The Perceptions of Older Patients and their Family or Caregivers Towards Physical Activity and Exercise on a Specialist Geriatric Ward: A Qualitative Study

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THE PREVALENCE OF FRAILTY IN OLDER ADULTS REFERRED TO PRIMARY CARE PHYSIOTHERAPY AND THE INFLUENCE OF FRAILTY SCREENING ON THE CLINICAL PRACTICE OF PHYSIOTHERAPISTS: A MIXED METHODS STUDY

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A dissertation submitted in part fulfilment of the requirements for the degree of MSc. in Neurology and Gerontology

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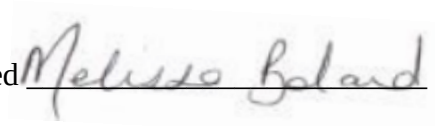
Declaration

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

Signed 

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TITLE

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TABLE OF CONTENTS

List of Tables

List of Figures

List of Appendices

List of Abbreviations

ADLs	Activities of Daily Living
CHO	Community Healthcare Organisation
CI	Confidence Interval
COREQ	Consolidated Criteria for Reporting Qualitative Research
CRGN	Community Registered General Nurse
CSO	Central Statistics Office
DNCC	Dublin North City and County
EASYcare-TOS	EASYcare two-step older persons screening
EFS	Edmonton Frail Scale
EU	European Union
GP	General Practitioner
HSCP	Health and Social Care Professional
HSE	Health Service Executive
ISCP	Irish Society of Chartered Physiotherapists
IQR	Interquartile Range
OR	Odds Ratio
OT	Occupational Therapist
PCRC	Primary Care Research Committee
PHN	Public Health Nurse
PI	Principal Investigator
PIL	Participant Information Leaflet
RCSI	Royal College of Surgeons in Ireland

REC	Research Ethics Committee
SD	Standard Deviation
SPSS	Statistical Package for the Social Sciences
STROBE	Strengthening the Reporting of Observational studies in Epidemiology
TUG	Timed Up and Go

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Melissa Boland

SUMMARY

Introduction

Globally, the proportion of the population of older adults (aged 65 and older) is growing rapidly. Frailty is a state of increased vulnerability to poor resolution of homeostasis following a stress and is the most problematic expression of population ageing. Physiotherapy is a heavily utilised social and community care service by older adults in the Republic of Ireland. An increasing number of older adults, with the potential presence of frailty, are likely to present to Primary Care physiotherapy services.

Aims and Objectives

The primary aim was to estimate the prevalence of frailty in older adults referred to Primary Care Physiotherapy, using the Edmonton Frail Scale. A secondary aim was to explore the acceptability of the Edmonton Frail Scale to physiotherapists and the influence of frailty screening on clinical practice of physiotherapists working with older adults in Primary Care.

Methods

A mixed methods study was undertaken. The prevalence of frailty among older adults referred to Primary Care physiotherapy was identified through an observational cross-sectional study. A sample of convenience of older adults referred to the Primary Care domiciliary physiotherapy service in North Dublin, Community Healthcare Organisation Dublin North City and County, were screened for frailty by physiotherapists, using the Edmonton Frail Scale. A qualitative study, using focus group interviews, explored the perspectives of a purposeful sample of physiotherapists on the influence of frailty screening on clinical practice.

Results

A total of 100 older adults were screened for frailty using the EFS, mean age 80.3 (±7.4) years 64% (n=64) female. The prevalence of frailty of the sample of older adults was 43% (n=43). The prevalence of pre-frailty and non-frailty was 26% (n=26) and 31% (n=31), respectively. No association was found between frailty and age, gender or living arrangement (OR 0.81,

0.44, 0.93, respectively) ($p>0.05$). The focus group interviews of Primary Care physiotherapists (n=8) found that the Edmonton Frail Scale is acceptable to the practice of physiotherapists in Primary Care. However, the need for an integrated multidisciplinary approach and pathway of care, was highlighted as integral to the success of frailty screening and management. The implementation of the Edmonton Frail Scale as an objective measure of frailty, influenced physiotherapistsô clinical practice through an enhanced holistic approach to older adults, increased awareness on cognitive frailty and improving communication with the multidisciplinary team and the family of older adults.

Conclusion

The results of this study suggest that the prevalence of frailty is higher in community-dwelling older adults referred to Primary Care physiotherapy, than the general community-dwelling older adult population. Physiotherapists working in a Primary Care setting are well placed to screen for frailty and pre-frailty as part of a Multidisciplinary Team, to identify older adults at risk of adverse health outcomes due to frailty.

Implication of Findings

The high prevalence of frailty and pre-frailty found in this study cohort highlights the importance of frailty screening by physiotherapists in the Primary Care setting. The implementation of the Edmonton Frail Scale into routine physiotherapy practice has the potential to improve the holistic management of community-dwelling older adults, through early identification of biopsychosocial risk factors associated with frailty. The results of this study indicate the need for further research into multidisciplinary approaches to frailty screening and the effectiveness of pathways of care for the management of frailty in the Primary Care setting.

INTRODUCTION

Globally, the proportion of the population of older adults (aged 65 and older) is growing rapidly (He et al., 2015). In the Republic of Ireland, the percentage increase in the population of older adults is rising faster than the European Union (EU) average and the proportion of older adults in the overall population is expected to rise from 21% to 34% between 2016 and 2036 (Department of Health, 2016). Frailty is described as the most problematic expression of population ageing, that decreases independence and quality of life (Clegg et al., 2013). Normal ageing is characterised by progressive changes which can lead to an increased susceptibility to disease (Lang et al., 2009). However, frailty is characterised by a diminished physiological response to stressors such as an acute illness or psychological distress, decreasing the likelihood of a full recovery (Fried et al., 2001). Frailty is a risk factor for adverse health outcomes, such as, falls, hospitalisation, disability and death (Fried et al., 2001) and frail older adults are high users of community resources (Morley et al., 2013). Due to the ageing population, the incidence and prevalence of frailty are predicted to increase, resulting in increased pressure on public health and social care systems (Collard et al., 2012).

Frailty is a dynamic process and older adults that receive care to prevent or reverse frailty are more likely to have less cognitive and physical decline and to experience fewer falls (Buckinx et al., 2015) (Clegg et al., 2013). Physical exercise has been shown to be one of the most effective interventions to prevent the progression of pre-frailty and frailty (Apóstolo et al., 2018) and physiotherapists have a significant role in prescribing and implementing exercise. However, to successfully target interventions and reduce the personal and economic costs associated with frailty, older adults at risk of or living with frailty must be identified. Due to the multi-dimensional nature of frailty, it is difficult to identify subjectively. There is currently no international standard for frailty measurement, however, there are many frailty screening tools, such as the Edmonton Frail Scale (EFS), validated for use by healthcare professionals (Dent et al., 2016) (Rolfson et al., 2006).

Morley et al. (2008) highlights the need to implement screening and management of frailty into routine clinical practice. Primary Care is a core component of the healthcare system, where the prevention and management of frailty usually occurs and the opportunity for early identification in the Primary Care setting is a particular advantage. (Fougère, 2018). In the Republic of Ireland, 92% of older adults are community dwelling (CSO, 2016) and the demand

for Primary Care services for older adults is projected to increase by 25% by 2020 (Health Service Executive (HSE), 2017). Physiotherapy is the fourth most utilised social and community care service by older adults in the Republic of Ireland (McNamara et al., 2013) and frailty is a significant predictor of physiotherapy utilisation (Roe et al., 2017). Therefore, an increasing number of older adults with the potential presence of frailty are likely to present to Primary Care physiotherapy services in Ireland. The Irish Longitudinal Study of Ageing (TILDA) estimated the prevalence of frailty among Irish community-dwelling older adults as 24%, 8% and 5% according to the Frailty Index, Fried Phenotype and FRAIL scale, respectively (Roe et al., 2017), however, the prevalence of frailty among community-dwelling older adults seen by Primary Care physiotherapists is not known.

At present, frailty screening using a validated tool is not part of routine clinical practice by physiotherapists in Primary Care in the North Dublin area of Community Healthcare Organisation Dublin North City and County (CHO DNCC). In addition to validity, the feasibility and practicality of application of frailty assessment is an important consideration for Primary Care. While frailty screening tools are useful for identifying older adults at risk of or living with frailty, little is known on whether they inform clinical practice or the development of interventions to prevent or manage frailty (Fougère, 2018). More research is required on how to address frailty in Primary Care, as well as the screening tools to healthcare professionals. (Davies et al., 2018). Few studies have explored the influence of frailty screening on clinical practice from the perspective of HSCPs. While there is growing evidence for the importance for frailty screening, there is a lack of consensus whether frailty screening in Primary Care is fulfilling its potential for improving patient outcomes and facilitates expedited access to interventions (Romero-Ortuno, 2015). Considering the high level of utilisation of physiotherapy by older adults at risk of or living with frailty and the potential for physiotherapists to identify and manage frailty, the prevalence of frailty among older adults referred to Primary Care physiotherapy and the influence of frailty screening on the clinical practice of physiotherapists warrants exploration.

Chapter one outlines a review of the literature in the area of frailty and itôs identification and management in clinical practice.

CHAPTER 1: LITERATURE REVIEW

1.1 Frailty

1.1.1 Definition

Frailty is both an established and growing topic in healthcare research. However, at present there is no internationally recognised gold standard definition of frailty (Sternberg et al., 2011; Rodríguez-Manas et al.,2013; Dent et al., 2016). The consensus among current literature is that frailty is considered as a state of increased vulnerability to poor resolution following a stress, or where minimal stress may cause functional impairment due to reduced physiological reserve and is associated with an increased risk of adverse health outcomes and mortality (Ferrucci et al., 2004; Clegg et al., 2013; Morley et al., 2013); Rodríguez-Manas et al., 2013). One of the challenges in defining frailty is that it is multifactorial. Rockwood (2005) suggests that a definition of frailty should consider the interactions of various factors, such as gender, cognition and physical function and identify clinically recognisable degrees of frailty.

1.1.2 Models of Frailty

Although there is no internationally agreed definition of frailty, two main approaches to defining and thus identifying frailty have emerged in the literature (Morley et al., 2013; Chen et al., 2014) the óphenotype modelô and the ócumulative deficit modelô. The óphenotype modelô defined by Fried et al. (2001), identifies frailty if three or more of the following five components are present; unintentional weight loss (greater than ten pounds in the previous year), weakness as measured by low grip strength, low energy or self-reported exhaustion, slowness measured by low walking speed and a low level of physical activity. The frail óphenotype modelô demonstrated concurrent and predictive validity for adverse outcomes (OR=2.63, $p<0.05$) when tested in a large prospective observational study of community dwelling older adults (n=5,317) (Fried et al., 2001). However, the Fried óphenotype modelô of frailty is focused on physical frailty. Recent literature emphasises the importance of considering the cognitive, mental health and social domains of frailty (Apóstolo et al., 2017). In a large cross-sectional study of community-dwelling older adults in the Netherlands, statistically significant lower social ($p<0.05$), psychological ($p<0.001$) and physical

functioning ($p<0.001$) was identified in persons identified as frail and pre-frail, than those identified as non-frail by the ópheno type modelô (Op het Veld et al., 2015).

Mitnitski et al. (2001) propose a ócumulative deficit modelô of frailty, known as the ôFrailty Indexô that quantifies the proportion of deficits, such as physical and cognitive impairments and laboratory abnormalities, accumulated by an individual. For a variable to be considered as a potential deficit in the ôFrailty Indexô, the variable must be acquired, associated with ageing and adverse outcome and it should not be normally present in close to 100% of older adults (Chen et al., 2014). The ôFrailty Indexô is based on the number of deficits present, with all deficits given equal weighting. A value of 0.67 in the ôFrailty Indexô identifies a level of frailty predictive of a high risk of mortality (Rockwood and Mitnitski., 2006).

While both models of frailty have moderately good correlation to each other ($R = 0.65$), the ópheno type modelô discriminates broad levels of risk i.e. frail, pre-frail or non-frail/robust, whereas the ôFrailty Indexô allows a more precise measure of risk of adverse outcomes including hospitalisation, institutionalisation and mortality (Rockwood et al., 2007). However, the precision of this estimation depends on the number of deficits considered, which could range between 20 and 70 (Rockwood et al., 2000). Therefore, it is argued that the set five criteria of the ópheno type modelô is more appealing for clinical use than the ôFrailty Indexô (Xue., 2011). In contrast to the ópheno type modelô, the ôFrailty Indexô does not distinguish frailty from comorbidity and disability, as it includes comorbidity and disability or their associated deficits (Chen et al., 2014). Cesari et al. (2013) suggest that the ópheno type modelô and the ôFrailty Indexô differ too much in their approach to be considered as alternatives to each other and should instead be viewed as complementary.

1.1.3 Pre-Frailty and The Frailty Cycle

Frailty is described as a dynamic, transitional state from robustness to functional decline that can improve or worsen over time (Lang et al., 2009) (Morley et al., 2013). The transitional process includes the concept of ópre-frailtyô, whereby a person has some characteristics of frailty but is likely to positively respond to injury, disease or a stressor and has potential for full recovery (Lang et al., 2009). In the ópheno type modelô of frailty by Fried et al. (2001), pre-frailty is identified when two of the five phenotype criteria are present and indicates a high risk

of progressing to frailty. Gill et al. (2006) conducted a prospective cohort study of community-dwelling older adults (n=754), that highlighted the importance of identifying older adults at the stage of pre-frailty to prevent or delay progression to frailty and increase the likelihood of return to a non-frail state. Epidemiological data obtained over 54 months of non-disabled community dwelling older adults aged 70 years and older, demonstrated that 57.6% (n=434) of participants had a minimum of one transition between any two of the three frailty states (frail, pre-frail, non-frail) as identified using the óphenotype modelô. Participants were more likely to transition to states of greater frailty than lesser frailty and the probability of transitioning from frail to non-frail was very low (0%- 0.9%).

Fried et al. (2001) discuss the ócycle of frailtyô, first presented by Fried and Walston (1998), in relation to the óphenotype modelôcriteria of weight loss, reduced strength, poor endurance, low activity levels and slow walking speed. These components of frailty can be unified into a ócycle of frailtyôassociated with declining reserve to stressors (Fried et al., 2001), for example, weight loss due to poor nutrition could lead to an increased rate of sarcopenia and subsequent loss of strength, reduced walking speed and lower activity levels. Xue et al. (2008) conducted a 7.5 year observational study of non-frail Chinese community-dwelling women (n=420) and found that weakness, slowness and low physical activity preceded weight loss and exhaustion in the development of frailty. However, the age range of participants in this study was narrow (70-79 years) and included women only, therefore the findings may not be generalisable to the wider older adult population. Nonetheless, the frailty markers of weakness, slow walking speed and low physical activity are easily identifiable by healthcare professionals, particularly physiotherapists and early identification could prevent progression in the frailty cycle. Further research in this area across a larger population, could therefore be valuable to guiding clinicians towards targeted screening and early intervention strategies for frailty prevention in older adults.

