

The landscape of frailty: Current perceptions of and approaches to frailty in undergraduate medical education.

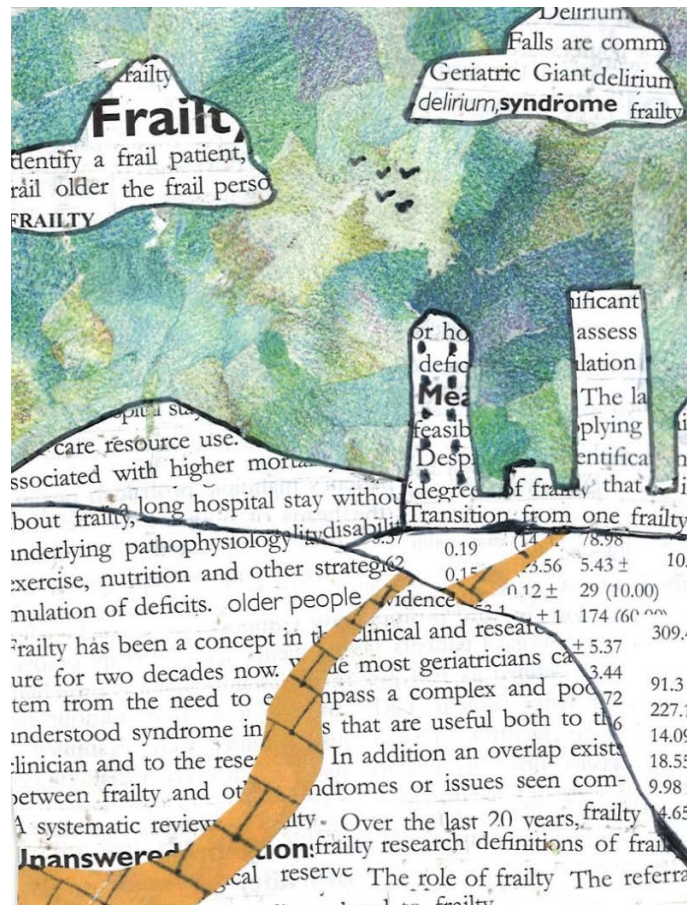


Figure 0.1. The lay of the land: the features or characteristics of a current situation or state of affairs (Researcher's collage)

Rebecca Winter, June 2021

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Abstract

Background: Frailty has important implications for the individual, for society and for how doctors are trained. UK Medical schools are now required to teach and assess medical students about frailty, yet the term is open to interpretation and it remains unclear what teaching or assessing frailty means in practice.

Aim: To describe the current landscape of frailty in undergraduate medical education, specifically how frailty is perceived, discussed and approached in literature, at an institutional level, and within learning environments. To explore how these understandings may influence what is being taught and learnt about frailty.

Methods: This thesis combines visual research methods with a scoping review, a national survey of UK medical schools, and responsive interviews involving 22 clinical teachers and medical students, analysed through reflexive thematic analysis.

Results: There is widespread variation as to how frailty is perceived, approached and discussed in undergraduate medical education. Areas of consensus exist as to what should be included as core topics including the concept of frailty, Comprehensive Geriatric Assessment and roles of the multidisciplinary team. Across all methods, it was found that frailty was discussed as an adjective. This appears to lead to a binary and colloquial understanding of frailty, which has implications for practice; frailty is recognised through clinical gestalt; frailty is one-way towards death; a frailty status determines (and limits) clinical decisions; frailty is perceived as the responsibility of geriatricians; frailty as a term is problematic. Medical students have limited scope of reference to support their clinical reasoning about frailty; they do not 'see' frailty outside the context of geriatric medicine; they have little cues to base their diagnosis; are uncertain how to translate decision making into action; and are conflicted in the use of the term clinically and in educational sessions.

Conclusion: The context in which a patient with frailty is seen and the use of frailty as an adjective appear to be key as to what medical students learn about frailty. Recommendations include; frailty should be explicitly discussed and signposted to students; patients with frailty should be involved in the planning and delivery of education; clinical reasoning about frailty may be enhanced through reflection on action; training and assessments should represent the complexity of reality; students should learn about frailty as a spectrum, across the context of primary and secondary care, potentially through longitudinal integrated clerkships.

