaction and challenges with the educational intervention and testing processes. Satisfaction was expressed regarding the usability of the e-learning tool, with particular reference to the imaginative use of online visual imagery and video graphics. Bryant (2011) indicates that the use of video imagery to capture participants’ attention and bring them to the point of comprehending information can be a key focus for individuals with low health literacy. This point was encapsulated by one study participant who stated that she was unable to comprehend the theoretical aspects involved in differentiating between an IAD and a pressure ulcer. This participant competently bridged the theory to practice gap purely through visual imagery. Challenges were expressed in regards to the difficulties in understanding the health-related terms employed therein; and suitability of the e-learning tool as a stand-alone module for education. Currently, it is likely that theoretical concepts presented within the PUCLAS e-learning tool are ambiguous, however, the video imagery and photographs show that this approach has potential to be effective when seeking to educate individuals with low health literacy.

Worryingly, throughout the literature, educational intervention and training is firmly placed within a ‘one size fits all’ approach (Cavendish, 2013. Kyle et al, 2014 and Hewko et al, 2015). This questions the value that organisations place on HSWs and
shines a spotlight on the lack of shared learning at a local level. Westerberg and Tafvelin (2013) make the point that HSWs receive little peer and leader support. With a lack of standardised education and career progression the HSW role is at present largely stymied and controlled, with little room to develop decision-making skills (Cavendish, 2013 and Hewko et al, 2015). Within acute settings the roles of HSW and Maternity Care Assistant are becoming invaluable (Dover and King, 2011). Accreditation, career progression with commensurate remuneration are needed (Willis, 2012). The Francis Report (2013) highlighted issues of concern in the Mid-Staffordshire hospitals, it recommended that HSWs be regulated, and stated that vulnerable patients deserve regulated care.

From an organisational perspective, in Ireland HSWs are not part of an integrated team (HSE, 2014). Recently the DoH (2016) stated in a strategic briefing document that the focal point for achieving a more effective and integrated model of care is the development of comprehensive primary care. However, as previously stated above, HSWs currently work within the social care organisation, not primary care.

5.7 Research Methods

This study used a repeated measure design to explore the correlation between the application of the PUCLAS 3 e-learning tool and knowledge gained, as demonstrated through the ability to accurately detect various stages of skin severity. The final response rate of 18% in this research was disappointing and frankly unacceptable, with a significantly high level of withdrawals, particularly in relation to ‘Post-test 2’. Within the body of relevant research as a whole, a limited number adopted this design to investigate the impact of an educational intervention for improving skills in detecting pressure ulcer damage. The majority tested knowledge with regard to skin changes through cross-sectional research designs (Kallman and Suresud, 2009, Demarre et al, 2012 and Guinnberg et al, 2015). These designs employed pre-designed questionnaires, and enabled the researchers to recruit across multiple settings. The response rates recorded were between 67% to 72% (Kallman and Suresud, 2009 and Guinneberg et al, 2015). This variation in methodological approach makes it difficult to compare and contrast the poor response rates from this research study. However, the writer adopted a repeated measure design to measure the sustainability of knowledge gained from an
educational intervention, disregarding the technique of memorising knowledge short term, and thereby permitting greater reliance on results (Gerrish and Lacey, 2010).

Beeckman et al (2008) employed a similar design and also found evidence of study subject withdrawals at the post-test 2 stage. However, Beeckman et al (2008) did not address withdrawal as a limitation for their study, possibly because it did not affect the overall quantifiable sample size. However, three international studies have investigated the impact of educational interventions, in other areas of clinical practice among nurses and HSWs (Van Der Linde, 2014, Pesut et al, 2015 and Weir, 2015). The study designs varied: Weir (2015) and Van der Linde (2014) adopted a quantitative descriptive design within a GP practice, and within an intellectual and mental health institution; Pesut et al (2015) employed a pre-/post-test design within a community setting. Weir (2015) demonstrated an overall low response rate of 16.9%. The total number of recruited respondents was eighteen, and notably the lowest recruitment response was with HSWs (n=8). Van der Linde (2014) had a small HSW sample size of twelve in total. Pesut et al (2015) had a total of thirty-five recruitment respondents completing the pre-test and educational intervention. Of this sample thirteen were HSWs. In this current research, nine study subjects withdrew at the post-test stage, decreasing the overall sample size for the purposes of data analysis. This is the first study in Ireland to assess the impact of an educational intervention on community HSW ability to detect early pressure ulcer damage. The writer did not anticipate the low response rate, and the, factors leading to this poor participation require further discussion.

5.7.1 Considerations

One important factor the Cavendish Report (2013) highlighted was that financial constraints put pressure on organisations preventing them from subsidising HSW education-related travel expenses. Additionally, the report indicated that omitting payment for travel is a misleading economic saving as it results in attrition of the HSW role, and poor uptake of education opportunities. However, for this study remuneration was secured from management. This would be expected to increase participation in the study, however, the opposite was true. The low response rate and subsequent withdrawals were damaging, as it affected the strength and integrity
of this study’s results. It is imperative that the underlying causal factors which resulted in a small sample size be identified and receive further attention.

5.7.2 Autonomy

Initially the writer aimed to recruit 50 HSWs to ensure an adequate sample size in case of withdrawal. In advance of embarking on the recruitment stage of any study, the Nursing and Midwifery Board of Ireland (NMBI, 2015) advises nurses and midwives to seek direction from the relevant Research Ethics Committee. The writer was very cognisant that the study group be approached with a view to participating in a way that ensured no individual felt unduly pressurised to take part, and that all who entered the process did so freely. To provide an ethical compass by which to formulate and execute the research process, the writer accessed the research findings of Gerrish and Lacey (2010). Here the writers state that an individual should have the ability to act freely in making an informed decision - that choice occurs when there is more than one option, permitting autonomy. It was on this premise, and following the Research Ethics Committee recommendations, that HSWs were given the choice to take part in the research, or to take part in training alone without any knowledge testing. This right to training irrespective of any commitment to partake in the study, was not a recommendation recorded in any of the previous literature testing knowledge (Beeckman et al, 2008 and Beeckman et al, 2010). However, in this current research project the presence of this recommendation cannot be overlooked as a causal factor in the low response rate.

When receiving study information, many HSWs verbally expressed the view that if training was to include an element of testing, they would not take part. Another possible causal factor for the low participation rate was outlined by Hancock et al (2005), who recognised that a lack of clear information regarding proposed training for HSWs was a detrimental factor in how HSWs reached an informed decision of whether or not to participate in training. Lamb and Sevdalis (2011) explored the factors that impacted on the recruitment of participants to research studies. Having clear concise information regarding the research process, in an easy-to-read format non-complicated format was deemed to be centrally important in allowing informed decision making. The writer obtained guidance from the Nursing and Midwifery Board of Ireland (NMBI) Code of Professional Conduct and Ethics (2014), and the
Veracity was one of the key principles adhered to at the recruitment stage. Assurance was given to participating study subjects and information was given in a comprehensive manner. The writer also conducted a pilot study, where no difficulties or confusion regarding study information were expressed. Corroborating evidence lies in the fact that only two study participants contacted the writer seeking more information. Lambe et al (2016) suggest that knowing about the research team, and having accessibility to contact them is a fundamental influencing factor. In addition to autonomy, Beeckman et al (2008) and Guinnberg et al (2013) suggest that consideration must be given to the possibility of fear being a factor in HSW unwillingness to participate in an unfamiliar computer-based assessment. This point will now be elaborated upon below.