1.2 Identifying Frailty

1.2.1 Association of Frailty with Co-morbidity, Disability and Age

The terms frailty, co-morbidity and disability are often used interchangeably and although interrelated, they are distinct clinical entities (Fried et al., 2004). Frailty is strongly associated with comorbidity and disability but can also be present in individuals without one or both of these factors (Fried et al., 2001) (Syddall et al., 2010) (Theou et al., 2012). Co-morbidities shown to be associated with frailty include cerebrovascular disease, chronic kidney disease and cardiovascular disease (Chang et al., 2012). Limitations in Activities of Daily Living (ADLs) and co-morbidity have been shown to occur more frequently in people with the highest levels of frailty (Theou et al., 2012).

The prevalence of frailty rises with increasing age (Collard et al., 2012) (Gale et al., 2015), however frailty is not an inevitable part of ageing (British Geriatric Society, 2014). Large epidemiological studies have found age-independent associations with frailty (Romero-Ortuno 2011, Santos-Eggimann et al., 2009, Fried et al., 2001), which may suggest that frailty is associated with physiological ageing more than chronological ageing (Clegg et al., 2013).

1.1.2 Comprehensive Geriatric Assessment and Frailty Screening Tools

A Comprehensive Geriatric Assessment (CGA) is considered the ógold standardô for the management of frailty and assists in care planning for older adults to avoid crises (British Geriatric Society, 2014). A CGA involves a multidisciplinary team (MDT) approach that determines an older personôs biomedical, psychosocial, and environmental needs to create a tailored care plan addressing the identified needs (Wells et al., 2003). A CGA is led by a geriatrician and integrates medical and social care around medical diagnoses and is associated with improved outcomes for older adults such as improved function and decreased risk of mortality (Stuck and Iliffe, 2011). However, a CGA is lengthy and requires up to two and a half hours to complete (British Geriatric Society, 2014). However, in current pressured health services it is not feasible or necessary for all older adults to undergo a CGA and there is a need

for efficient and valid and acceptable frailty screening tools, to enable healthcare professionals to identify frailty and older adults who may require a CGA (Pialoux et al., 2012).

Frailty is no longer considered a solely physical or physiological concept but a multidimensional presentation. Therefore, frailty screening tools used in clinical practice should be multifactorial, with consideration to physical, psychological, cognitive and social needs (de Vries et al., 2011). Frailty should be considered as a spectrum and a graded score including identification of a ópre-frailô state is recommended (Buckinx et al., 2015).

1.3 Frailty in Clinical Practice

Few studies have explored the influence of frailty screening on clinical practice from the perspective of HSCPs. In a mixed-methods study using a quantitative survey and subsequent qualitative semi-structured interviews of General Practitioners (GPs) and Primary Care nurses, Keiren et al. (2014) found that the EASYcare two-step older persons screening (EASYcare-TOS) was acceptable to use to identify frailty in clinical practice. Twenty-four (96%) participants felt that using the EASYcare-TOS improved the quality of patient care and stimulated a more proactive approach and exploration of patientsô problems. Archibald et al. (2017), published a study protocol outlining their proposed methodology to explore the perspectives of older adults, GPs, practice nurses, emergency department physicians and orthopaedic surgeons on frailty and frailty screening using focus group and individual interviews. A strength of this proposed study, is that it aims to explore both patient and healthcare professionalsô perspectives. However, like Keiren et al. (2014), it does not include physiotherapists. Gwyther et al., (2018) explored the views, understandings and attitudes of European healthcare policy-makers (n=7), from the European Union, United Kingdom, Italy, Spain and Poland, on the implementation on frailty screening and management strategies. The results highlighted the need for an integrated approach to frailty and the need for consistency in its measurement. However, there was no perspective of Irish policy-makers included in this study, to reflect the potential unique needs for frailty management in the Irish healthcare system. Shaw et al. (2017) found similar results regarding the importance of an integrated approach to frailty, among Italian, Polish and British stakeholdersô acceptability and feasibility of frailty screening and prevention. In this study, frail older adults (n=28), non-frail older adults (n=23), family care-givers (n=16), social-care professionals (n=22) and healthcare professionals (n=26) participated in focus group are individual semi-structured interviews.

However, like the study by Gwyther et al. (2018), no Irish stakeholders were involved in this study and only four participants, grouped as órehabilitation/occupational therapistsô were included, providing a small presence compared to the total sample (n=115).

The EFS is a multifactorial, brief frailty screening tool reported to take 5-10 minutes to administer. It is a reliable (*ə*=0.77, *P*=0.0001, *n*=18) and valid (*r*=0.64, p<0.001, n=158) measure of frailty in community dwelling older adults and can be administered by a healthcare professional without specialist training in geriatric care (Rolfson et al., 2006). Therefore, the EFS is an appropriate frailty screening tool to implement into physiotherapy practice in the Primary Care setting, however, there is a lack of research whether the EFS is acceptable to the routine practice of physiotherapists in Primary Care and whether it influences physiotherapistsô clinical practice with community-dwelling older adults.

1.4 Conclusion

From the review of the current literature, there is a clear gap in the research on the prevalence of frailty among community-dwelling older adults seen by physiotherapists in the Primary Care setting and on the influence of frailty screening on the clinical practice of physiotherapists. Therefore, this study aimed to explore these areas through the methodology outlined in Chapter two.

CHAPTER 2: METHODOLOGY

2.1 Setting

This study corresponded with the introduction of the EFS, as part of the assessment of older adults referred to the Primary Care physiotherapy domiciliary service of North Dublin, CHO DNCC in Ireland. The term óCommunity Healthcareô is used to describe the range of services provided by the HSE, outside of the acute hospital system, including Primary Care, Mental Health and Social Care (HSE, 2017a). CHO DNCC is the fastest growing CHO in Ireland with a population of 621,405, 11.5% (n=71,761) of which are aged 65 years or older CSO (2016). North Dublin is one of three geographical areas in CHO DNCC and is a predominately urban area. The Primary Care service of North Dublin comprises of 20 multidisciplinary Primary Care Teams (PCTs), including HSCPs such as physiotherapists, occupational therapists (OTs) and Public Health Nurses (PHNs).

2.2 Aims and Objectives

The primary aim was to identify the prevalence of frailty in older adults referred to Primary Care Physiotherapy in North Dublin, using the EFS (Part A). A secondary aim was to explore the influence of frailty screening on physiotherapistsôclinical practice, through the perspectives of physiotherapists working with older adults in Primary Care (Part B).

2.2.1 Objectives

Part A

1. To identify the prevalence of non-frailty, pre-frailty and frailty among community-dwelling older adults referred to Primary Care physiotherapy.
2. To investigate the association between frailty as measured by the EFS and age, gender and living arrangement.

Part B

1. To explore physiotherapistsô perspectives of the role of frailty screening in Primary Care.
2. To explore physiotherapistsô experience of utilising the EFS to screen for frailty among community dwelling older adults.
3. To explore physiotherapistsô perspectives on the influence of frailty screening on clinical practice in the Primary Care setting.

2.3 Design

A mixed methods study was undertaken. Part A was an observational cross-sectional study, investigating the prevalence of frailty among community-dwelling older adults referred to the Primary Care domiciliary service of North Dublin CHO DNCC, using the EFS. Part B was a qualitative study, using focus group interviews to explore physiotherapistsô perspectives on frailty screening and the influence of frailty screening on physiotherapy practice in Primary Care. A qualitative design, in the form of focus group interviews is appropriate to obtain in-depth knowledge of the perspectives and experiences of a group regarding a healthcare related subject (Then et al., 2014). The óStrengthening the Reporting of Observational studies in Epidemiologyô (STROBE) guidelines (Von Elm et al., 2014) and the óConsolidated Criteria for Reporting Qualitative Researchô (COREQ) guidelines (Tong et al., 2007) were followed in the design and reporting of this study, to ensure transparency.

2.4 Participants

Part A

Participants were community-dwelling older adults, aged 65 years or over, referred to the Primary Care domiciliary physiotherapy service of North Dublin, CHO DNCC. The minimum age cut-off of 65 years has been widely used in frailty prevalence studies (Collard et al., 2012).

Part B

Participants were staff grade and senior physiotherapists working within the Primary Care domiciliary physiotherapy service North Dublin, CHO DNCC.

2.4.1 Sample Selection

Part A

A sample of convenience was recruited from older adults referred to the Primary Care domiciliary physiotherapy service in the North Dublin, CHO DNCC. Recruitment occurred over three months, in consecutive order of new clients seen from the waiting list between December 2017 and February 2018 inclusive. Participants were referred for physiotherapy by a doctor, nurse or HSCP. Participants were not referred specifically for potential participation in this study. The sample is therefore representative of older adults routinely referred to Primary Care physiotherapy, which is the target population of the study.

Part B

Participants in the focus group interviews were recruited as a purposive sample of physiotherapists working in the Primary Care domiciliary physiotherapy service in North Dublin CHO DNCC, who administered the EFS in Part A of this study.

The inclusion and exclusion criteria for Part A and Part B of this study are presented in Table 2.1.

Table 2 . 1 - Inclusion and Exclusion Criteria

Part A	
Inclusion	**Exclusion**
Informed consent to participate and use data.	Unable to complete EFS at initial assessment due to factors not related to their baseline presentation e.g. acute illness or infection.
Ó65 years of age.	Receiving palliative care.
Community Dwelling.	
Part B	
Inclusion	**Exclusion**
Informed consent to participate and use data.	
Physiotherapist working in the Primary Care physiotherapy domiciliary service North Dublin, CHO DNCC.	
Have used the EFS to screen a minimum of 10 clients, as part of their practice in the domiciliary physiotherapy service of North Dublin, CHO DNCC.	

2.4.2 Sample Size

Part A

Using a variety of frailty screening tools, the prevalence of frailty among community dwelling older adults ranges from 4.0% to 59.1%, as reported in a systematic review of the literature by Collard et al. (2012). It must be considered that the prevalence of frailty may be different in community-dwelling older adults referred to physiotherapy, than in the general or institutionalised older adult population. Of the limited literature reporting on the prevalence of frailty as identified using the EFS, the sample population most comparable to the use of a community healthcare service such physiotherapy, is that of Tan et al. (2017). A frailty prevalence of 27% is reported by Tan et al. (2017), among a sample of 115 older adults attending a medical outpatient clinic, in a tertiary hospital in Singapore. A cut-off score of Ó8 points on the EFS indicated frailty. For part A of this study, a sample size of 303 participants is required, based on a sample size estimate power calculation to identify a frailty prevalence of 27%, with a 5% Margin of Error and 95% Confidence Interval (CI). The potential population was considered infinite. The calculation was made using an online sample size calculator (Sampsize).

Part B

A purposive sample size of physiotherapists for participation in the focus group interviews was estimated at eight to 10 participants, based on a potential sample of 14 physiotherapists (nine seniors and five staff grades) currently working in the domiciliary physiotherapy service of North Dublin, CHO DNCC. It is recommended to over recruit by 20% to 50% of the total number of participants required, to account for participants that may not be available to attend the focus groups (Morgan, 1997) (Wilkinson, 2004). Five physiotherapists solely working in the physiotherapy musculoskeletal clinics of Primary Care, North Dublin CHO DNCC, could not be recruited, as the EFS was not implemented into the musculoskeletal service.

2.5 Ethical Considerations

2.5.1 Ethical Approval

Ethical approval to conduct this study was granted by the Royal College of Surgeons in Ireland Research Ethics Committee (RCSI REC). Approval to conduct this study was also granted by the HSE Primary Care Research Committee (PCRC) and by the manager of the physiotherapy department in North Dublin, CHO DNCC. Approval letters are included as Appendices 1-3.

2.5.2 Data Protection

Collected data was stored under the Data Protection Act (2003) and the Data Guidance on Research in Health Sector (2007). Data was also stored in compliance with RCSI policy.

Part A

Participants were coded with a Unique Identifying Number (UIN) to ensure participant confidentiality. This was the only identifiable marker on all hardcopy and electronic data recorded within the study. A separate Excel file ôkeyô linked the codes to the participantsô name and physiotherapy ôclient numberô in case participants needed to be re-identified e.g. if a participant wished to withdraw from the study. The ôkeyô Excel file was password protected on an encrypted ôN:Driveô only accessible on HSE on-site computers. Only the PI and physiotherapists involved in the recruitment and assessment of participants in this study had access to the UIN ôkeyô Excel file during recruitment and data collection. This was necessary as participants were coded by the assessing physiotherapist prior to the data given to the PI. Physiotherapists held a copy of the completed EFS in the physiotherapy charts of the clients they assessed in line with standard practice and stored securely in the relevant Primary Care centre.

On completion of data collection, the ôkeyô Excel file was deleted from the HSE N:Drive and securely transferred to the RCSI V:Drive. Coded hardcopies of the EFS assessments and informed consent forms returned to the PI were stored in a locked cabinet in Swords Health Centre, Co. Dublin. Only the PI had access to the key for this cabinet. On completion of data collection and analysis, hardcopy data was scanned to softcopy onto the secure unique project

folder on the RCSI V:drive. All other electronic data pertaining to the study such as the Excel and statistical software files containing inputted raw data from the EFS assessments are also stored in the unique project folder in the RCSI V:Drive. Only the PI and research supervisors have access to this unique project folder. Under RCSI processes, softcopy data will be retained on the V:drive for five years. Hardcopy data was destroyed by a secure shredding service.

Part B

Participants were coded with a UIN. Audio recordings of the focus groups were downloaded, encrypted and stored in a password protected folder in the PIôs allocated unique project folder in the RCSI V:Drive. Audio transcripts were also stored securely in the PIôs allocated unique project folder in the RCSI V:Drive. A separate ôkeyô Excel file linked the UIN to the participants and was stored in the PIôs allocated unique project folder in the RCSI V:Drive. This was accessible by the PI and research supervisors only.

2.6 Procedure (Part A)

2.6.1 Informed Consent

The selection criterion was applied at the point of initial assessment. Eligible patients were invited to participate in the study by their assessing physiotherapist, who acted as the gatekeeper to the study on behalf of the PI. Assessing physiotherapists provided written agreement to the PI to act as gatekeeper, to provide the Participant Information Leaflet and Informed Consent Form to eligible patients (Appendices 4-6).

The Participant Information Leaflet described the purpose, nature and risks of the study. Participants were made aware of their ethical right to withdraw from the study, without giving reason and without consequence to their current or future treatment. A minimum period of seven days was given to provide consent, to allow eligible patients to consider the information provided and to make an informed decision regarding their participation in the study. A maximum time to provide informed consent was by the end of the three-month data collection period.