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Abbreviations and Acronyms

AMED	Allied and Complementary Medicine Database
BGS	British Geriatrics Society
BSMS	Brighton and Sussex Medical School
BSUH	Brighton and Sussex University Hospital
CCF	Congestive Cardiac Failure
CCT	Certificate of Completion of Training
CFS	Clinical Frailty Scale
CGA	Comprehensive Geriatric Assessment
CINAHL	Cumulative Index of Nursing and Allied Health Literature
COPD	Chronic Obstructive Pulmonary Disease
COREQ	Consolidated Criteria for Reporting Qualitative Research
Covid-19	Corona Virus-19
ClinR	Clinical Reasoning
CR	Critical Realism
CTs	Clinical teachers
DNAR	Do Not Attempt Resuscitation
DOLs	Deprivation of Liberties Safeguards
eFI	Electronic Frailty Index
Embase	Excerpta Medica Database
ERIC	Education Resources Information Centre
F1	Foundation Year One Doctor
GABS	Geriatric assessment blood tests
GMC	General Medical Council

GPs	General Practitioners
HCPs	Health Care Professionals
HDU	High Dependency Unit
ITU	Intensive Therapy Unit
IPE	Interprofessional Education
JBI	Joanna Briggs Institute
LOs	Learning Outcomes
LICs	Longitudinal Integrated Clerkships
M.D.	Medical Doctorate
MDT	Multidisciplinary Team
MEL	Medical Education Lead
MET	Medical Emergency Team
MEDLINE	Medical Literature Analysis and Retrieval System Online
MLA	Medical Licencing Assessment
MSC	Medical Schools Council
MSs	Medical students
NEWS	National Early Warning Score
NHS	National Health Service
OfG	Outcomes for Graduates
OSCEs	Objective Structured Clinical Examinations
OSF	Open Science Framework
OSLERs	Objective Structured Long Examination Records
PRISMA-7	Program of Research on Integration of Services for the Maintenance of Autonomy- 7

PRISMA-ScR	Preferred Reporting Items for Systematic Reviews and Meta-Analyses - Scoping Review Checklist
RGEC	Research Governance and Ethics Committee
RTA	Reflexive Thematic Analysis
SBA	Single Best Answer
SHO	Senior house officer
TA	Thematic Analysis
TAVI	Transcatheter aortic valve implantation
TF	Teaching Fellow
TUGT	Timed-up-and-go-test
UGME	Undergraduate medical education
UK	United Kingdom
UTI	Urinary tract infection
USA	United States of America
WPBAs	Workplace Based Assessments
WR	Ward round

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To all the participants in this study, frailty is not an easy subject to talk about, and you gave your time and thoughts so generously – thank you.

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My wonderful family, who all clubbed together in tea making and looking after the little ones whilst I laboured away at a keyboard. Rem, for all the support and open ears, but mostly for the way that you too became so passionate about frailty and us all getting it right. Mum, I am where I am solely because of the encouragement and support you have given me my whole life. You've always made me believe that if you reach for the stars you can catch them. And last but not least, Arthur and Liliana – I love you and I am grateful that when we were together, I could only think of you.

Declaration

I declare that the research contained in this thesis, unless otherwise formally indicated within this text, is the original work of the author. The thesis has not been previously submitted to this or any other university for a degree, and does not incorporate any material already submitted for a degree.

Signed:

Dated:

Prologue

Consider a student on clinical rotation who encounters a patient with advanced frailty that has developed pneumonia. This patient cannot provide a detailed history due to his acute confusion. He is not coughing and his fever is moderate. He cannot easily follow instructions and cannot sit up for long, so auscultating his lungs in the structured way the student was trained is not possible. This patient has only vague markings on the chest X-Ray to support the diagnosis, not the typical X-Ray findings taught. The student thinks to herself: "What have you been teaching me about pneumonia if most of it is not true in the group of patients I will regularly see?"

By contrast, those students appropriately trained to look after patients with frailty will be more readily able to recognise that the patient has delirium and immobility. They would be able to gather a collateral history, understand that conditions can present atypically and formulate appropriate differential diagnoses, taking a systematic approach. They are able to create a problem list and a pragmatic course of action, working alongside the multidisciplinary team and taking into account the patient's wishes and best interests. Although they will know all this as if by reflex, they will also be aware of when they too needed to be actively taught these skills; they will know that not being taught this costs lives and life lived at home. Understanding frailty is the future of modern medicine.