5.7.3 Fear

Prompt and accurate detection of skin changes are the key determining actions in order to reduce the risk of skin deterioration (Bruce et al, 2012). Three studies assessed HSW knowledge used a self-questionnaire test format: Kallman and Suserud, 2009; Demarre et al, 2012; and Guinnberg et al, 2015. All the authors concluded that supervising staff performing skin assessment is not always possible, while the urgent need to test skill inadequacies is best met through a testing format. However, dissatisfaction was expressed regarding the limitations of a self-administered questionnaire. This data collection method did not directly test competencies and knowledge in a controlled environment. Demarre et al (2012) and Guinnberg et al (2015) did not stipulate a timeframe for the return of the questionnaire, however, Kallman and Suserud (2009) assigned a timeframe of 14 days for study participants. Kallman and Suserud (2009) expressed dissatisfaction that the format created the opportunity for participants to seek advice from literature or other staff members. However, the NPUAP, EPUAP, PPPIA (2014) state that a health care worker must accurately assess skin damage but the process must be in a prompt manner. This questioning the reliability of this type of testing format. In addition, Kallman and Suserud (2009) believed that knowledge testing can be perceived as threatening in nature, or as possibly giving a poor impression of the HSW’s practice. This could be an underlying factor contributing to the overall low response rate obtained in this research study.
Familiarity with the teacher-centred approach to learning could negatively impact on the adoption of an innovative computer-based approach. This view is supported by a survey of adult computer skills conducted by the National Adult Literacy Agency (NALA, 2012), involving almost 6,000 adults. Results showed that 17% of Irish adults opted not to participate in computer-based assessment, and that resistance to the computer-based format was predominately found in the female population. Like nurses, HSWs predominantly come from the female gender. This could give rise to negative views toward e-learning, leading to computer anxiety and reluctance to participate in the research. However, as demonstrated before, in Ireland individual ownership of a mobile phone is quite high and the expressed desire for a ‘touch screen’ computer reminiscent of their mobile phones was clearly stated (CSO, 2012). Overall, these issues relating to personal integrity could stem from fear of being ‘found out’.

In spite of this fear factor, The Department of Health (2015) states that it is imperative that the patient has the right person, with the right skills, for the right job. The Department of Health also supports transparency relating to any data obtained which has the potential to effectively measure the shortcomings in practice, to allow for effective workforce planning. With this in mind, the DoH (2015) stresses that any data garnered from research should be used responsibly and in ethical manner. This is known as beneficence (Gerrish and Lacey, 2010). The writer was sensitive to this ethical requirement, and the intention was to gain insight into the educational needs of HSWs in regards to skin assessment. Any deficits found may then be used to implement enhanced prevention in Public Health nursing and overall evidence-based practice in the community setting. A threat to personal integrity alone cannot be an accepted as justification for the HSWs’ fear of participation. Hancock (2005), Swedberg et al (2013) and Moran et al (2014), all expressed the view that measuring current HSW knowledge by means of continuous assessment in a discontinuous manner is unsatisfactory and questions the value organisations have for this caring workforce. In addition to autonomy and fear. Samuriwo (2010) makes the point that to have understanding of how people behave and act, an insight into their values is necessary to complete a comprehensive skin assessment (Samuriwo, 2010).
5.7.4 Values

Employers also play a pivotal role in facilitating staff to attend training. However, Cavendish (2013) suggested that employers can experience difficulties facilitating high numbers of staff for training. Moran et al (2014) concurs with these findings, and reiterated that a lack of formal training was as a result of healthcare organisations expecting HSWs to complete their training within their own work time. Both studies suggest that this can result in a high staff turnover and was the primary reason for failure to attend training. Worryingly, this lack of training is a factor recognised as having a negative influence on HSW career progression and job satisfaction (Cavendish, 2013 and Moran et al, 2014). Findings by Swedberg et al (2013) are at odds with this view, demonstrating instead that HSWs were often conflicted between their commitment to their patients’ needs and attendance at training. This healthy relationship could negatively impact on HSW committing to additional education.

In keeping with these recognised findings, the writer strived to minimise the above limitations. Each study group consisted of only nine participants for each training session, thereby facilitating a higher facilitator/student ratio. The writer strived to reduce HSW anxiety that their patients might be neglected during the research processes by obtaining reassurance from the management team regarding the maintenance of patient care and safety. Accessibility to the study day was also considered: the venue chosen was a location geographically central to all HSWs, with public transport to and from the venue readily accessible. In addition, HSWs received reassurances from management that they would not suffer any loss of earnings during the research processes. The influencing factors surrounding the resistance to change have been underpinned by Cavendish (2013), demonstrating that a HSWs’ willingness to take part in the training could be influenced by dissatisfaction with their current role, lack of accreditation, the absence of a financial reward, or changes in levels of responsibility following any education. Moran et al (2014) concurs with this theme, stating that HSWs often failed to see their role as a career, leading to habitual failure to seek opportunities to progress. Therefore, the proposed training may have been anticipated as informal, with no accreditation attached: leading to more responsibility with no recognition, and therefore resulting
in reduced motivation to take part. Cavendish (2013) makes the point that HSWs strive to belong and feel valued as part of a team. Westerberg and Tafvelin (2013) support this finding, noting that HSWs aspire to obtain defined roles and gain trust from their fellow colleagues. Willis (2013) suggests that if organisations are striving to obtain high value quality of care then they must value those that are currently delivering the care. However, in the community setting in Ireland, HSWs work within the social care division, not primary care (HSE, 2015). This division could leave the HSWs feeling that they are disconnected rather than being part of an integrated team, leading to feelings of being undervalued (Annear et al, 2014). As their level of training is seen to be of a lower standard, the risk remains that due respect is not shown to them by other healthcare workers. However, according to Weir (2015), this workforce is becoming increasingly skilled, and in certain areas these attitudes are declining. Within the acute setting the role of the carer and indeed the maternity care assistants are becoming invaluable (Dover and King, 2011) with the introduction of an accredited level 2/level 3 diploma in maternity care (Browne, 2005).

The Chief Nursing Office in the Department of Health recently launched a position paper on ‘Reaffirming the values for nurses and midwives’. This strategic document was developed as a response to recent cases of poor practice witnessed in nursing and midwifery in relation to the most vulnerable people in our society (DoH, 2016). This paper consulted with nurses and midwives nationally, and identified over 1,000 words that represented values held by them. They were collated into three overarching values: compassion, care and commitment (DoH, 2016). In theory, these values would be bestowed onto HSWs in the course of the work delegated from nurses and midwives and reaffirmed each year through an inclusive vision for HSWs and allied health professionals. Giving the HSWs the desire to learn and valuing their practice is fundamental in order for holistic learning to occur (Thomas et al, 2014).

5.7.5 Choice of Enquiry

This research design was a repeated measured design to gain insight into the HSW ability to detect early pressure ulcer damage, and directly test the knowledge gained post-intervention at two measuring points. The supplementary qualitative findings from the workshop/discussion group obtained rich descriptive data augmenting the
primary quantitative data, which was not planned. However, memo notes were taken throughout the research process by means of a reflective diary, both during and after data collection, and valuable patterns emerged. Although the workshop discussion group format was designed to obtain reflections on the educational intervention, the data obtained was instrumental in the latter stages of data analysis. It augmented the primary quantitative data and uncovered a new research finding which can inform future practice. Reflecting in quantitative research practice allowed the writer to critically review the work processes and research development (Walker and Priest, 2013). This new finding would not have been unveiled if the research design did not include the supplementary qualitative findings. Gerrish and Lacey (2010) make the point that adopting group discussions or interviews to explore and recognise the educational framework and language required for the population under study is vital if preliminary work has not previously been undertaken. This was a preliminary research study, yet, to facilitate a mixed methods design required a team of skilled researchers (Halcomb and Hickman, 2015). As a novice researcher, the writer acknowledges the fact that there are alternative superior modes, such as mixed methods, to develop an educational intervention for research populations that have different educational and cultural backgrounds. The writer suggests this finding be taken into consideration in future related research.