In instances of participants with cognitive impairment which affected their capacity to provide informed consent, participants were facilitated as per the Assisted Decision-Making (Capacity) Act (2015). Capacity was considered as time and issue specific to this study and a functional approach to the assessment of capacity was taken by the assessing physiotherapist, as outlined in the Capacity Act (2015), such as ensuring that the person understood the information relevant to their participation in the study and that they could retain the information long enough to make an informed decision Once informed consent was given by the participant, the assessing physiotherapist could provide the participantsô data to the PI.

2.6.2 Edmonton Frail Scale

This study corresponded with the introduction of the EFS (Appendix 7), as part of the physiotherapy assessment and routine care of the domiciliary service in North Dublin CHO DNCC. The EFS is an 11-item frailty screening tool consisting of nine domains associated with frailty; cognition, general health status, functional independence, social support, medication use, nutrition, mood, continence and functional performance. The EFS can be administered by healthcare professionals without specialised training in geriatric care. It has good inter-rater reliability ($\partial = 0.77$, $P = 0.0001$, $n = 18$) and it is a valid measure of frailty in community dwelling older adults compared to clinical impression by a geriatrician following a comprehensive assessment ($r = 0.64$, $p<0.001$, n=158) (Rolfson et al., 2006). The EFS can be used in both the community and acute setting. The score ranges from 0-17, with a higher number indicating a higher level of frailty. The óClock-Drawing Testô and the óTimed Up and Goô test included in the EFS are valid and reliable measures of cognitive ability, including executive function and functional mobility, respectively in community dwelling older adults (Podsiadlo and Richardson, 1991) (Shulman, 2000). The EFS reflects the multifactorial nature of frailty as it provides a collective objective score corresponding to a level of frailty, rather than viewing components such as cognition, mood and mobility in isolation.

2.6.3 Data Collection

Data collection for Part A of this study took place in the home of the participant. The EFS was carried out as part of the initial physiotherapy assessment by the physiotherapist in the relevant Primary Care Team (PCT) to the participant. Demographic information, such as age and gender were also collected by the assessing physiotherapist, to create context and describe the profile of the participants (Appendix 7).

2.7 Procedure (Part B)

2.7.1 Informed Consent

Eligible physiotherapists working in the domiciliary service of North Dublin CHO DNCC were invited to participate in a focus group interview by the PI and were provided with a Participant Information Leaflet (Appendix 8), describing the purpose, nature and risks of the study. Eligible physiotherapists were asked to sign an informed consent form, including consent to audio recording of the interview (Appendix 9). Participants were made aware of their ethical right to withdraw from the study, without giving reason and without personal or professional consequence. A minimum of seven days was given to provide consent, to allow time to consider the information provided and to make an informed decision regarding participation in the study. Participants could provide informed consent up to the day before the focus group was due to occur.

2.7.2 Focus Group Interviews

The PI referred to recommendations Krueger et al. (2002), on designing and conducting focus group interviews, to ensure best practice and methodological quality. Focus group interviews took place in a private meeting room in the community services headquarters for North Dublin, CHO DNCC. This was a convenient location for participants, where staff meetings regularly occur and participants were therefore familiar with the space and travel burden was at a minimum. Participants were given two weeks advance notice of the date, time and location of the focus group interview to ensure that maximum attendance. Three focus groups (one for

staff grade physiotherapists and two for senior physiotherapists) were held. Small focus groups of three to four participants are recommended when participants have specialised knowledge or experiences to discuss (Krueger, 1994) (Morgan, 1997). Arranging groups based on clinical hierarchy, helped the group composition be as homogeneous as possible and reduce possible power imbalances, helping participants to feel comfortable to express their opinions (Then et al., 2014). The focus group interviews were led by the PI, who asked the questions prepared on the interview theme sheet (Appendix 10).

A Primary Care based Clinical Nurse Specialist, with a post-graduate diploma in Gerontological Nursing and experience in qualitative research acted as an independent co-moderator in the focus group interviews. Participants were reminded that the interview was being audio recorded and each participant was asked to introduce themselves to the group to allow an opportunity to relax into the group conversation. The PI ensured that less vocal members of the group were given an opportunity to participate, through prompting as appropriate. Each focus group interview lasted 35-40 minutes, however one hour was allocated for each group which allowed time for participants to settle and to test the sound of the audio recorder. As recommended by Krueger and Casey (2014), active listening and field note taking to highlight key points and non-verbal activity, was carried out by the PI and the co-moderator. Following each focus group interview, the PI and the co-moderator discussed any potential sources of bias that may have occurred during the interview. This was recorded by the PI in their reflective diary, which was used to monitor their reflexivity throughout the research process. There was a gap of 12 days between the first and subsequent two focus groups, to allow time for the PI to reflect and begin preliminary analysis to aid the conduction of the remaining interviews.

2.8 Statistical Analysis

Part A

Statistical Package for the Social Sciences (SPSS) version 21.0 was used to analyse data. Data was examined for normality using the Shapiro-Wilks test. Descriptive statistics were used to report the baseline demographics of the participants. The overall prevalence of non-frailty, vulnerable (pre-frailty) and frailty as identified by the EFS scores 0-5, 6-7 and 8-17

respectively, are reported with 95% CI. These cut-off scores of the EFS were used in frailty prevalence study by Tan et al. (2017). The level of frailty as identified by the EFS score; mild (8-9 points), moderate (10-11 points) and severe (12-17 points) was also reported. Binary logistic regression was used to examine the association between frailty and age, gender and living arrangement. For this analysis, the data was dichotomised into frail (8-17 points) and not frail (0-7) points i.e. considering non-frail and pre-frail participants as not frail. Age was categorised as 65-79 years or Ó80 years, gender was categorised as male or female and living arrangement was categorised as living alone or living with support of family or spouse.

Part B

The audio from the focus group interviews were transcribed verbatim by the PI, using an RCSI network computer. Data was analysed using a framework of ôThematic Analysisô described by Braun and Clarke (2006). This method is useful for analysing qualitative data derived from health research (Gale et al., 2013). As this is the first study in Ireland to investigate physiotherapistsô perspectivesô on frailty screening in Primary Care, an inductive approach to thematic analysis was applied, whereby the themes emerged from the data, without a predetermined framework. The six phases of inductive thematic analysis described by Braun and Clarke (2006) were completed; Familiarisation of the data through re-reading of the transcripts, line by lineô analysis to generate initial codes, searching for themes among codes, reviewing themes in the context of the entire data set, defining categories and finally reporting on the themes. Methods recommended by Guba (1981) and Krefting (1990) to ensure rigour throughout data analysis and enhance the dependability, credibility, and confirmability of the results were applied. Transcripts were independently analysed by the PIôs research supervisor and findings compared to that of the PI. Any disagreements or uncertainty around coding and emerging themes were discussed and decision was mutually agreed upon. Member checking of the transcripts was offered to participants. Ongoing reflective practice was also carried out by the PI. Thoughts and potential bias were acknowledged by the PI in a reflective diary to enhance reflexivity throughout the research process.

The results are presented in Chapter three.

CHAPTER 3: RESULTS

3.1 Introduction

The following chapter presents the results of the analyses of both Part A and Part B of this study, described in Chapter Two. For Part A, demographic information of the participants, the prevalence and level of frailty across the study cohort and the association between level of frailty and age, gender and living arrangement are reported. For Part B, an overview of the focus group participants and a detailed thematic analysis of the overarching themes and sub themes, in relation to the influence of frailty screening on the clinical practice of physiotherapists working with older adults in Primary Care, are reported.

3.2 Participant Flow (Part A)

Recruitment took place from December 2017 to February 2018 inclusive. The final sample size was 100 participants. The flow of participants in the study is presented in Figure 3.1.

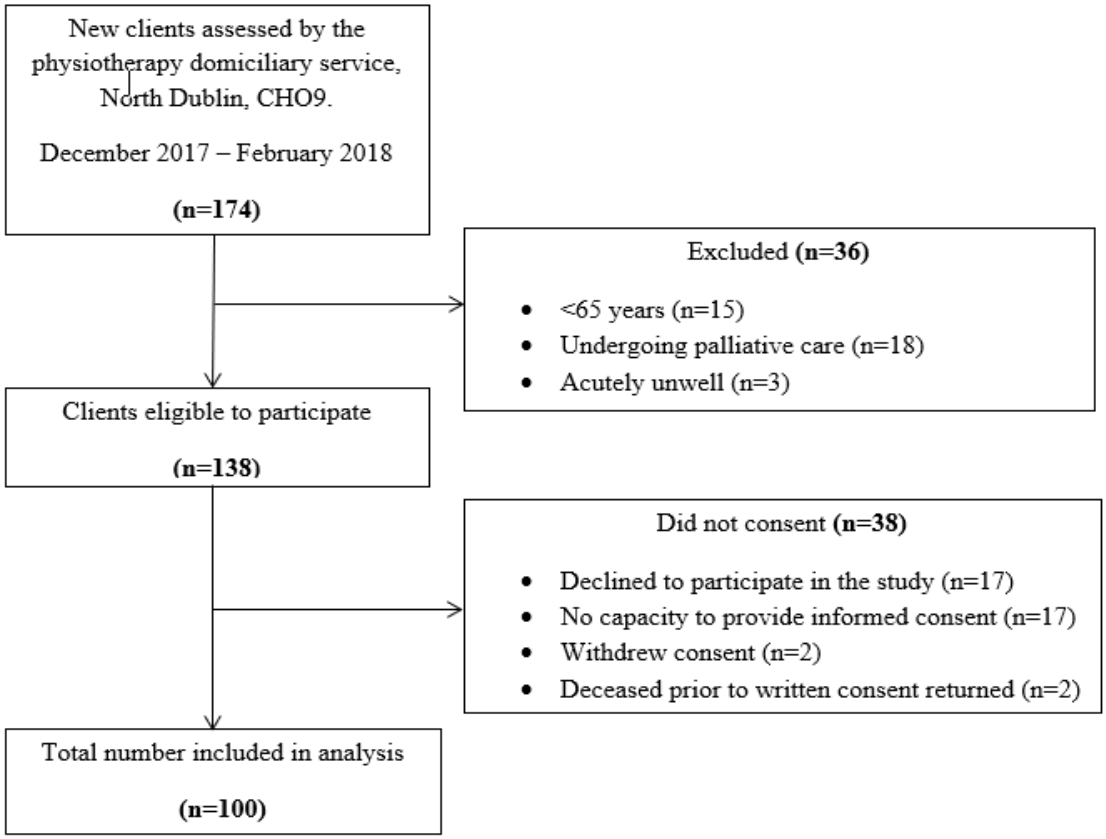

Figure 3 . 1 - Participant flow through the Study

3.3 Baseline Demographic Information (Part A)

Age was normally distributed in the study sample (p=0.05). The mean (±SD) age of the participants was 80.3 (±7.4) years, with 64% (n=64) being female. The majority (63%, n=63) of participants lived with family or a spouse, with 34% of participants living alone (n=34). Thirty-nine percent (n=39) of participants availed of a homecare package (HCP). The majority (52% n=52) of referrals to the Primary Care physiotherapy domiciliary service in this cohort came from a public health nurse (PHN) or a community registered general nurse (CRGN). Referrals from General Practitioners (GPs) accounted for 16% (n=16) of the referrals. Baseline Demographic Data is presented in Table 3.1.

Table 3 . 1 - Baseline Demographic Information

(n=100)			
Age (years)		Mean (±SD) (95% CI)	80.3 (± 7.4) (78.8 - 81.7)
			% (n)
Age Group	65 - 69 years		11% (n =11)
	70 - 74 years		11% (n =11)
	75 - 79 years		25% (n =25)
	80 - 84 years		23% (n =23)
	85 - 89 years		16% (n =16)
	90 + years		14% (n =14)
Gender	Female		64% (n =64)
	Male		36% (n =36)
Living Arrangement	Alone		34% (n =34)
	With Spouse		35% (n =35)
	With Family		28% (n =28)
	Other		3% (n =3)
	HCP		39% (n =39)
	No HCP		61% (n =61)
Discipline of Referrer	GP		16% (n =16)
	PHN / CRGN		52% (n =52)
	Primary Care OT		13% (n =13)
	Acute Hospital		14% (n =14)
	Other		5% (n =5)

3.4 Prevalence and Levels of Frailty

The EFS scores of the study sample were not normally distributed (p=0.03). The median (IRQ) score of the participants was 7 (4), which falls into the pre-frail category. Forty-three percent (n=43) (95%CI 33-53%) of participants were identified as frail by the EFS. Approximately half of the participants identified as frail, were in the ómild frailtyôcategory of the EFS (51%, n=22). A breakdown of the prevalence and levels of frailty in the sample are presented in Table 3.2.

Table 3 . 2 - Prevalence and Levels of Frailty

(n = 100)		
EFS Score	Median (IQR)	7 (4)
3.5 Breakdown of EFS Results		**% (n) (95%CI)**
Frailty Prevalence		
0 - 5 points	Non-Frail	31% (n =31) (22-40%)
6 - 7 points	Pre-Frail	26% (n =26) (18-36%)
8 - 17 points	Frail	43% (n =43) (33-53%)
Frailty Level		
0 - 5 points	Not Frail	31% (n =31) (22-40%)
6 - 7 points	Vulnerable	26% (n =26) (18-36%)
8 - 9 points	Mild Frailty	22% (n =22) (15-30%)
10 - 11 points	Moderate Frailty	13% (n =13) (7-22%)
12 - 17 points	Severe Frailty	8% (n =8) (3-14%)

A breakdown of the scores of the sample in each domain of the EFS is outlined in Table 3.3. Sixty-nine percent (n=69) of the sample made an error in the cognition óClock Draw Testô. Sixty-five percent of the sample had one or more hospital admissions in the previous year, with 80% (n=80) having polypharmacy, defined as taking five or more prescription medications. Regarding functional independence and performance, 71% of the sample reported requiring help with two or more ADLs and a large proportion of participants (88%, n=88) took 11 or more seconds to complete the TUG Test or were unable or required assistance to complete the test. A breakdown of the EFS results are presented in Table 3.3.

Table 3 . 3 - Breakdown of EFS Results

(n =100)		
Cognition (Clock Draw Test)	No errors	31% (n =31)
	Minor spacing errors	26% (n =26)
	Other errors	43% (n =43)
General Health Status		
No. of hospital admissions	0	35% (n =35)
	1 to 2	49% (n =49)
	>2	16% (n =16)
Self-Described Health	Good - Excellent	56% (n =56)
	Fair	34% (n =34)
	Poor	10% (n =10)
Functional Independence		
No. of ADLs requiring help with	0 to 1	29% (n =29)
	2 to 4	37% (n =37)
	5 to 8	34% (n =34)
Social Support	Always	83% (n =83)
	Sometimes	13% (n =13)
	Never	4% (n =4)
Medication Use		
Polypharmacy (≥5 medications)	Yes	80% (n =80)
	No	20% (n =20)
At times, forgets to take medications	Yes	30% (n =30)
	No	70% (n =70)
Nutrition		
Recent weight loss	Yes	20% (n =20)
	No	80% (n =80)
Mood		
Often feels sad or depressed	Yes	45% (n =45)
	No	55% (n =55)
Urinary Incontinence	Yes	37% (n =37)
	No	63% (n =63)
Functional Performance (TUG Test)	0 to 10s	12% (n =12)
	11 to 20s	50% (n =50)
	> 20s / unable/ needs assistance	38% (n =38)

ADLs = Activities of Daily Living ; TUG = Timed Up and Go

3.6 Age, Gender and Living Arrangement by Frailty Status

The mean (±SD) (95% CI) age of participants in the Non-Frail, Pre-Frail and Frail group is 79.1 (±6.8) (7.6-81.6) years, 81.5 (±7.8) (78.3-84.6) years and 80.3 (±7.7) (77.9-82.7) years, respectively. The breakdown of age group per frailty status is illustrated in Figure 3.2.

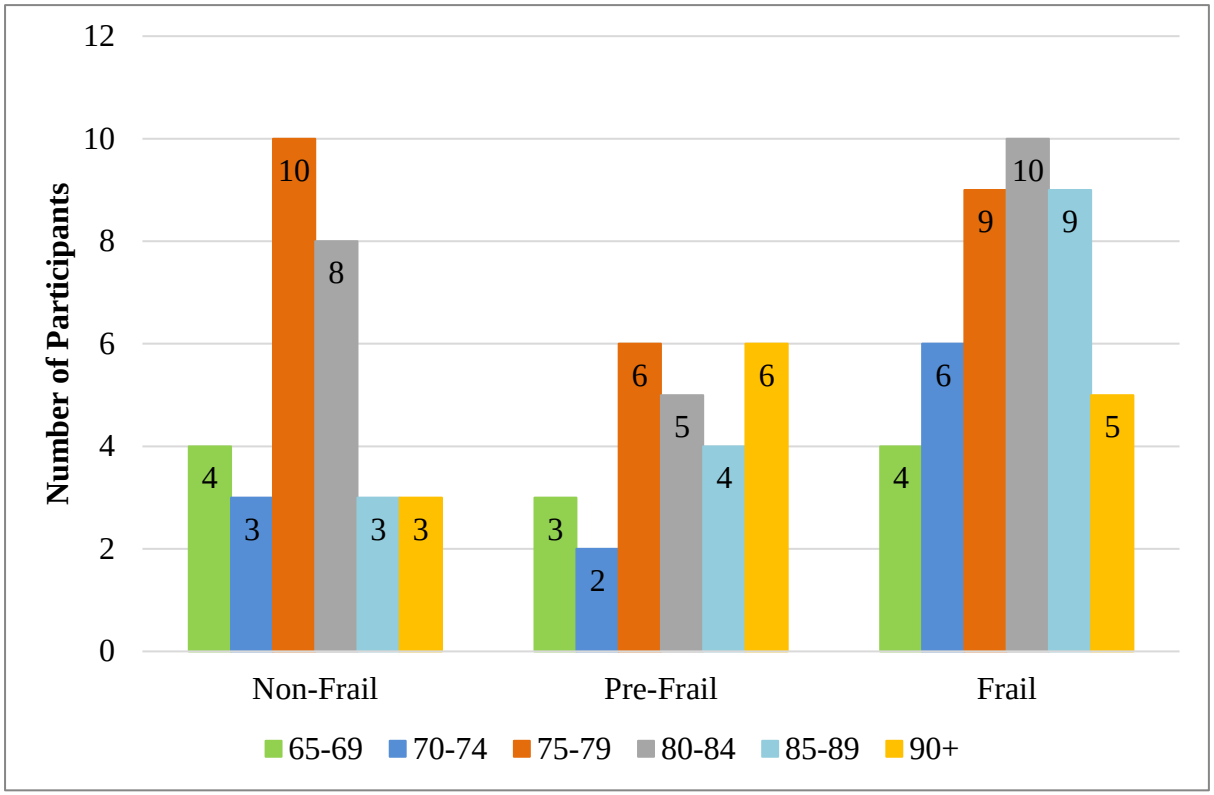

Figure 3 . 2 - Breakdown of Age Group by Frailty Status

Females account for 61% (n=19), 50% (n=13) and 74% (n=32) of participants in the Non-Frail, Pre-Frail and Frail group, respectively. A breakdown of gender per frailty status is illustrated in Figure 3.3.

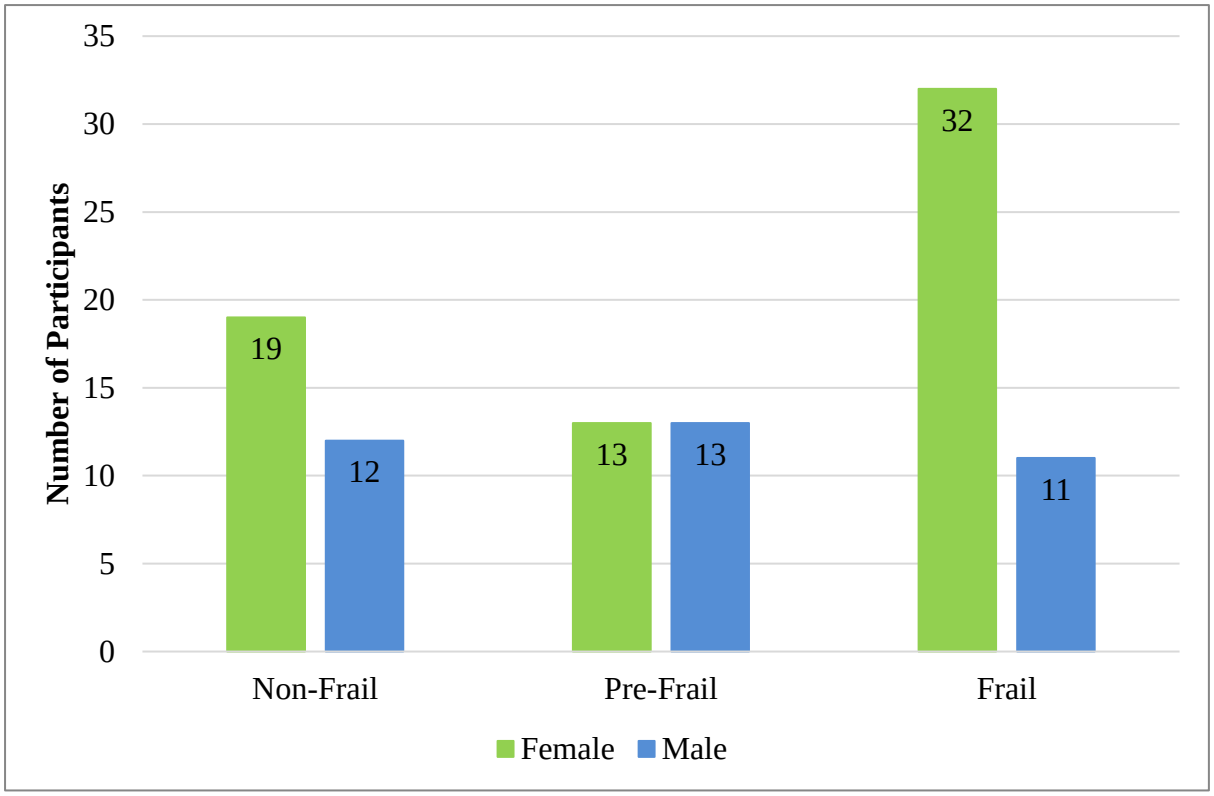

Figure 3 . 3 - Breakdown of Gender by Frailty Status

The percentage of participants living alone in the Non-Frail, Pre-Frail and Frail Group is 29% (n=9), 38% (n=10) and 35% (n=15), respectively. The remaining participants live with a spouse, family member or other. A breakdown of the number living alone and with support is presented per frailty status is illustrated in Figure 3.4.

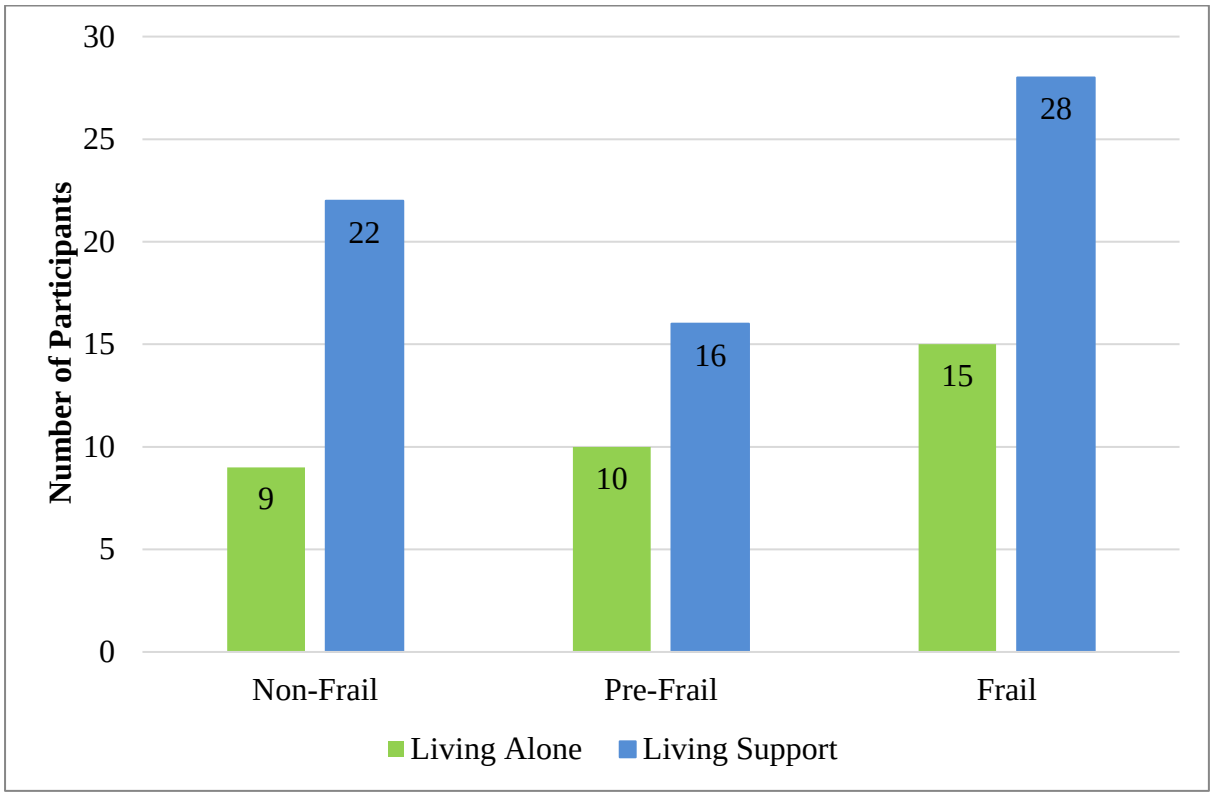

Figure 3 . 4 - Breakdown of Living Arrangement by Frailty Status

3.7 Association of Frailty with Age, Gender and Living Arrangement

Binary logistic regression was used to test the association of frailty with age (being Ó80 years), gender (being female) and living arrangement (living alone), compared to being 65-79 years, male and living with support, respectively. Non-frail and pre-frail participants were grouped as being ónot frailô and participants identified as mild, moderate or severely frail were considered as ófrailô. No significant association was found between frailty and older age, gender or living alone among this sample, with $p>0.05$ for all factors. The statistical analysis, including Odds Ratios (OR) is presented in Table 3.4.

Table 3 . 4 - Association of Frailty with Age, Gender and Living Arrangement

Variable	Category	Frail (n=43)	Not Frail (n=57)	OR	95% CI	P-value
		n (%)	n (%)			
Age	Ó80 years	24 (56%)	29 (51%)	0.81	0.36 - 1.83	0.62
Gender	Female	32 (74%)	32 (56%)	0.44	0.19 - 1.04	0.06
Living Arrangement	Living Alone	15 (35%)	19 (33%)	0.93	0.40 - 2.18	0.87

3.8 Cognition and Functional Performance by Frailty Status

The cognition of participants was captured in the EFS by the óClock Draw Testô, whereby less errors indicate a greater cognitive ability. Sixty-five percent (n=20) and 23% (n=6) of the non-frail and pre-frail participants, respectively, made no error in the óClock Draw Testô. Only 12% (n=5) of frail participants made no error.

The functional performance of participants was captured in the EFS by the TUG Test, whereby less time taken to complete the test indicates better functional mobility and balance. Twenty-three percent (n=7), 50% (n=13) and 53% (n=23) of the non-frail, pre-frail and frail participants, respectively, took more than 20 seconds to complete the test, required assistance or were unable to complete the test.

A breakdown of cognition and functional performance by frailty status are illustrated in Figures 3.5 and Figure 3.6.