5.8 Innovative Outcomes

It is suggested that the HSW function, like the nursing profession, is gender isolated, not reflecting the population needs in present-day Ireland. It is also clear that there are several issues relating to HSW ability to detect early pressure ulcer damage, caused by issues relating to competency to complete a comprehensive skin assessment. The findings point towards deficiencies in HSW ability to accurately detect skin damage, irrespective of the training provided. However, the low health literacy finding is worrying, and as shown previously, does not only lie in the field of HSW inability to accurately detect skin changes alone. Low health literacy can prevent HSWs from obtaining vital information needed to prevent harmful ritualistic practices. This can not only lead to HSW isolation from the rest of the caring workforce, but can inhibit measures designed to counteract harmful ritualistic approaches. Variations in learning abilities are of concern and low health literacy adds confusion to the debate surrounding training requirements. It is difficult for
educators to determine the most valid training options for HSWs when research has shown that training is not measured in a consistent way, and clinical supervision is haphazard or non-existent, especially in the community setting. This current research adds to knowledge regarding the inconsistencies and inadequacies in existing training for HSWs, and their lack of career progression. Most existing literature recommends a shift from the current teacher-centred method towards transformative style training, including structured education to ensure HSWs of different ability and ethnic background benefit from the training provided.

HSWs provide most daily patient care and have the greatest opportunity to complete a comprehensive skin assessment in the community. Skin assessment is one vital preventative measure which must be undertaken in order to reduce risk and avoid pressure ulcer development. However, to date in Ireland no writer has investigated the effects of existing HSW training has on their competency to fulfil this role. Any positive impact arising from an educational intervention requires measurement if a true representation of the validity or reliability of the training received is to be obtained. Most significantly, two studies assessing the validity of the PUCLAS tool noted their predictive validity and advocated their use (Beeckman et al, 2008, Beeckman et al, 2010). The prevailing point to note in this writer’s study is the negative effect of the educational intervention. This was reflected in the post-test 1 scores. If the PUCLAS tool were a suitable educational method for HSWs to accurately detect early pressure ulcer damage, an increase in scores from pre-test to post-test 1 and post-test 2 should be observed. The negative impact of this educational intervention shows that the PUCLAS tool may not be a reliable teaching method for HSWs. However, the small sample size does not enable the researcher to generalise the findings. Nonetheless, this negative finding is disconcerting for registered nurses in the community, as they must now be mindful of deficits in HSW ability to competently complete skin assessment. Thus delegation of such tasks must be undertaken with caution, and structured accredited education for HSWs in skin assessment vital. A more appropriate method of teaching approaches must be found if HSWs are to detect early pressure ulcer damage, with consideration given to the associated findings of low health literacy among participants.

The fear of being ‘found out’ cannot be overlooked, which could call into question the values held by HSWs, e.g. compassion, care and commitment. This must be
considered when querying why some HSWs chose not to participate in the study. The research design for this study directly tested HSW knowledge, prohibiting conferring and techniques of memorising knowledge, which reduce results validity. The writer underestimated the complexity of the phenomenon under investigation and this was influential in the low response rate.

The research question was:

*What is the impact of an educational intervention on community Home Support Workers’ ability to detect early pressure ulcer damage?*

This study showed that there was a small negative correlation between the pre-test scores and post-test 2 scores, but this was not statistically significant. There was a small positive correlation between the post-test 1 scores and post-test 2, this also was not statistically significant. This is surprising, considering the fact that previous studies demonstrated statistical significant results for the PUCLAS tool. However, the study population differed, which makes meaningful comparison difficult.

Although the writer’s study did not show statistical significant variations following the educational intervention, the writer believes this is not due to the PUCLAS tool as an instruction method. Firstly, the writer believes this is in part a factor of the small sample size. The writer also believes that the lack of statistical significance arises from the moderate negative relationship between pre-training and post-test 2 scores and can be principally explained by low health literacy among the participants. Previous research regarding this method of improving skills and knowledge in detecting various stage of skin damage showed promising results. Further research is needed in this area in order to conclusively measure the benefits of this educational intervention method for HSWs, and to further explore the issue of low health literacy among HSWs in all areas of clinical practice. Overall, the findings of this study point to unacceptable variations in the competence of this workforce. These findings have indicated that presently HSWs are being sent into homes with inadequate or no training, and that currently there is minimal supervision to monitor if current practices for care delivery are safe.

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5.9 Summary

Skin assessment is an essential component in preventing pressure ulcers, and therefore reducing the incidence of pressure ulcer damage. Most pressure ulcers are believed to be preventable (O’Brien and Cowman, 2011). However, pressure ulcers are an ongoing economic and social burden. They can also cause considerable suffering for the individual and significantly impair quality of life. The financial cost of treating pressure damage creates a heavy burden on healthcare systems. Bennett et al (2004) estimated that 2-4% of annual global healthcare expenditure is used to treat pressure ulcer. This indicates that many preventable pressure ulcers occur, despite the widespread use of visual skin assessment methods.

Presently, in the community setting, visual skin assessment remains a key trigger for the initiation of preventative measures. The inconsistencies in visual skin assessment have been outlined in the research and in this study. The inconsistencies are a worry for nurses working in the community and create risk for the delivery of effective strategies which involve the delegation of care. A more efficient and reliable method of training is urgently if HSWs are to competently complete a comprehensive skin assessment. If prompt and accurate skin assessment were completed by HSWs, nurses in the community could more effectively initiate preventative measures which would therefore significantly reduce pressure ulcer occurrence. Pressure ulcers are a growing problem in the healthcare sector, and all healthcare workers must make every effort to tackle this problem. However, HSWs need a method of training appropriate to their learning needs. The finding of low health literacy adds a layer of complexity to the task of achieving educational attainment for this workforce and thus requires further research. This will support nurses in the community and further the goal of improving safe delegation of care provision and maintain patient safety. The writer believes that health educators could benefit from combining transformative style learning with clinical supervision (Hayes, 2014 and Thomas et al, 2014). Therefore, the educators involved in health and social care education need to adapt to the growing needs of the HSW in terms of how and what they learn and what they need to know.
Chapter 6
Conclusion

6.1 Introduction

The aim of this study was to investigate the impact of an educational intervention on community HSW ability to detect early pressure ulcer damage. The educational intervention employed was the PUCLAS e-learning tool. Two previous studies have been conducted regarding the its impact, however neither of these related to HSWs. The writer’s findings will therefore add to the body of knowledge concerning limitations in current training and the future educational needs of HSWs. In this chapter, a brief summary of the writer’s findings will be outlined. The study strengths and limitations will be discussed. Furthermore, the implications arising from the study findings and recommendations for future research will be discussed in detail. Finally, the writer will reflect on the study, and discuss the lessons learned from the research process.

6.2 Key Findings

The study consisted of three measuring points. During each measuring point, all participants were asked to classify photographs of varying skin severity. HSWs were asked to classify 20 different photographs by means of a multiple choice pre-designed questionnaire. The number of correct responses was recorded individually per participant. Each participant recorded their answer using the European Pressure Ulcer Advisory Panel classification system (NPUAP, EPUAP and PPPIA, 2014). Overall study subjects accurately detected the severity of skin changes on 58% of occasions at the pre-test phase. Post-Test 1 was measured for all twenty-seven study subjects. On average, the study subjects accurately detected the severity of skin changes on 55% of occasions. This small negative change in scores from the pre-test to post-test 1 was noted, but was not deemed statistically significant (p=.294). Post-Test 2 was measured for all twenty-seven study subjects two weeks later. The study subjects accurately detected the severity of skin changes on average on 58% of occasions. There was a small positive change noted in scores from post-test 1 to post-test 2, however this was not statistically significant (p=.309).
In the pre-test and post-test 1 phase the writer observed that HSWs experienced difficulty in determining classification stages, in particular differences between stage 4 and stage 1, and especially where necrotic tissue or eschar was evident. On observation, in the pre-test 2 phase the most common incorrect answer was recorded for erroneous classification as stage 4. No relationship was noted between length of service and pre-test to post-test 2 scores. However, there was a moderate negative correlation between pre-training and post-test 2 scores ($r=-.44$), this was statistically significant ($p=0.02$).

Qualitative findings concur with the aforementioned negative correlation, and similarly indicate behavior associated with individuals experiencing difficulty comprehending new terms. Themes emerging from the qualitative findings indicate that HSWs experienced difficulty understanding unfamiliar health terms and theories, and that they illustrated characteristics similar to those of individuals with low health literacy. Importantly, individuals who have low levels of health literacy are more likely to exhibit unintentionally harmful ritualistic practices. Overall, the PUCLAS e-learning tool did not prove to be a suitable teaching method, if the goal is to increase HSW ability to detect early pressure ulcer damage. However, the integration of data collection and analysis from the quantitative findings indicated low health literacy.

The inconsistency in HSW ability to detect early pressure is noteworthy. That the overall score for accurately detecting varying stages of skin severity was only 58% is of concern. In the community setting, HSWs are the principal healthcare worker completing skin assessment. An incorrect skin assessment could lead to an unnecessary adverse event, leading to increased healthcare costs and costs in terms of patient quality of life. Significantly, if skin assessment is not completed in a competent manner by HSWs, resulting in inaccurate or delayed reporting, HSWs in the community setting may in fact be contributing to pressure ulcer prevalence.

6.3 Strengths and Limitations

The strength of this study lies in the examination of one area of practice. In other words, the writer sought to determine the impact of an educational intervention on HSW ability to detect early pressure ulcer damage. This study is a unique
exploration of HSW knowledge regarding skin assessment, as it is the first study of its kind in Ireland. The writer chose to conduct a repeated measure design. To test HSW knowledge by a pre-/post-test design in a control environment counteracts limitations caused by conferring or the accessing of online media for answers - noted limitations of the self-administered questionnaire. The study consisted of three measuring points: one pre-test and two post-tests. This enabled the writer firstly to measure the educational intervention as an instruction method, and secondly through post-test 2 to measure the sustainability of any knowledge gained. The writer was the only assessor in the study. All measuring points and data were completed by the writer for all study subjects.

The main limitation of the study is the small sample size. The writer aimed to recruit fifty participants in case of participant withdrawal, to ensure adequate sample size. The results of the study should be interpreted with caution as only 27 out of 150 potential HSWs participated. The writer nonetheless considers that the study goal was achieved. In addition, time was limited due to the study being undertaken as the fulfilment of a one-year Master's degree. As a novice researcher, the writer underestimated how difficult it would be to recruit HSWs. This resulted in an unanticipated small sample size. If the writer had more time, further study subjects could almost certainly have been recruited. However, the HSWs worked in large geographical areas in the community and the only time allocated for recruitment was at monthly staff meetings. This meant opportunities for recruitment were limited. As the research study progressed, the writer recognised that the profound problems underlying current training inadequacies are multifaceted in nature. However, a time limit of eleven months for total completion and submission of the final thesis rendered completion of an alternative design unachievable. Time limitations also made necessary the short time interval for the post-test 2 phase. This study was conducted as a Master's degree, therefore, all planning, research and assessments were conducted by the writer. In other studies of this nature, numerous researchers or assessors were involved in conducting the study, and time limitations were thus not considered problematic.

The writer observed only the difficulties in classification for each study subject. This is also a limitation, in that recording and analysing this information might have
provided greater clarity as to which erroneous classification of grades occurred. This could potentially have given more insight into what is happening in current practice. Beeckman et al (2008) employed a software package for the assessment of inaccurate classification, but such an approach was outside the scope of this research. However, it is an important point to consider in future research. The writer used the method of convenience sampling. The fact that the participants could take part by choice may have caused self-selection bias. This could possibly weaken the validity of the study.

The small sample size, as mentioned previously, is the main limitation of the study. However, the study design is a unique exploration of HSW knowledge regarding skin assessment, with low health literacy levels being the most significant finding. This style of assessing knowledge is an unfamiliar environment for HSWs, yet, this methodical style and the setting used were strengths, and may thus be beneficial in future similar research studies.

### 6.4 Dissemination of Findings

Research provides knowledge, insights and evidence which benefit patients and health professionals. Quality research is crucial for the Department of Health to deliver their objectives for the health care system (HRB, 2016). Nursing and midwifery research embraces the use of research findings to guide practice, and is an important element of evidence-based practice (Nursing and Midwifery Board Ireland, 2015). It is the responsibility of the writer to disseminate their research to the professionals and general populations (Gerrish and Lacey 2010).

Initially the writer will compile a thesis on the study for submission to the RCSI and once the thesis has been assessed, it will be submitted to the e-portal of RCSI library. The study results will also be disseminated to the General Manger, Home Support Manager and Director of Public Health Nursing of the study area. This will ensure that all parties are aware of HSW limitations in relation to completing a comprehensive skin assessment. This will ensure that new knowledge is generated to enhance evidence based practice (Gerrish and Lacey 2010).

The writer will arrange a meeting with HSWs to inform them of findings and recommendations. The writer will prepare a paper from the study for submission to
the relevant peer-reviewed, tissue viability and wound management journals for potential publication. Finally, the writer will submit an abstract for presentation of the findings at relevant tissue viability meetings.

6.5 Implications for Nursing Practice.

The purpose of conducting this research was to discover new information to assist in providing quality care for our patients. This research aimed to determine change in HSW ability to detect early pressure ulcer damage following an educational intervention. This study provides a unique exploration of HSW knowledge relating to competence in completing skin assessment. As professionals, nurses are accountable for delegation of care delivery to HSWs (NMBI, 2014). Delegation requires experienced clinical judgement. Such delegation must never compromise the patient’s safety and must always serve the patient’s best interest. HSWs are a vital part of the primary care workforce and are in the best position to carry out skin assessment. This study has shown that currently HSWs ability to complete skin assessment is inadequate. This means that nurses should be mindful when delegating this care provision to HSWs, as these staffs’ skill levels might not be adequate to meet patients’ needs. The Registered Nurse delegates the care provision to HSWs. Therefore, it is imperative that the RN is involved in some way in the training and assessment of HSW competencies. Additionally, ‘pressure ulcer champions’ could be introduced. These individuals could be carefully selected on the basis of their competency and physical proximity to the need, e.g. ability and accessibility in terms of providing practical solutions. Pressure ulcer prevention champions could be made responsible for evidence-based prevention and evaluation of practice. This would also allow the skilled workforce to develop with the service.