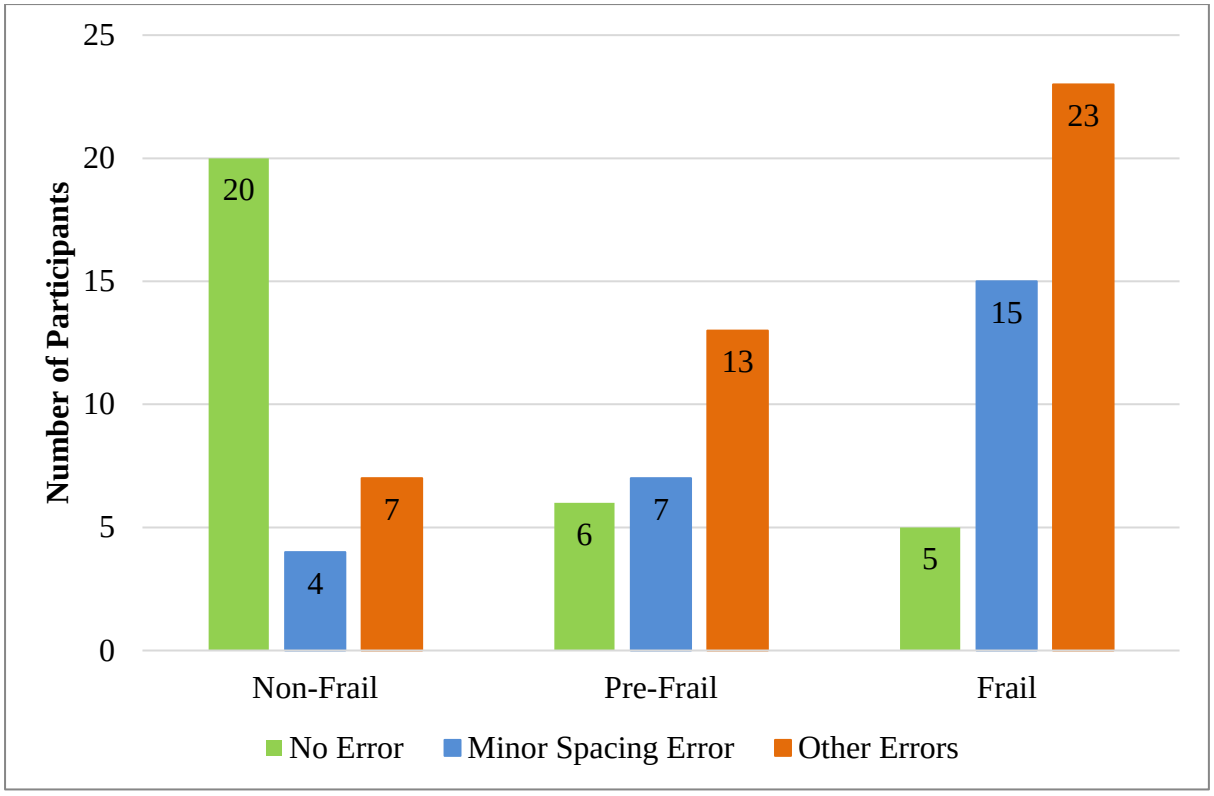

Figure 3 . 5 - Breakdown of Clock Draw Test Performance by Frailty Status

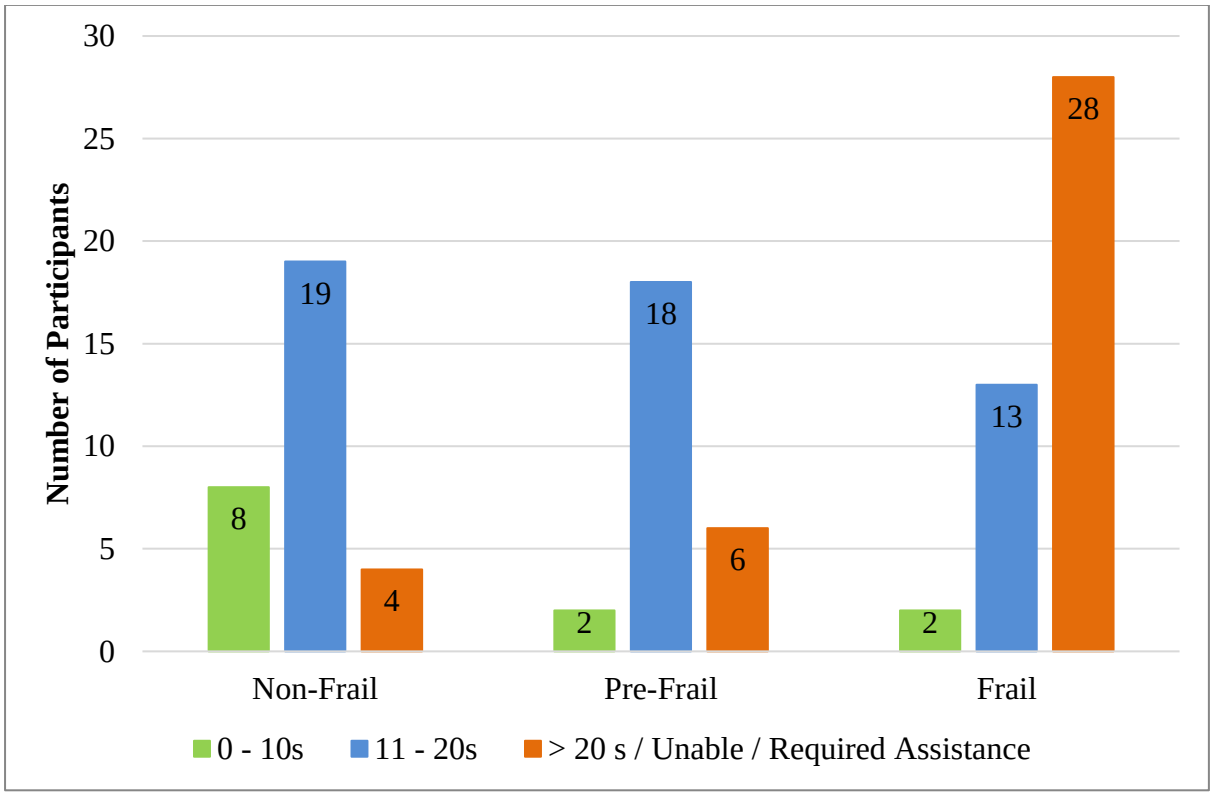

Figure 3 .6 - Breakdown of TUG Test Performance by Frailty Status

3.8 Physiotherapist Focus Group Interviews (Part B)

Three focus group interviews involving a total of eight physiotherapists (male n=3; female n=5) were carried out as part of this study. Two focus group interviews of senior physiotherapists (n=2 and n=3) and one focus group interview of staff grade physiotherapists (n=3) were conducted. The median (IQR) number of years of experience of participants working with older adults in Primary Care is 8 (11.8) ranging from 0.5-25 years.

Three over-arching themes emerged from the thematic analysis of the focus group interview data namely; Frailty Screening in Primary Care, Multidisciplinary Approach and Influence of Frailty Screening on Clinical Practice. The themes and subthemes are presented in Figure 3.2. The subthemes will be reported in detail under the relevant theme, however, many of the subthemes interlink across the main themes.

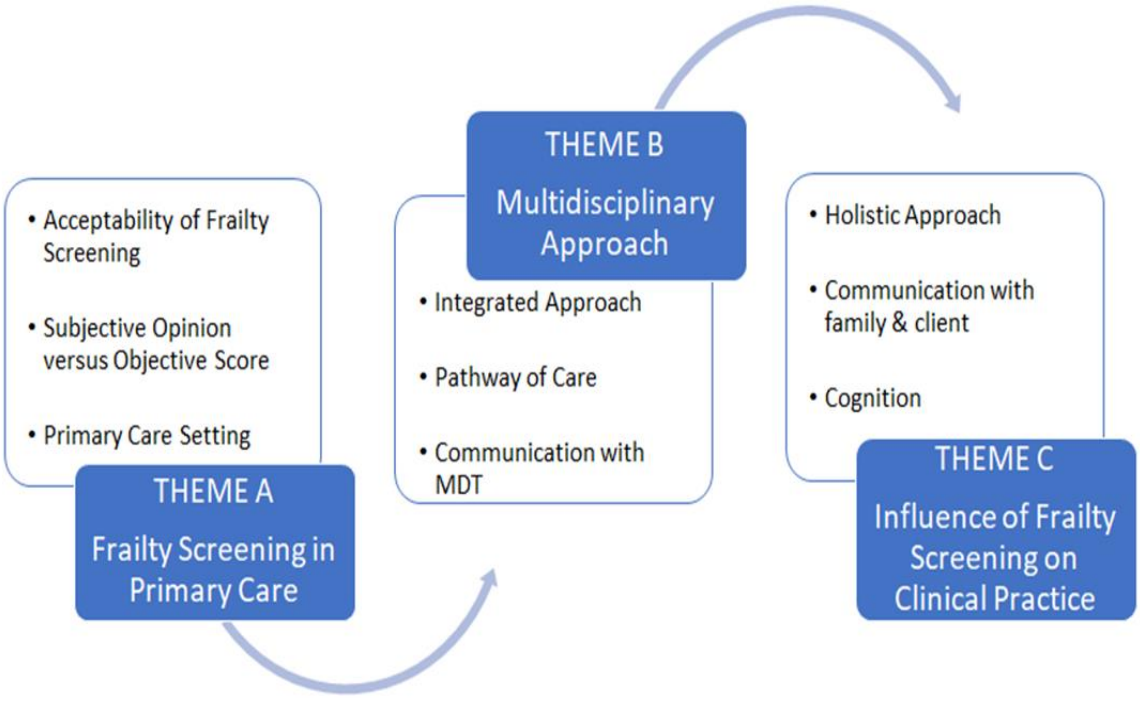

Figure 3 . 7 - Over-Arching and Sub-Themes

3.9 Frailty Screening in Primary Care (Theme A)

The results of the focus group interviews identify physiotherapistsô perspectives of Frailty Screening in Primary Care under three main subthemes outlined below.

3.9.1 Acceptability of Frailty Screening

All participants felt that the frailty screening using the EFS was an acceptable addition to their clinical practice with other adults. Some participants felt that the EFS did not add extra time to their standard assessment and those who felt it did add extra time, deemed it to be an acceptable amount. All participants felt that it was easy to use and implement into their practice.

> *PT7: ñI found it very easy to use. From a time point of view, it was very effective as well.ò*
>
> *PT8: ñI found it quick and found it a good way of looking at things I may not have thought to look at before.ò*

Participants felt that the EFS would flow better in their physiotherapy assessment of older adults, if the EFS or the components of the EFS were integrated into the standard physiotherapy assessment, rather than it being a separate form to complete. Participants felt that the EFS was still relatively new to them and that the flow of the assessment would also improve with practice. Some participants reported some initial hesitation regarding some components of the EFS, such as mood, as this was not routinely part of the practice previously. However, overall participants felt that all components of the EFS were acceptable and relevant to their practice.

> *PT6: ñIt would be good to integrate it into what we already doé if it was part of our own assessment forms I suppose it would probably be even better.ò*

3.9.2 Subjective Opinion versus Objective Score

Terms frequently used by participants to describe frailty were óvulnerabilityô and óat riskô. Many participants highlighted frailty as being at risk of hospital admission.

> *PT3: ñSo my understanding of frailtyé I suppose itôs in a few ways, they can be physically frail where theyôre weak and maybe unable to be functionally independent or also maybe psychologically frail, be that for cognitive issuesé and even emotional support and also just the ability to have people who can help them, it would also influence their frailty.ò*

There was significant discussion in the focus group interviews regarding the EFS as a means of an objective measure of frailty. Participants highlighted that the objective score of frailty was often different than their subjective opinion on the clientôs level of frailty, in that the client was more frail or less frail than what they would have perceived them to be. Participants found that having an objective screening tool of frailty like the EFS, helped to identify underlying components of frailty that may not be óvisibleô and identified subjectively.

> *PT2: ñé there are people who actually hide their ñfrailtyò. You know so not until you do the scale, it more or less highlighted to you, oh ok well they look better than they really are.ò*

> *PT6: ñSometimes we just say that someone is frail, but we donôt know exactly what that is. So this (EFS), is a nice measure to be able to identify that a bit better.ò*

The results of the focus groups strongly indicated that while frailty was considered subjectively at times, the introduction of a frailty screening tool formalised the assessment of frailty and

made it a more prominent aspect of clinical practice among all older adults receiving physiotherapy.

> *PT5: ñé it made me think about it more because I have an objective measure and I wouldnôt have necessarily thought about it quite as muché what I would have thought subjectively considered to be frail patients, I would have maybe thought about that more whereas this made me think more about everyone.ò*

3.9.3 Primary Care Setting

Participants felt that frailty screening is very relevant in the Primary Care setting, due to the high volume of older adults referred to Primary Care physiotherapy and other disciplines of the PCT. Additionally, participants felt that screening for frailty in the community gave a true reflection of the level of frailty of the client, as it is their normal place of residence in which they need to function daily.

> *PT6: ñYouôre seeing people in their own real environmenté In a hospital environment they are going to be a bit more protected, thereôs a lot of people around, thereôs nurses and doctors. Whereas at home, itôs how they really managingò*.

Participants felt that the Primary Care setting allows for early identification of frailty and that through early identification, adverse events such as admission to hospital or long-term care could be avoided. The concept of pre-frailty was also highlighted by participants, as well as the importance of capturing older adults at this level of frailty to prevent them becoming frail. Some participants found that older adults who were frail according to the EFS, were known to members of the PCT and supports were already in place. Participants felt that the EFS facilitated them to objectively identify the level of frailty, of the older adults referred to Primary Care physiotherapy.

> *PT1: ñé maybe if we could pick up on the pre-frail patientsé you know there are subtle changes maybe that just havenôt been picked up on.ò*

3.10 Multidisciplinary Approach (Theme B)

The need for a MDT approach to frailty was a strong theme that emerged from the focus group interviews and is outlined under three subthemes below.

3.10.1 Integrated Management Approach

The focus group interviews highlighted an integrated management approach of a MDT as integral to the management of frailty in the Primary Care setting.

> *PT6: ñFrailty is multifactorial I suppose, so youôd need a multidisciplinary approach. So we can definitely help as physios but we need to involve GPs, nurses, family.ò*

Participants felt that a frailty screening tool like the EFS would be more effective if all disciplines in the MDT were using the tool. It was felt that there would be increased access to frailty screening and more timely screening, in cases where another discipline was in contact with an older adult prior to a physiotherapist. All participants agreed that physiotherapists are well placed to screen for frailty among older adults but not any more so than other disciplines of the MDT, such as PHNs or OTs. Participants also reported that a familiarity of the EFS among the MDT would enhance communication between disciplines regarding the frailty level of clients, as they would be able to interpret the score and significance of the result. Participants highlighted that an integrated approach by a MDT is required to address frailty effectively, as clients with frailty usually have complex needs requiring intervention from multiple disciplines.

> *PT1: ñI think you canôt have a physio working on their own either to address frailtyé if we canôt pull in the back up of a team, weôre not going to be as effective é theyôre going to have comprehensive needs so there has to be the backup of the geriatrician and of the dietician, the OT, the social work.ò*

3.10.2 Pathway of Care

The importance of a pathway of care for managing frailty among those identified as frail or pre-frail using the EFS, was highlighted across the focus group interviews. Participants reported that only identifying frailty is not sufficient and that a pathway to address the needs of client is required, to justify the use of a frailty screening tool.

> *PT1: ñI donôt think thereôs much point in implementing something like this (EFS) into an assessment, unless we have a pathway to follow through on it.ò*

Participants felt a pathway was particularly important for onward referral for areas identified for further intervention outside the scope of physiotherapists, such as cognition, mood and social isolation, which again emphasised the need for a structured multidisciplinary approach to frailty identification and management.

> *PT7: ñé when the GPs attend our meetings, that I would ask them if there was a cog-stat done or something recently, and if not in the next visit if they could make a note maybe to do something like that. So weôre closing the loop and weôre really working as a team to try and get that in place as soon as possible. So I think thatôs the real benefit of the team dynamic.ò*

3.10.3 Communication with the MDT

Many participants felt that using the EFS as an objective screening tool of frailty enhanced their communication with the MDT. It was highlighted that frailty was often discussed informally among the MDT, however, participants found it helpful to have an objective score of frailty when discussing clients at a Primary Care Team meeting and to support their clinical findings to the other members of the MDT.

> *PT5: ñI suppose it is discussed in a very informal wayé especially at Primary Care Team meetings, if there was somebody you were concerned about that was particularly frail, but what was beneficial about this was you actually had an objective measure.ò*

Some participants highlighted the communication of frailty across the wider healthcare setting and questioned if the EFS is standardised across the acute and community setting, to enhance the communication of a clientôs level of frailty and comparison of the results.