The HSW role is currently placed within social care (HSE, 2014). An integrated rather than fragmented service is urgently required, one that allows the patient to have a continuum of care delivered by a professional, competent and confident workforce (DoH, 2016). For HSWs, the topic of career progression and remuneration to match any accreditation also needs to be addressed. Regulation of this element of the workforce has been mooted, this would also help to support better practice.
Lang (2010) makes the point that minimal research has been carried out on HSW safety and competency in capably caring for patients in the home setting. Nationally we need a consistent health service that is regionally and locally specific in terms of appropriate staffing and skill mix. This will involve adapting to trends and needs in all aspects of clinical care. In this way we will develop person-centred care services.

### 6.6 Recommendations for Future Research

Research has the ability to identify trends and patterns, and provide a guide for positive change to healthcare delivery (Gerrish and Lacey, 2010, HRB, 2016). Therefore, it is recommended that a similar study should be conducted in order to validate or contest the study findings. It is necessary to determine if the knowledge deficit in detection of pressure ulcers is present in other care staff working in residential care, long term care settings, and acute care settings.

It is recommended that further research is conducted in the area of devising an educational framework for pressure ulcer management for community HSWs. Currently there is a wide variation in educational standards and knowledge attainment. Therefore, this study recommends ensuring that the HSW education programmes are fit for purpose, and that those completing programmes are fit to practice, with clearly defined roles. This could be conducted by a mixed method approach.

Currently, the carers in health and social care are predominantly female (Cavendish, 2013). As patient satisfaction is vital for measuring quality of care, we need to explore the routes by which men can become effective carers. The rationale for the lack of male presence and their lack of engagement requires further exploration.

In Ireland black and minority ethnic (BME) carers working in health are a new phenomenon. This is seen within the HSE National Service Plan as a particular resource to be developed. However, to date this development has not occurred (HSE, 2015).

The DoH (2015) in its National Health Care Quality Reporting System, has recently recommended that measuring the patient experience is vital for quantifying the quality of health services. Other research could be undertaken to explore patient
satisfaction with home support services. This would add to overall knowledge and inform providers of the advantages and disadvantages of care provided.

Telehealth can assist in the delivery of care, communication to and between nurses and others, and also as a form of personal supervision when wanting to discuss a patient’s case (Taylor et al, 2015). Currently the availability of ‘wifi’ in health centres is almost non-existent, and in combination with poor ICT infrastructure, this degrades any role progression (HSE, 2015). These are key areas for future research.

6.7 Reflections on the Study

Reflection can encourage improvements in evidence based practice, by enhancing the health care practitioner’s self-awareness. Additionally, reflection can help to confirm and correct practices. This can improve patient outcomes and support health care practitioners in improving their practice (Howastson-Jones, 2010). On reflection, I have found the research process to be very testing, as I have experienced many setbacks and frustrations throughout.

At first I was very enthusiastic about accomplishing the research project. However, not long into the process I realised how much time, effort and hard work was required to complete it. I had many daunting moments, doubting my ability to finish. The initial ethical consent process, finding an appropriate venue to accommodate all participants’ needs, recruiting study subjects and completing the repeated measure design were all tasks requiring much more investment in time and energy than I had expected.

The processes of recruiting and conducting the repeated measures were the most difficult parts of the study. However, it has enabled me to evolve and improve my personal skills. Communicating with the HSWs and the Home Support Department helped me to appreciate the tremendous workload involved in their role in the community. This also allowed me to gain insights into just how vulnerable and undervalued this element of the workforce are. The HSWs who consented to participate in the study were very enthusiastic about learning and had no fear in voicing their inadequacies and articulating the deficits in training hampering their
ability to fulfil their role. This insight has taught me to strive to supervise, teach and share my expertise at every opportunity in the community.

However, achievement of all the elements this study required proved complicated and very time consuming. I found it very difficult to manage my time efficiently and manage my stress at work and at home. I reduced my working week and also obtained invaluable advice on how to break the study down into smaller sections. This latter information will stay with me throughout my career and in my personal life. I was also overwhelmed to begin with, lacking confidence in reading and critiquing research. I never thought that I would be able to write a research study. On reflection, I have gained so much experience and practice in each of these areas. I have also gained a fuller understanding of how problematic accurate skin assessment is for clinicians, and how challenging it is for the HSW to fulfil this role without any formal training.

It proved difficult to reach a sufficient sample size, which has effected the overall results. If I were to repeat this research study, I would consider extending the recruitment to HSWs across many counties. I would also consider inviting all HSWs who work in the community in direct patient care and voluntary and external agencies. Employing a reflective diary was beneficial to my research journey. It allowed me to record notes at any point, keeping track of observations and ideas as they occurred. It thus enabled me to further explore trends in the data and positively affected my ability to make sense of the themes emerging.

I have gained invaluable experience conducting this research study. I have experienced the difficulties and benefits that researchers encounter on the voyage to unearth, analyse, distil and present new information. I have great respect and admiration for all the researchers who have sought to enhance nursing knowledge. I have received incredible support and guidance from so many people. I will always be sympathetic towards and try to offer help to anyone going through the research process. It has been a tremendous journey for me both personally and professionally. It has shown me that with relentless work I can achieve more than I dreamed imaginable, and I feel very proud that I have completed this research study.
6.8 **Summary**

The writer has discussed community HSW ability to detect early pressure ulcer damage. HSWs have the biggest opportunity to complete skin assessment in the community setting. However, this study has shown that HSW ability to detect pressure ulcer damage is insufficient. This is concerning, since visual skin assessment is the only method available to determine a change in skin integrity currently in the community. The study design was considered to be a research strength, as it allowed the writer to test peoples’ knowledge in a controlled environment, omitting the limitations caused by conferring or through use of online media. The repeated design method enabled the writer firstly to measure the educational intervention as an instruction method. Secondly the post-test 2 phase measured the sustainability of any knowledge gained from the educational intervention.

Sample size and time restrictions were limitations of the study. The writer was unable to recruit the required sample size due to an unanticipated low response rate and withdrawals at the post-test 2 phase. Further recruitment could have been completed if the writer had had more time. Future research regarding the PUCLAS tool is imperative to verify whether this educational intervention is suitable for all HSWs. The study population was also considered a limitation, as it does not encompass the Public Health Nurses’ caseload in its entirety.

Study results will be disseminated both locally and in the Royal College of Surgeons in Ireland library for reference and for future research. A copy of the study will be sent to the relevant managers. The writer will formally present to the group to inform them of the results and recommendations. The study will also be submitted to relevant tissue viability and wound management journals and for presentation at conferences as appropriate.

On reflection, the writer has developed professionally and personally and has gained confidence with regard to academic ability. The writer found the research process challenging. These are many aspects of new learning that will be carried forward and will assist the writer to improve my clinical practice.
6.9 Conclusion

Internationally, pressure ulcers are a significant burden on Healthcare organisations. Surprisingly, the prevalence of pressure ulcers has almost doubled in recent years (Garcia-Fernandez et al., 2013), yet the majority of pressure ulcers are believed to be preventable (O’Brien and Cowman 2011). Worldwide prevalence ranges from 7.2%-0.31% across community settings (Okuwa et al 2009, Vowden and Vowden, 2009, Asimus and Li, 2011, Stevenson et al, 2013, CIHI, 2013 Woo et al, 2015, Hall et al, 2014) with Irish prevalence reported to be between 0.04%-4% (McDermott-Scales et al, 2009 and Skerritt and Moore, 2014). These estimations are based on studies with different methodological designs to each other, which render meaningful comparison problematic.