> *PT1: ñé if we want to standardise across the area from someone whoôs been in an acute setting and comes out to community, can we re-measure? é or weôve done it in the community and they end up going into the acute setting, can we communicate that over? And is the acute setting using the same tool, that would be my question.ò*

3.11 Influence of Frailty Screening on Clinical Practice

3.11.1 Holistic Approach

Participants discussed their role in assessing mobility and function and felt that those components were important aspects of frailty. Screening areas such as cognition, mood and continence were new additions to the routine physiotherapy assessment for older adults due to the EFS and participants felt that helped them to have a more holistic approach to the clientôs care. Participants felt they can identify potential needs in these areas within their own scope of practice and have a role to refer to the appropriate discipline. Participants found having psychological, social and physical components in one tool beneficial and used terms such as ósuccinctô, óoverviewôand óoverall pictureôduring the focus group interviews.

> *PT4: ñThe physical component, yes we have a big role in it and then come to the psychological and social issuesé we can look for more support and then we can have a chat with the other disciplinesé to help the client in a holistic approach.ò*

The influence of social support in frailty was highlighted by the majority of participants as a consideration in a personôs frailty level and was brought to the fore from using the EFS. Social support was indicated by participants as a significant means of how a personôs frailty can be positively influenced.

> *PT6: ñHow we support people can change how vulnerable they areé we can change their frailty I guess.ò*

Overall, participants felt that frailty screening or knowledge of the frailty status of the client didnôt significantly influence the direct physiotherapy intervention provided to the client. Participants reported that they routinely address issues related to frailty such as decreased mobility and balance and their physiotherapy intervention in this context was largely the same, despite the extra knowledge of frailty level. However, the level of frailty influenced the global management of the client. One participant reported that they may provide extra sessions to those with a higher level of frailty.

> *PT8: ñé because they are very frail, I suppose it would just highlight to me that I just need to keep them on my radar maybe a little bit more.ò*

Some participants also reported that the EFS highlighted areas such as low mood and social isolation. This influenced the global management of clients, particularly those who may not be physically frail and require a huge amount of specific physiotherapy intervention. Participants reported that identifying these components of frailty with the EFS, influenced them to direct clients towards community based social and exercise groups and counselling services.

> *PT7: ñIôve discussed the counselling, the primary care counselling service much more since Iôve used this scale, because of the question about the moodé it opens up that and that pathwayé if there were gaps in their social, so letôs say if their mood was low I would then look at, what are they doing, are they getting out into the community? Are they accessing local exercise groups or day care centres or different things like that.ò*

3.11.2 Communication with Family and Client

Many participants reported that using the EFS enhanced their communication with the family of the client. Participants found that having an objective measure of frailty helped to support their advice to families, such as, when recommending increased support for the client.

> *PT2: ñWhere there was a kind of conflict of opinioné they are at variance with the reality of the situationé having that scoring somehow is something validé it helps to communicate, to press home the message a bit easier.ò*

Some participants also found that having an objective score of frailty from the EFS helped them to communicate with family members when a client was less frail than the family may have perceived and used it as a means of reassurance to the family and encouragement to allow increased independence.

> *PT4: ñFamily thoughté (the client) was really really frail and then they didnôt even allow to do this and that and then I explain, no compared to the scaleé she can do better, based on all those things.ò*

Participants also reported that if a client performed poorly in the cognitive aspects of the EFS, it triggered them to communicate with a family member when getting a subjective history from the client. However, one participant felt that it is more appropriate to perform the EFS in a private setting away from family members, to create an environment for clients to answer honestly to sensitive questions surrounding components such as mood, continence and social support.

> *PT7: ñI think for me, involvement of their carer or their spouse more heavilyé especially the clock for me, it just opened up the fact that maybe there is something going on here and I would try to have someone else in the room to get that collateral kind of history.ò*

Participants highlighted their educational role in managing frailty. Participants felt that they have a role in educating the family, for example on strategies or supports that the client may require and an educational role with the client, both with clients who present as frail and also with clients who may present as non-frail or pre-frail. Participants considered the education of older adults on frailty to be an important role of physiotherapists in Primary Care as a means of frailty prevention and health promotion and felt that the EFS strengthened their ability to do so.

> *PT7: ñBut I guess itôs about prevention and kind of health promotion as well and thatôs part of our role as physiotherapists in primary care. A big part. So itôs prevention of the fall down the line or itôs prevention of the missed medicationé so those that are scoring lower, you can still give them nice information and advice andé put things in place that will prevent possibly a decline going forwards. And I think thatôs the essence of primary care in a sense.ò*

A stigma surrounding the term ófrailtyô was highlighted by many participants in the focus groups. Many participants did not feel comfortable discussing the result of the EFS with the client, particularly if the person was identified as frail. Participants reported that they would avoid using the term ófrailô when speaking to clients as they feel there is a negative association with the term.

> *PT5: ñI would have often shied away from the term frail. I sometimes think it can be very negative and sometimes a bit of stigma attached to it and certainly while in a medical profession, weôre all able to assess and know thereôs different grades to that, but I think sometimes putting that word out there can have a massive effect on the patient.ò*

Participants reported that clients did not generally ask about their result but may have asked for feedback on specific areas, such as their performance in the TUG test. Participants were more likely to discuss concerns regarding a clientôs frailty with a family member.

3.11.3 Cognition

Participants felt that using the EFS increased their awareness of cognition as an important aspect of frailty as cognition was not routinely assessed, as part of their practice with older adults before the implementation of the EFS. Participants highlighted the significance of ôThe Clock Testô in EFS and felt it was very beneficial to have an objective measure of cognition in their practice with older adults, as it provides an insight into the cognitive ability of their clients and can facilitate early identification of cognitive deficits.

> *PT7: ñIt might be the first step to identify that thereôs a cognitive impairment thereé I really did like that, because we werenôt gathering, collating that information before thisò.*

Participants used terms such as ósurprisingô and óinterestingô to describe the results of ôThe Clock Testô as often participants performed more poorly than they would have anticipated. Participants felt that ôThe Clock Testô identified cognitive deficits that they would not have picked up on otherwise or through assessing their orientation to person, place and time. Some participants highlighted that those who performed poorly in ôThe Clock Testôtended to be more frail overall.

> *PT3: ñThe clock was a revelationé people who I might have thought cognitively were actually quite good and then I was quite surprised to find that they werenôt that good, with the clock anyway.ò*

Participants reported that carrying out a cognitive test influenced their clinical practice, particularly in their prescription and implementation of a home exercise programme. Participants reported that in the case of clients that may have some underlying cognitive deficits as identified by the EFS, they would ensure to link with a carer or family member to assist the client to perform the exercise programme. Referral to a day-centre was also reported as a means of providing supervised exercise to clients with cognitive impairment.

> *PT7: ñIf I was giving an exercise programme, that I would try to go through it with the carers or that partner or spouse that they were on board as well, for carryoveré and I mightnôt have always done that I have to say, because the cognitive piece might not have been highlightedé So that definitely for me is a change in my practice.ò*

Participants also felt that cognitive deficits identified in the óClock Draw Testô could provide a potential explanation for poor adherence to the advice or exercises provided to the client and were therefore more likely to seek support for the client in this regard. Additionally, participants reported that they would simplify their intervention for clients identified with a potential cognitive impairment.

> *PT3: ñé a lot of people we assume maybe they mightnôt just be motivated but I suppose I thought certainly when they werenôt scoring well in the clockéI certainly kept things simpler and maybe not over tax them.ò*

The results from Part A and Part B of this study will be discussed in Chapter 4.

CHAPTER 4: DISCUSSION

4.1 Introduction

This chapter will discuss the results of both Part A and Part B of this study presented in chapter four. The results will be discussed with reference to current literature and the potential implications of the findings on the area of frailty identification and management. Consideration will also be given to the strengths and limitations of this study and recommendations for future research.

4.2 Prevalence of Frailty

Current international literature reports a varied prevalence of frailty of four percent to 59% among community-dwelling older adults, due to the spectrum of frailty screening tools used in epidemiological studies (Collard et al., 2012). A systematic review of the literature reported an overall weighted prevalence of frailty of 10.7% (95% CI = 10.5ï 10.9%; 21 studies; n=61,500) (Collard et al., 2012). The higher prevalence of frailty (43%, n=43 95%CI =33-53%) found in the cohort of this study of older adults referred to Primary Care physiotherapy, is perhaps not surprising. The reason for referral to physiotherapy was not captured in this study. However, as the participants were referred to physiotherapy, it is reasonable to presume that they required the service due to a form of physical disability or functional decline, which may influence their level of frailty. The measure used to identify frailty also influences the prevalence rate, with more global measures of frailty including psychological and social components in addition to physical measures, identifying a higher prevalence of frailty in the population (Collard et al., 2012; Roe et al., 2017). The EFS is a holistic biopsychosocial measure, therefore the high prevalence of frailty among the cohort in this study may be due to capturing additional non-physical contributors to frailty such as poor cognition, polypharmacy and low mood.

The prevalence of pre-frailty 26% (n=26) in this cohort referred to physiotherapy is lower than the general community-dwelling population reported by Collard et al. (2012) of 41.6% (95% CI = 41.2ï 42.0%; 15 studies; n=53,727). This suggests a concern that community-dwelling older adults may be referred to physiotherapy after a transition to a frail state has occurred. The importance of identifying older adults at the pre-frail stage is well documented in the

literature (Pialoux et al., 2012) and is also acknowledged by physiotherapists interviewed in this study. Increasing the awareness of HSCPs and older adults on frailty may trigger an earlier referral to services such as Primary Care physiotherapy and facilitate timely screening of frailty.

4.3 Cognitive and Functional Performance by Frailty Status

The performance of older adults in this study in the óClock Draw Testô and the TUG test was poor overall. Due to the setting of this study in a physiotherapy service, poor functional mobility and slow walking speed found among 88% (n=88) of this cohort is perhaps not surprising. The mean time to complete the TUG test among the general older adult population is 10.2 seconds (SD±3.1 seconds) (Pondal and del Ser., 2008). However, over half (52%) (n=52) of older adults in this study identified as frail took more than 20 seconds to complete the TUG, required physical assistance or were unable to complete it. The TUG test is a commonly used measure by physiotherapists and can be used in isolation to identify frailty (Clegg et al., 2013). However, it is less able to identify pre-frailty (Savva et al., 2013). Therefore, a multifactorial tool such as the EFS would improve physiotherapistsô ability to identify pre-frailty.

Participating physiotherapists in Part B of this study reported that objective cognitive screening was not part of their routine practice with older adults, prior to the implementation of the óClock Draw Testô as part of the EFS. Frailty is independently associated with cognitive decline and a greater level of frailty is associated with a faster rate of cognitive decline (Buchman et al., 2007; Boyle et al., 2010). The high proportion (69%, n=69) of the overall cohort of older adults in this study found to perform poorly in the óClock Draw Testô, indicates the opportunity for identification of potential cognitive impairment by Primary Care physiotherapists. This opportunity was also highlighted by physiotherapists in Part B of this study as cognitive screening tests are not currently routinely in use by HSCPs in Primary Care in North Dublin.

4.4 Association of Frailty with Age and Gender

Unlike other epidemiological research reviewed by Collard et al., (2012), which demonstrates a statistically higher prevalence of frailty in females (9.6%, 95%CI 9.2-10;) than males (5.2%, 95%CI 4.9-5.5), this study did not find an association between frailty and gender. An

association between frailty and age was also not found in the cohort of this study. In the literature of the general community-dwelling older adult population, frailty prevalence has been found to increase with increasing age, estimated at 4% in individuals ages 65-69 years, increasing to 26% in individuals over 85 years (Collard et al., 2012). Although the sample size of this study (n=100), may not be large enough to detect an association between frailty and age or gender, this result may be due to the characteristics of the specific population of older adults investigated in this study, such as the high prevalence of poor functional mobility and cognitive decline. Therefore, age and gender alone may not be suitable characteristics for the prioritisation of healthcare services such as physiotherapy and a more global approach such as through frailty screening may be more meaningful.

4.5 Frailty Screening in Primary Care

Focus group interviews were conducted among physiotherapists working in Primary Care in North Dublin, Ireland. Physiotherapistsô perspectives of the role of frailty screening in Primary Care and their experience of using a frailty screening tool, as part of their assessment of older adults, were captured.

Participants felt strongly that Primary Care is an appropriate setting to conduct frailty screening, mainly due to the potential for early identification of frailty. This view reflects current literature that advocates that Primary Care has the potential to allow earlier identification of patients who are at risk and who are moving in and out of the frailty continuum (Lacas and Rockwood, 2012). Participants expressed the importance of frailty screening at Primary Care level in order to help to maintain functional independence in the community and reduce the risk of adverse outcomes. The results of this study indicate that physiotherapists are aware of the potential negative outcomes associated with frailty such as, hospitalisation and institutionalisation, that are well documented in the literature (Clegg et al., 2013). Preventive medicine has been described as a core component of Primary Care (Lacas and Rockwood, 2012). Participants expressed the potential of their role in Primary Care regarding prevention and health promotion and the potential to identify older adults in a pre-frail state, was particularly valued by participants. The results of Part A of this study found that a large proportion of the majority (43%, n=43) of older adults referred to Primary Care physiotherapy were frail. This highlights the opportunity for Primary Care physiotherapists to facilitate

interventions and support for this cohort of older adults, to prevent the development of frailty. The ability of frailty screening to enhance the direction of pre-frail and frail older adults to preventative health interventions is supported by European policy-makers Gwyther et al. (2018).

Reducing the severity of frailty benefits older adults, their families and society, however to achieve this, frailty screening and management is required in clinical practice (Buckinx et al., 2015). Validated frailty screening tools help to identify older adults that may benefit from further assessment such as a CGA, or interventions that may prevent or reverse frailty (Romero-Ortuno, 2015). Participants felt that the utilisation of a frailty screening tool, namely the EFS, enhanced their ability to identify both frailty and pre-frailty among older adults. The EFS helped participants to identify óhiddenô components of frailty that they may not have noticed without the screening tool, in particular areas such as mood or cognition for clients that appeared physically well. Although the participants reported that they would have considered frailty at times in a subjective manner, implementing the EFS created a culture of frailty screening among physiotherapists as part of routine practice, whereby all older adults referred to physiotherapy were screened for frailty. This change in practice is in line with guidelines by the British Geriatric Society (2014), who recommend that older adults should be assessed for the possible presence of frailty during all encounters with health and social care professionals.