Significant costs are associated with preventing and treating pressure ulcers. The costs associated with prevention alone are considerable (Bennet et al, 2004). Most cost estimations exclude associated costs like the patient’s loss of earning and legal costs. Notably costs for patients in the community are excluded (Ousey, 2010, Posnett and Franks, 2007). Furthermore, there is the considerable human cost that comes with pressure ulcer pain and suffering. The associated human costs have been described as feelings of anxiety, low mood and social isolation (Goreki et al, 2010). Worryingly, there is some evidence that people with pressure ulcers and other associated complications have a higher mortality rate than those without pressure ulcers (Jaul and Calederon-Margalit, 2015).

The delivery of services by care providers in the community is challenging. The predicted growth in the aged population, converging with an escalating occurrence of chronic disease and disability, is concerning (Moore and Cowan, 2012; and DoH, 2014). Moore et al. (2013) have shown that increasing age is a predictive risk factor in the development of pressure ulcer damage. The development of a pressure ulcer is seen to be a serious reportable event and is associated with poor nursing care (HSE, 2015). Pressure ulcer prevention is an essential part of nursing, yet evidence suggest that patients may not receive the appropriate care (Skerritt and Moore, 2014). Skin assessment is one vital component in pressure ulcer prevention (NPUAP, EPUAP, PPPIA, 2014). Evidence shows that skin assessment is not the sole responsibility of the nurse and should involve all healthcare workers.
(Samuriwo, 2010). Currently because of the increased nursing workload, HSWs have the greatest opportunity to complete skin assessment. The inconsistencies and inadequacies in existing training for HSWs have been extensively documented (Francis Report, 2013, and Cavendish Report, 2013). Additionally, it is recognised that there is variation in HSW training, and a lack of agreement about the most effective teaching methods to be employed. Clinical supervision is lacking, noted as extensive within the community setting. The general consensus in existing literature recommends a shift from the current teacher-centred methods to transformative approaches. Additionally, due to financial and time constraints, the Health Services expect delivery of education components to be of a high quality with optimal accessibility. E-learning is one such innovative approach to education which satisfies all these requirements (Beeckman et al, 2008, Beeckman et al, 2010). The PUCLAS e-learning tool has been validated by Beeckman et al (2008) and Beeckman et al (2010). These study findings demonstrated improvement in knowledge and skills regarding classification of pressure ulcers and detecting skin damage by nurses and student nurses. This stand-alone instruction method illustrates its theoretical concepts by means of clear definitions, high quality photographs and video imagery.

However, in the writer's study using the PUCALS e-learning tool, HSW ability to detect early pressure ulcer damage post education was found not to have improved. However, caution needs to be applied to the findings due to the small sample size and the possibility that health illiteracy is a factor. After further analysis, the findings in this study also point to HSW inability to accurately detect skin damage, irrespective of which training is provided. Variations in learning ability were also of concern, with similarities noted to that of individuals recognised as experiencing low health literacy. The literature concludes that a transformative style training for HSWs is the way forward (Cavendish, 2013 and Hayes, 2014). This should also include structured education to ensure HSWs of different ability and ethnic background benefit from the training provided. However, these demands increase complexity and therefore create difficulties for educators. They add confusion to the debate surrounding training requirements, particularly in relation to the findings regarding the possibility of low health literacy. More concerning is that currently the measurement of knowledge gained is not undertaken in a consistent manner, and
clinical supervision remains haphazard or non-existent (McKenna, 2005, Swedberg et al, 2013). This study’s findings indicate that more appropriate teaching approaches must be found if HSWs are to accurately detect early pressure ulcer damage. Without further research questions regarding HSW inability to apply new knowledge will remain.
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APPENDIX 1: Clinical Research Ethics Committee Approval Letter, HSE, Dublin North-East
7th January 2016

Ms Mairead Clarke
c/o Prof Zena Moore
RCSI
School of Nursing & Midwifery
123 St Stephens Green
Dublin 2

Re: Research Study Proposal:
"The impact of an educational intervention on home support workers ability to assess and detect early pressure ulcer damage within a community care setting"

Dear Ms Clarke

I am in receipt of the changes from you as recommended by the HSE North East Area Research Ethics Committee (REC) and wish to advise that Mr Kevin McKenna has had an opportunity to review same.

I can confirm that you have met all the conditions of the Committee and you may commence your study.

This will be formally noted at the next REC meeting.

Yours sincerely,

Dr Brendan MacMahon
Chairperson
HSE North East Area - Research Ethics Committee

Copied to: Ms Fiona Murphy, General Manager, Oriel Suite, St Brigids Hospital, Ardee, Co Louth
Ms Paula Loughran, Home Support Manager, Market Street, Dundalk, Co Louth
Prof Zena Moore, RCSI, School of Nursing & Midwifery, 123 St Stephens Green, Dublin 2
APPENDIX 2: Clinical Research Ethics Committee Approval Letter, HSE, Dublin North-East
Royal College of Surgeons in Ireland  
The Research Ethics Committee  
121 St. Stephens Green, Dublin 2, Ireland  
Tel: +353 1 4022209  Email: recadmin@rcsi.ie

Dr David Smith, Acting Chair  
Dr Niamh Clarke, Convenor  

26th January 2016

Ms Mairead Clarke  
C/o Prof Zena Moore  
RCSI School of Nursing & Midwifery,  
123 St Stephens Green,  
Dublin 2

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<th>REC 1225 (accepted approval from HSE North East Area REC)</th>
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<tr>
<td>Project Title:</td>
<td>Than impact of an educational intervention on home support workers ability to assess and detect pressure ulcer damage within a community care setting.</td>
</tr>
<tr>
<td>Researchers Name (lead applicant):</td>
<td>Ms Mairead Clarke (Primary Care Nurse, Redeemer Resource Centre, Cox’s Demesne, Dundalk, Co Louth)</td>
</tr>
<tr>
<td>Principal investigator on the project (PI):</td>
<td>Prof Zena Moore (RCSI School of Nursing &amp; Midwifery)</td>
</tr>
<tr>
<td>Other Individuals Involved:</td>
<td>Dr Declan Patton (RCSI School of Nursing &amp; Midwifery)</td>
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Dear Ms Clarke,  
Thank you for your Research Ethics Committee (REC) application. The RCSI HREC accepts the ethical approval granted by the HSE North East Area REC for the research study (details above) submitted by Ms Mairead Clarke.  

This letter provides approval for data collection for the time requested in your research study and for an additional 6 months. This is to allow for any unexpected delays in proceeding with data collection. Therefore this research ethics approval will expire on 26th October 2016.  

Where data collection is necessary beyond this point, approval for an extension must be sought from the Research Ethics Committee.  

This ethical approval is given on the understanding that:  

- All personnel listed in the approved application have read, understand and are thoroughly familiar with all aspects of the study.  
- Any significant change which occurs in connection with this study and/or which may alter its ethical consideration must be reported immediately to the REC, and an ethical amendment submitted where appropriate.  
- Please submit a final report to the REC upon completion of your project.  

We wish you all the best with your research.  

Yours sincerely,  

[Signature]  
PP Dr Niamh Clarke (Convenor)  
Dr David Smith (Acting Chair)
APPENDIX 3; Access Letter from Home Support Manager
Mairead Clarke,
Community RGN,
Redeemer Health Centre,
Dundalk,
Co. Louth

Dear Mairead,

In relation to your Masters Study, I am consenting that you can complete your study with HSE Home Support Workers.