There were approximately 198,000 referrals to Primary Care physiotherapy across all age groups in Ireland in 2017 (HSE, 2017). Participants felt that due to the high level of contact with older adults as part of their practice in Primary Care, they were well placed to identify older adults that may be frail or be at risk of frailty. Roe et al. (2017) examined the healthcare utilisation of older adults (Ó65 years, n=3507) and found that 6.3% availed of physiotherapy in the previous 12 months, with physiotherapy being the third most utilised Primary Care service following GP and Public Health Nursing services. While this is quite a large proportion compared to other HSCPs in this study, perhaps there is scope for a higher utilisation of physiotherapy by older adults so that they can avail of interventions such as exercise to prevent the onset of frailty.

The sample of physiotherapists interviewed in the focus groups ranged in their level of experience working in Primary Care (0.5-25 years) and clinical grade (Staff Grade (n=3), Senior (n=5)). Therefore, the sample is representative of the variety in current structures and

demographics of Primary Care physiotherapists in Ireland. Although participants felt that frailty screening is important in Primary Care, it is necessary to note the barriers and facilitators to frailty screening reported by physiotherapists, to make it a sustainable part of routine clinical practice. Some participants reported that completing the EFS added time to the standard assessment, however, felt that the information obtained with the EFS was valuable and added to their care of the older adult sufficiently to justify the extra time required. Participants felt that as the EFS was a new addition to their practice, more experience using the tool would improve the time efficiency as well as having the EFS embedded into their standard assessment, rather than it being an additional tool. The practice of frailty screening by physiotherapists may be improved through the provision of education and training in frailty. To avoid the variance in experience on the assessment and management of frailty, formal practical guidance is required for all healthcare professionals (Gwyther et al., 2018).

4.6 Multidisciplinary Approach to Frailty Screening and Management

The need for a multidisciplinary approach to the identification and management of frailty is the second main theme that emerged from the focus groups interviews. Although participants felt that physiotherapists are well placed to screen for the presence of frailty, they felt that other disciplines in the PCT, such as PHNs and OTs, had an equal role in identifying frailty. All participants felt that the EFS strengthened their communication with other members of the PCT. This was due to the objective nature of the EFS providing a score of frailty that they could refer to and helped to trigger timely referrals to other disciplines, or further assessment in the form of a CGA. The use of objective frailty measures in Primary Care adopts a language of communication between Primary Care and CGA providers to enable equity of access (Romero-Ortuno, 2015). Of note, participants felt that it was important for other members of the PCT to be familiar with the EFS screening tool to further improve communication regarding the frailty score and therefore the management of the older adult. This suggests that, to maximise the effectiveness of frailty screening, the same tool should be implemented in the practice of all PCT members. The EFS is can be used by all healthcare professionals (Rolfson et al., 2006) and this research demonstrates the importance of this to physiotherapists working as part of a MDT in Primary Care.

The goal of identifying frailty in the Primary Care setting is to improve the quality of patient centred care provided to frail older adults (Lacas and Rockwood, 2012). European healthcare policymakers have been found to be receptive to screening for frailty, if it resulted in a proactive consultative programme of care and interventions (Gwyther et al., 2018). The need for a ópathway of careô for individuals identified with frailty was also reported by participants in this study. Participants felt strongly that frailty screening should only occur if there was a multidisciplinary integrated pathway to address the needs identified by the EFS.

There is a growing evidence base on the effectiveness of Primary Care based interventions to improve the frailty status of older adults, with multicomponent interventions demonstrating the best outcomes (Fougère, 2018). Exercise and nutrition programmes have been shown to be effective in the reversal of frailty and preventing the development pre-frailty to frailty, compared to usual care among community-dwelling older adults (Serra-Prat et al., 2017) (Kim et al., 2015) and a combined programme of exercise, nutrition and cognitive intervention has been shown to be more effective in reversing frailty among community-dwelling older adults compared to each intervention in isolation and remained so at 12-months ($p<0.05$)(OR= ī 0.92 CI = ī 1.21, ī 0.64) (Ng et al., 2015). Providing interventions that are effective in the long-term are important for both service users and policy-makers. The results of this study in conjunction with the current evidence base, highlights the importance of integrated multidisciplinary approach to frailty management.

Of note, some participants also acknowledged the process of frailty screening in the context of the wider healthcare services. Namely, the communication of frailty between Primary Care and the acute hospital setting. Participants felt that utilisation of the same screening tool in both the Primary Care and hospital setting was also important for integrated care, so that the frailty status of the individual could be re-evaluated and tracked, should they move between services. Currently there is no standard frailty measure shared between physiotherapists in the Primary Care and acute hospital setting. Due to the many frailty screening tools available and the lack of one standardised tool, streamlining the approach to identifying frailty is an ongoing challenge (Sternberg et al., 2011). However, this research illustrates the importance that physiotherapists place on having a standardised tool to aid in communication and the subsequent provision of services, for older adults at risk of or presenting with frailty.

4.7 Influence of Frailty Screening on Clinical Practice

As was the main aim of Part B of this study, the focus group interviews provided an insight into the influence of frailty screening, using the EFS, on the clinical practice of physiotherapists in Primary Care. Although overall, participants did not feel that the implementation of the EFS into their assessment influenced their physiotherapy intervention, they felt that the EFS influenced their global management of older adults. An enhanced holistic approach to frailty, the impact of cognitive screening and communication with the older adult and their family, were the most prominent areas that influenced the clinical practice of the participating physiotherapists.

As the EFS includes components on areas that physiotherapists mays not routinely screen, such as, nutrition, mood and continence, participants felt that they had a more holistic approach to older adults with its use. This finding also relates to the theme of ôMultidisciplinary Approachô, whereby participants felt that identifying these areas with the EFS, triggered communication with and referral to another discipline in the PCT. The EFS heightened the awareness of participants to the importance of these areas, in the management of frailty and demonstrates the importance of utilising a frailty screening tool that considers the biopsychosocial presentation of the older adult. Participants reported that the implementation of the EFS resulted in more discussion with older adults regarding Primary Care counselling services and social groups in the community. This finding reflects that of another qualitative study with Italian, Polish and British older adults, family care-givers and HSCPs (Shaw et al. (2017), which reported that all groups emphasised the psychosocial and social elements of frailty, suggesting that interventions incorporating social interaction and cognitive stimulation in addition to physical activity, would be more successful. Shaw et al. (2018) also refer to the need for integrated services, for such interventions to be feasible.

4.8 Limitations of the Study

- The prevalence of frailty using the EFS was collected in one urban CHO area only and therefore may not reflect the national prevalence, such as in more rural areas of Ireland.
- The sample size of Part A of the study was smaller than estimated due to a short data collection period.
- Some participants (n=17) were excluded from analysis in the study due to a lack of capacity to provide informed consent. Due to the influence of cognitive impairment on frailty, this exclusion may have resulted in an under estimation of the prevalence of frailty among the study cohort.
- The moderator for the focus group interviews with physiotherapists was a colleague of the participants which may have created assessor bias from the PI and performance bias from the participants. However, every effort was made to reduce this, for example the presence of a co-moderator, the PI keeping a reflective diary and keeping the groups homogenous in terms of clinical grade.

4.9 Recommendations for Future Research

- Exploration of the perception of PHNs and OTs on frailty screening following the implementation of the EFS.
- Exploration of physiotherapists and other HSCPs in the acute hospital setting on frailty screening following the implementation of the EFS.
- Investigate the effectiveness of a pathway of care for frailty in the Primary Care setting.
- Investigate the cost effectiveness of frailty screening by HSCPs in Primary Care.

CONCLUSION

In an ageing population, frailty is a growing concern for older adults and healthcare services both in Ireland and internationally due to the increased risk of adverse outcomes for frail older adults and the resulting increased pressure on healthcare services. Due to the multidimensional aspects of frailty, research in this area demonstrates that frailty is superior to age in identifying older people at risk of a decline in self-management ability. Therefore, the importance of frailty screening cannot be ignored. This research identified that a large proportion (43%, n=43) of older adults referred to the domiciliary physiotherapy service in Primary Care, North Dublin, CHO DNCC are frail and over a quarter (26%, n=26) are pre-frail. Poor cognition as demonstrated by the ôClock Draw Testõ and functional performance as demonstrated by the ôTUGõ test, were also highly prevalence in this study cohort. An estimation of the prevalence of non-frailty, pre-frailty and frailty referred to Primary Care physiotherapy is important to provide targeted interventions and pathways of care for community-dwelling older adults.

This study is also the first study in Ireland to explore the perspectives of physiotherapists in Primary Care on the acceptability of frailty screening in the routine care of older adults and the influence of frailty screening on the clinical practice of physiotherapists. The EFS was an acceptable and useful measure for physiotherapists. The results of this study demonstrate the importance of a holistic, multidisciplinary approach to frailty in Primary Care and the need for integration between HSCPs to improve the effectiveness of frailty screening. This study also highlights the impact of the introduction of a cognitive screening measure as part of the EFS and the benefit perceived by physiotherapists to their clinical practice.

The results of this study are valuable at organisational level both in Primary Care and the wider healthcare environment, for resource allocation and service development for community-dwelling older adults.

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APPENDICES

Appendix 1 ï RCSI Ethics Approval Letter

Royal College of Surgeons in Ireland
The Research Ethics Committee
121 St. Stephens Green, Dublin 2, Ireland.
Tel: +353 1 4022205 Email: recadmin@rcsi.ie

ROYAL COLLEGE OF SURGEONS IN IRELAND
COLÁISTE RÍOGA NA MÁINLEÁ IN ÉIRINN

Dr David Smith, Acting Chair
Dr Sinead Healy, Convenor

13th November 2017

Ms Melissa Boland
Physiotherapy Department,
Swords Health Centre,
Bridge St
Co. Dublin

Ethics Reference No:	REC1462
Project Title:	Frailty in Older Adults referred to Primary Care Physiotherapy and the influence of Frailty Screening on the Clinical Practice
Researchers Name (lead applicant & PI):	Ms Melissa Boland (Swords Health Centre)
Other Individuals Involved:	Ms Louise Keating and Dr Mary Walsh (both from RCSI, School Of Physiotherapy)

Dear Ms Boland,
Thank you for your Research Ethics Committee (REC) application. We are pleased to advise that ethical approval has been granted by the committee for this study.

This letter provides approval for data collection for the time requested in your application 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 20th November 2018.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.
- A final report will be submitted to the REC upon completion of the project.

We wish you all the best with your research.

Yours sincerely,

PP Dr Sinead Healy (Convenor)

Dr David Smith (Acting Chair)

Appendix 2 ï HSE Primary Care Research Committee Approval

Dear Melissa,

Research Application - ñThe Prevalence of Frailty in Older Adults Referred to Primary Care Physiotherapy and the Influence of Frailty Screening on the Clinical Practice of Physiotherapistsò

I wish to confirm that the Primary Care Research Committee considered your research application at our meeting of 5/2/18, the following reflects the discussion and decision:

Decision: Approved.

Please note that approval is granted by the PCRC, however due to service and staff demands participation at front line service level is at the discretion of Head of Service Primary Care and local management. I am copying this decision to Mr. Des OõFlynn Head of Service Primary Care, CHO 9 in this regard.

The PCRC protocol requires that the Primary Care Research Committee will have sight of the final draft report prior to publication and that their opinion will be considered in relation to the publication, in particular items that may have a bearing on the HSEôs reputation.

Kind Regards

Muriel Farrell

Chair, Primary Care Research Committee

Muriel Farrell |General Manager |Office of Brian Murphy| Head of Planning, Performance & Programme Management & Interim Head of Operations

Primary Care Division | HSE |Swords Business Campus | Balheary Road Swords Co. Dublin | K67D8HO |(01 8908742 I 086 6055821 |*muriel.farrell@hse.ie

Appendix 3 ï Physiotherapy Manager Approval Letter

Feidhmeannas Seirbhíse Sláinte
Health Service Executive

Health Service Executive
Community Healthcare Organisation – Area 9
Dublin North City and County
Physiotherapy Department
Community Services HQ
Fujitsu House, Unit 100, 1st Floor
Lakeshore Drive,
Airside Business Park
Swords
Co. Dublin

National Primary Care Research Committee

RE: Research Proposal for MSc in Neurology and Gerontology - Physiotherapy

I confirm my approval and support for the proposed research by Melissa Boland as part of an MSc in Neurology and Gerontology with RCSI entitled *"The Prevalence of Frailty in Older Adults referred to Primary Care Physiotherapy and the influence of Frailty Screening on the Clinical Practice of Physiotherapists".*

I am happy that this work is within the scope of practice of physiotherapists working within the Primary Care setting and feel the work will have beneficial effect in the development of appropriate preventative and treatment pathways for this cohort of patients. Furthermore, it is imperative that work of this nature is supported in order that we may focus on the preventative components of healthcare.

Yours Sincerely,

Deirdre Earle

_____

Deirdre Earle
Physiotherapy Manager
Community Healthcare Organisation Dublin North City & County (CHO DNCC)
Telephone: (01) 895 3775 | Mobile: 086 6088825
Fax: (01) 895 3792
E-mail: deirdre.earle@hse.ie

Appendix 4 ï Gatekeeper Agreement Form

ROYAL COLLEGE OF SURGEONS IN IRELAND
COLÁISTE RÍOGA NA MÁINLEÁ IN ÉIRINN

Gatekeeper Agreement Form

Title of Study: The Prevalence of Frailty in Older Adults referred to Primary Care Physiotherapy and the Influence of Frailty Screening on the Clinical Practice of Physiotherapists

Principal Investigator

Melissa Boland, Physiotherapist, Primary Care North Dublin CHO9.

Research Supervisors

Louise Keating, School of Physiotherapy, Royal College of Surgeons in Ireland.

Tel: (01) 402-2259 Email: lkeating@rcsi.ie

Dr Mary Walsh, School of Physiotherapy, Royal College of Surgeons in Ireland.

I accept responsibility for providing potential participants with the Participant Information Leaflet and Informed Consent Form related to the study stated above. I agree to code the data of participants with a Unique Identifying Number (UIN).

Signature: _____

Name (Block Capitals): _____

Date: _____

Appendix 5 ï Participant Information Leaflet (Part A)

Participant Information Leaflet

Principal investigator's name: Ms. Melissa Boland (MISCP)

Principal investigator's title: Staff Grade Physiotherapist (HSE)

Co-investigator's name: Ms. Louise Keating

Co-investigator's title: Lecturer, School of Physiotherapy RCSI

Co-investigator's name: Dr. Mary Walsh (PhD)

Co-investigator's title: Honorary Lecturer, School of Physiotherapy RCSI

Study Title: The Prevalence of Frailty in Older Adults referred to Primary Care Physiotherapy and the influence of Frailty Screening on the Clinical Practice of Physiotherapists

You are being invited to take part in a research study carried out by Melissa Boland, a physiotherapist in HSE Community Healthcare Organisation 9 (North Dublin). 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, friends or GP (doctor). Take time to ask questions – do not feel rushed or 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 should only consent when you feel that you understand what is being asked of you and you have had enough time to think about your decision.

You do not have to take part in this study and a decision not to take part will not affect your current or future medical care.