Remuneration for all HSWs will be covered for the duration of the first education session and also 2 weeks post-testing and will not impede on their financial payment for either attendance and will be payed accordingly to each HSWs hourly rate of pay as agreed by HSE contract. Furthermore, remuneration of travel expenses for all HSWs from each HSWs original base (as agreed by HSE) to the education session and back and, also attendance 2 weeks post-testing. The sum of 12,500 Euros is secured for funding for this research training project.

Regards,

Paula Loughran,
Home Support Manager
APPENDIX 4; Participant Information and Invitation Letter
## Participant Information Leaflet

**Study title:** The impact of an educational intervention on home support workers’ ability to detect early pressure ulcer damage.

<table>
<thead>
<tr>
<th>Researcher Name:</th>
<th>Mairead Clarke</th>
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<tbody>
<tr>
<td>Telephone number of Researcher:</td>
<td>0868151246</td>
</tr>
<tr>
<td>Research Supervisor Name:</td>
<td>Prof Zena Moore</td>
</tr>
</tbody>
</table>

You are being invited to take part in a research study to be carried out at the Regional Educational Centre, Ardee. Before you decide whether or not you wish to take part, you should read the information provided below carefully and, if you wish, discuss it with your family or friends. Take time to ask questions – don’t feel rushed and don’t feel under pressure to make a quick decision.

You should clearly understand the risks and benefits of taking part in this study so that you can make a decision that is right for you. This process is known as ‘Informed Consent’.

You don’t have to take part in this study. You can change your mind about taking part in the study any time you like. Even if the study has started, you can still opt out. You don’t have to give us a reason. If you do opt out, rest assured it won’t affect the quality of any educational training on offer in the future.

### Why is this study being done?

The research study is taking place to find out if the use of an educational intervention will increase a Home Support Workers ability to assess and detect early pressure ulcer damage in a community care setting.

### Who is organising and funding this study?

The research study is being part-funded by the HSE. The study is being completed by Mairead Clarke as an MSc Research project.

### Why am I being asked to take part?

The purpose of this study is to find out what impact an educational intervention has on Home Support Workers (HSWs) ability to assess and detect early pressure ulcer damage in a community care setting. You are asked to take part in this study because you are a HSW presently employed by the HSE and working in the community setting.
How will the study be carried out?

1. The Researcher will approach you at the monthly staff meeting inviting all HSWs to attend training regarding early detection of skin damage.

2. The Researcher will provide you with an information leaflet outlining the nature and purpose of the optional research study that is incorporated into this educational training.

3. The Researcher will invite you, if you are interested in participation to take a consent form and information leaflet home and to deliberate with friends and family if participation in the study is right choice for you.

4. The Researcher will advise you that if a decision has been made by you to participate, that you will be required to complete a consent form and return it to the home support department within 48hrs.in the provided enveloped sealed for the attention of Mairead Clarke.

5. All HSWs will attend a study morning delivered by me whether they consent to partake in study or not. I am a specialist in tissue viability.

6. If you consent to partake you will be assigned a unique identification number on the morning by an independent administration officer in the regional educational centre. This person will be the only person to have details of identification numbers and has no involvement in any other area of this study. This identification number will remain the same throughout the study.

7. I will establish your baseline knowledge and ability to assess and detect early pressure ulcer damage through your ability to correctly assess photographs of pressure ulcers of varying stages of severity.

8. The number of correct responses will be recorded individually per participant.

9. All HSWs regardless of participation in research study will then be provided with education pertaining to pressure ulcer classification using the PuClas 3 online educational tool.

10. The education will be followed by a workshop, tasked with reflecting on the content of PuClas 3 tool, and any questions/queries will be resolved.

11. If you consent to partake in the research study a post-test will then be completed in order to establish any changes in your ability to assess and detect early pressure ulcer damage through your ability to correctly assess photographs of pressure ulcers of varying stages of severity. The number of correct response will be recorded individually per participant.

12. A pocket guide classification tool will be given to all HSWs that attended training, to take back to your primary care setting.
13. If you consent to partake in the study you will be asked to return to the same venue for approximately 30 minutes to will complete a second post-test (2 weeks post intervention) to establish sustainability of any knowledge gained on the assessment and detection of early pressure ulcer damage. This will be assessed through your ability to correctly assess photographs of pressure ulcers of varying stages of severity. The number of correct response will be recorded individually per participant.

What will happen to me if I agree to take part?

1. The researcher will invite you to take an information leaflet and consent form home and to deliberate with friends and family if participation in the study is right choice for you.

2. The researcher will advise you that if you decide to participate you will be required to complete a consent form and return it to the home support department within 48hrs a sealed envelope provided for the attention of Mairead Clarke.

3. Administration Officer in the regional education centre on the day of the training will then assign you with a unique identification number and ask you to retain this identification number throughout the study.

4. You will be asked to attend a study morning in the Regional educational centre in Ardee delivered by me, a specialist in tissue viability.

5. I will ask you to complete a short questionnaire regarding your duration of service, length of time as a Home Support Worker and past education history.

6. I will then ask you to assess photographs of pressure ulcers of varying stages of severity.

7. I will record the number of correct responses individually per participant.

8. You will then be provided with education pertaining to pressure ulcer classification using the PuClas 3 online educational tool.

9. The education will be followed by a workshop, tasked with reflecting on the content of PuClas 3 tool, and any questions/queries will be resolved.

10. I will ask you to return to the same location for a duration of approximately 30 minutes (2 weeks post education) to assess photographs of pressure ulcers of varying stages of severity.

What happens if I don’t wish to participate?
If you don’t take part in this study there will be no judgment made regarding your choice, training will be offered to all HSWs and future study days will be offered as previous in a fair manner. There will be no change regarding any current employment arrangements with the HSE.
What are the benefits?
The results of the research will be used to provide the HSE advice on future educational services that will be valuable to HSWs growing role in the community to assess and detect early pressure ulcer damage.

What are the risks?
Minor inconvenience could be experienced by you due to the need to travel to attend the study morning and follow up session. There are no physical risks associated with completing questionnaires, or completing online educational tool.

What if something goes wrong when I’m taking part in this study?
If you decide to take part in the study you may choose to withdraw at any time throughout the study. If there are any questions you do not wish to answer you do not have to do so.

Will it cost me anything to take part?
If you decide to take part in the study assurance has been given that there will be no loss of earnings.

Is the study confidential?
All information provided by you will be treated with strict confidentiality. The data collected will follow strict rules about how we look after it and who can use it. Every effort will be made to keep your identity safe. Each HSW taking part will have a number ID, the researcher will not be able to link any answers with individual’s names and all results will be collective not individual.
The data collected will be stored in a locked filling cabinet in the researcher’s office, which is accessed only by the researcher, and the data software will be stored on an encrypted laptop, also accessible to the researcher only. This too will be stored in a locked cabinet in the researcher’s office. Under the RSI processes, the data will be retained on a secure RCSI server for a period of 5 years. Data will be retained for period of 5 years to ascertain access to information should future publications be indicated. Following this time the data will be destroyed.
The final results will be submitted in the form of a thesis to the Royal College of Surgeons in Ireland (RCSI), as part of the work required for MSc by Research. A copy of the thesis will be given to the library of the RCSI. The findings of the study will be sent for publication in a professional journal and/or presented at conferences, any results published will never link identify of any particular person or location of which you work in.

Where can I get further information?
If you have any further questions about the study or if you want to opt out of the study, you can rest assured it won't affect the quality of treatment you get in the future.
If you need any further information now or at any time in the future, please contact during the hours of 09.00am-5.00pm. Monday-Friday:

Name:
Mairead Clarke
Address:
Redemeer Resource Centre
Coxs Demense, Dundalk
Co Louth
Phone No: 0868151246
E-Mail Mairead.clarke@hse.ie: mairead.clarke@hse.ie

Supervisor:
Prof Zena Moore
Address:
School of Nursing & Midwifery
RCSI
Dublin 2
Phone No: 014022569
E-Mail: zmoore@rcsi.ie
APPENDIX 4; Participant Consent Form
Participant Consent Form

Study title: The impact of an educational intervention on home support workers’ ability to assess and detect early pressure ulcer damage.

<table>
<thead>
<tr>
<th>I have read and understood the <strong>Information Leaflet</strong> about this research project.</th>
<th>Yes ☐ No ☐</th>
</tr>
</thead>
<tbody>
<tr>
<td>The information has been fully explained to me and I have been able to ask questions, all of which have been answered to my satisfaction.</td>
<td>Yes ☐ No ☐</td>
</tr>
<tr>
<td>I understand that I don’t have to take part in this study and that I can opt out at any time. I understand that I don’t have to give a reason for opting out and I understand that opting out won’t affect my future.</td>
<td>Yes ☐ No ☐</td>
</tr>
<tr>
<td>I am aware of the potential risks of this research study.</td>
<td>Yes ☐ No ☐</td>
</tr>
<tr>
<td>I have been assured that information about me will be kept private and confidential/anonymous.</td>
<td>Yes ☐ No ☐</td>
</tr>
<tr>
<td>I have been given a copy of the Information Leaflet and this completed consent form for my records.</td>
<td>Yes ☐ No ☐</td>
</tr>
</tbody>
</table>

**Storage and future use of information:**

<table>
<thead>
<tr>
<th>I give my permission for information collected about me to be stored or electronically processed for the purpose of this research.</th>
<th>Yes ☐ No ☐</th>
</tr>
</thead>
<tbody>
<tr>
<td>I give my permission for information collected about me to be stored or electronically processed for use in related studies or other studies in the future but only if the research is approved by the original Research Ethics Committee or its replacement.</td>
<td>Yes ☐ No ☐</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Participant Name (Block Capitals)</th>
<th>Participant Signature</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>______________________________</td>
<td>_____________________</td>
<td>_________________</td>
</tr>
</tbody>
</table>

/ / To be completed by the Researcher:

*I, the undersigned, have taken the time to fully explain to the above participant the nature and purpose of this study in a way that they could understand, I have explained the risks involved as well as the possible benefits. I have invited them to ask questions on any aspect of the study that concerned them.*

<table>
<thead>
<tr>
<th>Mairead Clarke</th>
<th>RGN,</th>
</tr>
</thead>
<tbody>
<tr>
<td>______________________________</td>
<td>_____________________</td>
</tr>
</tbody>
</table>

---- Name (Block Capitals) | Qualifications | Signature | Date
APPENDIX 6; Puclas Modules
<table>
<thead>
<tr>
<th>(1) Introduction to Pressure Ulcers</th>
<th>(2) Pressure Ulcer Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>This e-learning module will provide:</td>
<td>This e-learning module will provide:</td>
</tr>
<tr>
<td>(i) An overview of pressure ulcers</td>
<td>(i) An overview of the current</td>
</tr>
<tr>
<td>(ii) The aetiology</td>
<td>Pressure Ulcer Classification</td>
</tr>
<tr>
<td>(iii) Prevalence and incidence</td>
<td>System</td>
</tr>
<tr>
<td>(iv) Impact on patients quality of</td>
<td></td>
</tr>
<tr>
<td>life and carers</td>
<td></td>
</tr>
<tr>
<td>(v) Basic principles of prevention</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>(3) Introduction to Incontinence-</td>
<td>(4) Differentiation between</td>
</tr>
<tr>
<td>Associated Dermatitis:</td>
<td>Incontinence-Associated</td>
</tr>
<tr>
<td>This e-learning module will provide:</td>
<td>Dermatitis and Pressure Ulcers:</td>
</tr>
<tr>
<td>(i) An introduction to</td>
<td>This e-learning module will provide:</td>
</tr>
<tr>
<td>Incontinence-Associated</td>
<td>(i) An overview of the clinical and</td>
</tr>
<tr>
<td>Dermatitis (IAD)</td>
<td>patient characteristics of IAD</td>
</tr>
<tr>
<td>(ii) The size and impact of the</td>
<td>versus pressure ulcers.</td>
</tr>
<tr>
<td>problem</td>
<td>(ii) The importance of making the</td>
</tr>
<tr>
<td>(iii) Aetiology</td>
<td>correct differential diagnosis.</td>
</tr>
<tr>
<td>(iv) Basic principles of prevention</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX 7; Flow of Participants Through Study Intervention
Figure 1: Flow of Participants Through Study Intervention

The Researcher gained consent (39 Study Subjects)

8 Study Subjects
Demographic Questionnaire & Pre-Test
Educational Intervention
Discussion Group
Post-Test 1
Post-Test 2 (8) Study Subjects Two weeks Later

9 Study Subjects
Demographic Questionnaire & Pre-Test
Educational Intervention
Discussion Group
Post-Test 1
Post-Test 2 (9) Study Subjects Two weeks Later

9 Study Subjects
Demographic Questionnaire & Pre-Test
Educational Intervention
Discussion Group
Post-Test 1
Post-Test 2 (5) Study Subjects Two weeks Later

7 Study Subjects
Demographic Questionnaire & Pre-Test
Educational Intervention
Discussion Group
Post-Test 1
Post-Test 2 (5) Study Subjects Two weeks Later

Pilot Study - 3 Study Subjects - Demographic Questionnaire & Pre-Test & Educational Intervention

Discussion Group/Post Test 1

(5) Study Subjects
Two weeks Later

(7) Study Subjects
Two weeks Later

(9) Study Subjects
Two weeks Later
APPENDIX 8; Demographic Questionnaire
The impact of an on-line educational intervention on Home Support Workers’ ability to assess and detect early pressure ulcer damage in a Community Care setting.

**Section 1: Please complete the questionnaire below.**

<table>
<thead>
<tr>
<th>Unique ID Number:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Date:</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>&lt; 1 year</th>
<th>1-5 years</th>
<th>5-10 years</th>
<th>&gt;10 years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

How long have you been working as a Home Support Worker?

<table>
<thead>
<tr>
<th>How long have you been working as a Home Support Worker with the HSE?</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Have you completed any other training regarding pressure ulcer detection?

<table>
<thead>
<tr>
<th>Have you completed any other training regarding pressure ulcer detection?</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX 9 Pre-Designed Questionnaire
Example of Pre-Designed Questionnaire

<table>
<thead>
<tr>
<th>Please Assess Severity of Skin Damage</th>
<th>Please Tick as Appropriate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1</td>
<td>○</td>
</tr>
<tr>
<td>Stage 2</td>
<td>○</td>
</tr>
<tr>
<td>Stage 3</td>
<td>○</td>
</tr>
<tr>
<td>Stage 4</td>
<td>○</td>
</tr>
<tr>
<td>Unknown</td>
<td>○</td>
</tr>
</tbody>
</table>