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 do not have to give us a reason. If you do opt out, it will not affect the quality of treatment you get in the future.

Why is this study being done? The purpose of this study, is to assess how many people referred for physiotherapy in the community are frail or at risk of becoming frail.

Why am I being asked to take part? You have been asked to take part as you are aged 65 years or older and have been referred for community physiotherapy.

Who is organising this study? Melissa Boland, a physiotherapist in HSE Community Healthcare Organisation 9 (North Dublin), is carrying out this study as part of a Masters project towards an MSc in Neurology and Gerontology from the Royal College of Surgeons in Ireland (RCSI).

How will this study be carried out? At your first physiotherapy appointment in your home, you will be invited to participate in the study by your physiotherapist. All people aged 65 years and older living in the HSE North Dublin area, undergoing a physiotherapy assessment at home before March 2018 will be asked to participate in this study. You will be asked if some of your details and results of your physiotherapy assessment can be used for this study.

What will happen if I agree to take part in this study? As part of your physiotherapy assessment you will be asked some details about your health and social support. You will also be asked to do a brief test to check your cognition and walking. This is all part of a normal physiotherapy assessment.

Is the study confidential? When you enter the study, you will be assigned a unique number and only this number will be used to identify you on study paper or computer files. Your name will not be published and will not be disclosed to anyone else. All information will be stored securely and only accessible to the persons named overleaf conducting the study. Your data collected as part of your physiotherapy assessment may be shared, as required, with your GP and/or professional whom referred you for physiotherapy. Computerised information will be kept securely for 5 years and then destroyed in line with RCSI research policy.

What are the benefits? This study is aiming to establish a profile of frailty of older adults referred to community physiotherapy. This may help to improve physiotherapy services in the future.

What are the risks? There are no risks to participating in the study.

Permission: Ethical Approval for this project has been granted by the Royal College of Surgeons' in Ireland Research Ethics committee and permission has been granted by the HSE Primary Care Research Committee.

Where can I get further information?

You can get further information about this study by contacting the Principal Investigator (Melissa Boland) or her Research Supervisors (Ms. Louise Keating and Dr. Mary Walsh). Their contact details are provided below.

If you wish to withdraw from the study, you can do so by contacting your treating physiotherapist, or by contacting the Principal Investigator or Research Supervisors.

Principal Investigator

Melissa Boland, Physiotherapist, HSE Primary Care North Dublin CHO9.

Tel: (01) 8907178 Email: melissa.boland@hse.ie

Research Supervisors

Louise Keating, School of Physiotherapy, Royal College of Surgeons in Ireland.

Tel: (01) 402-2259 Email: lkeating@rcsi.ie

Appendix 6 ï Informed Consent Form (Part A)

INFORMED CONSENT FORM

ROYAL COLLEGE OF SURGEONS IN IRELAND
COLÁISTE RÍOGA NA MÁINLEÁ IN ÉIRINN

Title: The Prevalence of Frailty in Older Adults referred to Primary Care Physiotherapy and the influence of Frailty Screening on the Clinical Practice of Physiotherapists

*I have read and understood the **Information Leaflet** about this research project. 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.*	***Yes***	***No***
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 current or future medical care.	***Yes***	***No***
I give permission for my data to be shared, if required, with my GP and/or professional whom referred me for physiotherapy.	***Yes***	***No***
I have been given a copy of the Information Leaflet and this completed consent form for my records.	***Yes***	***No***

Participant Name (Block Capitals): _____

Participant Signature: _____ ***Date***: _____

To be completed by the Principal Investigator or his/her nominee.

I the undersigned have taken the time to fully explain to the above patient the nature and purpose of this study in a manner that 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.

Name & Qualifications (Block Capitals): _____

Signature: _____ ***Date:*** _____

3 copies to be made: one for patient, one for PI and one for practice records (if relevant)

Principal Investigator

Melissa Boland, Physiotherapist, Primary Care North Dublin CHO9.

Research Supervisors

Louise Keating, School of Physiotherapy, Royal College of Surgeons in Ireland.

Tel: (01) 402-2259 Email: lkeating@rcsi.ie

Appendix 7 ï Demographic Information and Edmonton Frail Scale

UIN:_____ Date: _____

Demographic Information

(please complete fully)

Informed Consent completed & enclosed: Yes □ No □

Age (years): _____ Gender: Male □ Female □

Living Arrangement:

Alone □ With Spouse □ With Family □ Other □ (please specify) _____

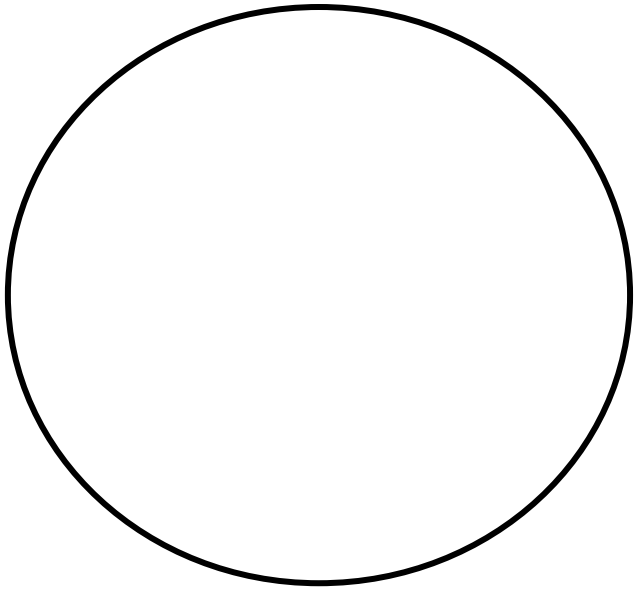
Home Care Package: Yes □ No □

Discipline of Referrer:

GP □ PHN / RGN □ Primary Care OT □ Acute Hospital □

Other □ (please specify) _____

Clock Test (Domain 1 Edmonton Frail Scale)



UIN:_____ Date: _____

Edmonton Frail Scale

Frailty domain	Item	0 point	1 point	2 points
Cognition	Please imagine that this pre-drawn circle is a clock. I would like you to place the numbers in the correct positions then place the hands to indicate a time of 'ten after eleven'	No errors	Minor spacing errors	Other errors
General health status	In the past year, how many times have you been admitted to a hospital?	0	1–2	≥2
	In general, how would you describe your health?	'Excellent', 'Very good', 'Good'	'Fair'	'Poor'
Functional independence	With how many of the following activities do you require help? (meal preparation, shopping, transportation, telephone, housekeeping, laundry, managing money, taking medications)	0–1	2–4	5–8
Social support	When you need help, can you count on someone who is willing and able to meet your needs?	Always	Sometimes	Never
Medication use	Do you use five or more different prescription medications on a regular basis?	No	Yes	
	At times, do you forget to take your prescription medications?	No	Yes	
Nutrition	Have you recently lost weight such that your clothing has become looser?	No	Yes	
Mood	Do you often feel sad or depressed?	No	Yes	
Continence	Do you have a problem with losing control of urine when you don't want to?	No	Yes	
Functional performance	I would like you to sit in this chair with your back and arms resting. Then, when I say 'GO', please stand up and walk at a safe and comfortable pace to the mark on the floor (approximately 3 m away), return to the chair and sit down'	0–10 s	11–20 s	One of : >20 s , or patient unwilling , or requires assistance
Totals	Final score is the sum of column totals			

Scoring

0 – 5	Not Frail
6 – 7	Vulnerable
8 – 9	Mild Frailty
10 – 11	Moderate Frailty
12 – 17	Severe Frailty
Total	/17

Appendix 8 ï Participant Information Leaflet (Part B)

Participant Information Leaflet

Principal investigator's name: Ms. Melissa Boland (MISCP)

Principal investigator's title: Staff Grade Physiotherapist (HSE)

Co-investigator's name: Ms. Louise Keating (SMISCP) (PhD Candidate)

Co-investigator's title: Lecturer, School of Physiotherapy RCSI

Co-investigator's name: Dr. Mary Walsh (PhD)

Co-investigator's title: Honorary Lecturer, School of Physiotherapy RCSI

Study Title: The Prevalence of Frailty in Older Adults referred to Primary Care Physiotherapy and the influence of Frailty Screening on the Clinical Practice of Physiotherapists

You are being invited to take part in a research study carried out by Melissa Boland, a physiotherapist in HSE Community Healthcare Organisation 9 (North Dublin). Before you decide whether or not you wish to take part, you should read the information provided below carefully. Take time to ask questions – do not feel rushed or 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 should only consent when you feel that you understand what is being asked of you and you have had enough time to think about your decision.

You do not have to take part in this study and a decision not to take part will not affect you personally or your current or future employment. 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 do not have to give us a reason. If you do opt out, it will not have any consequence.

Why is this study being done? The purpose of this study, is to explore the perspectives of physiotherapists on frailty screening in Primary Care and how frailty screening using the Edmonton Frail Scale influences their clinical practice.

Why am I being asked to take part? You have been invited to take part as you are a physiotherapist working in the physiotherapy domiciliary service in North Dublin, Community Healthcare Organisation 9 and have used the Edmonton Frail Scale as part of your physiotherapy assessment of older adults.

Who is organising this study? Melissa Boland, a physiotherapist in HSE Community Healthcare Organisation 9 (North Dublin), is carrying out this study as part of a Masters project towards an MSc in Neurology and Gerontology from the Royal College of Surgeons in Ireland (RCSI).

How will this study be carried out? This study will be carried out in the form of focus group interviews, with a group size of 6 to 8 people. The focus group interview will last approximately one hour. The focus group interview will occur during your core working hours in a convenient location, as agreed with your physiotherapy manager.

What will happen if I agree to take part in this study? The focus group will be led by the Principal Investigator of this study who will ask questions regarding your opinion on frailty screening and the influence of frailty screening on your clinical practice with older adults. You will be invited to answer the questions with your opinion and to engage in the group discussion. The focus group interview will be audio-recorded and subsequently transcribed electronically by the Principal Investigator. A co-moderator will also take some notes during the interview. You will have an opportunity to review the transcripts to ensure that it reflects your intended opinion or comment.

Will there be any Audio or Video Recording? The focus group interview will be audio recorded. The audio recordings will be downloaded, encrypted and stored in a secure password protected folder on the RCSI network. The electronic transcriptions of the audio recordings will also be stored in a secure password protected folder on the RCSI network. Only the Principal Investigator and Research Supervisors will have access to this folder.

Is the study confidential? For data analysis and reporting of the study, you will be assigned a unique number and only this number will be used to identify you on study paper or computer files. Your name will not be published and will not be disclosed to anyone else. All information will be stored securely and only accessible to the persons named overleaf conducting the study. Computerised information will be kept securely for 5 years and then destroyed in line with RCSI research policy.

What are the benefits? This study is hoping to explore and gain an understanding of physiotherapists perspectives on the implementation of the Edmonton Frail Scale into the physiotherapy assessment for older adults and the potential influence on clinical practice. This may help to improve physiotherapy services for community-dwelling older adults.

What are the risks? There are no risks to participating in the study.

Permission: Ethical Approval has been granted by the Royal College of Surgeons' in Ireland Research Ethics Committee and permission has been granted by the HSE Primary Care Research Committee.

Where can I get further information?

You can get further information about this study by contacting the Principal Investigator (Melissa Boland) or her Research Supervisors (Ms. Louise Keating and Dr. Mary Walsh). Their contact details are provided below.

If you wish to withdraw from the study, you can do so by contacting your treating physiotherapist, or by contacting the Principal Investigator or Research Supervisors.

Principal Investigator

Melissa Boland, Physiotherapist, HSE Primary Care North Dublin CHO9.

Tel: (01) 8907178 Email: melissa.boland@hse.ie

Research Supervisors

Louise Keating, School of Physiotherapy, Royal College of Surgeons in Ireland.

Tel: (01) 402-2259 Email: lkeating@rcsi.ie

Dr Mary Walsh, School of Physiotherapy, Royal College of Surgeons in Ireland.

Appendix 9 ï Informed Consent Form (Part B)

INFORMED CONSENT FORM

Title: The Prevalence of Frailty in Older Adults referred to Primary Care Physiotherapy and the influence of Frailty Screening on the Clinical Practice of Physiotherapists

*I have read and understood the **Information Leaflet** about this research project. 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.*	***Yes***	***No***
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 current or future medical care.	***Yes***	***No***
I understand that an audio/and or video recording will be made and that I have the right to review and edit any transcripts to which I have contributed.	***Yes***	***No***
I have been given a copy of the Information Leaflet and this completed consent form for my records.	***Yes***	***No***

Participant Name (Block Capitals): _____

Participant Signature: _____ ***Date***: _____

To be completed by the Principal Investigator or his/her nominee.

I the undersigned have taken the time to fully explain to the above patient the nature and purpose of this study in a manner that 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.

Name & Qualifications (Block Capitals): _____

Signature: _____ ***Date:*** _____

2 copies to be made: one for participant and one for PI

Principal Investigator

Melissa Boland, Physiotherapist, Primary Care North Dublin CHO9.

Research Supervisors

Louise Keating, School of Physiotherapy, Royal College of Surgeons in Ireland.

Tel: (01) 402-2259 Email: lkeating@rcsi.ie

Appendix 10 ï Focus Group Interview Question Guide

Focus Group Interview Question Guide

The group moderator (PI) will begin with an introduction to the format of the focus group interview and remind participants that the interview will be audio-recorded. The moderator will introduce the co-moderator and their role. Participants will be invited to introduce themselves by stating their name, role and number of years of clinical experience working with older people in the Primary Care setting. Interview questions will be guided in the following order of topics. If the discussion develops into another related area by participants, this will be allowed, then the moderator will revert to the guide when appropriate to do so.

1) Frailty Screening

Do you frailty screening is relevant of in the Primary Care setting? What is your opinion on the role of physiotherapists in frailty screening?

2) Implementation

What is your opinion on incorporating the Edmonton Frail Scale into your physiotherapy assessment? How acceptable did you find implementing the Edmonton Frail Scale into your clinical practice in Primary Care?

- Did you experience any problems with implementing the tool? - What did you like about using it? What did you dislike about using it?

3) Identifying Frailty

What was your experience of identifying frailty with the implementation of the Edmonton Frail Scale into your physiotherapy assessment of older adults?

- Was there anything that surprised you? Can you give me an example of this?

4) Influence of Frailty Screening on Clinical Practice

Did the information obtained with the Edmonton Frail Scale inform and influence your clinical decision making regarding the clientôs care?

- Prompt: can you give me an example of this?

Did knowing the frailty status of the client influence your clinical practice?

- How did it influence your physiotherapy treatment plan? - How did it influence your multidisciplinary working? (with the Primary Care Team) and (with wider health and social care services)?

5) Overview

Is there anything else you would like to add on the topics discussed?

The moderator will thank the participants and the co-moderator at the end of the focus group interview.