Inspired by an extract from Samuel Searle and Kenneth Rockwood, 2018, *The Lancet*¹

Chapter 1. Introduction

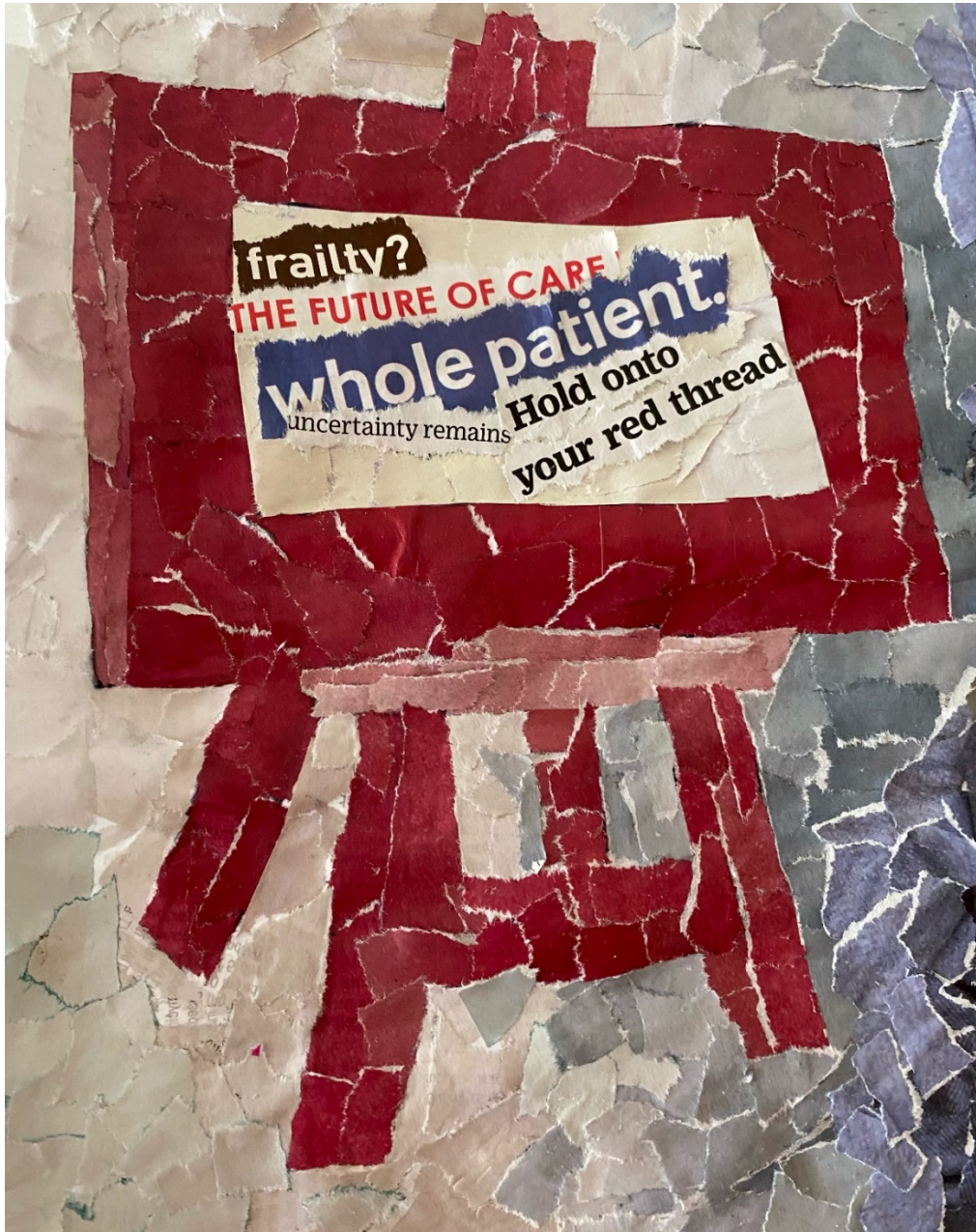


Figure 1.1. Setting the scene: To provide information that is needed to understand what comes next (Researcher's collage)^a

^aThe use of collages within this thesis is described in Section 1.8

1.1 Chapter overview

This chapter introduces the topics of frailty, undergraduate medical education (UGME) and frailty in UGME. The chapter then provides the rationale for the thesis, the thesis aims, and introduces the theoretical stance, methodology and the thesis structure.

1.2 Introduction to frailty

The concept of frailty was introduced in literature two decades ago to advance understanding of the heterogeneous health status of older persons. Since then, this area of research has grown exponentially². As the population of older adults rises globally, frailty is gaining increased international attention³. Broadly speaking, the medical concept of frailty describes a state of vulnerability to adverse outcomes, resulting from a cumulative decline in reserve and function across multiple physiologic systems throughout a lifetime⁴. This cumulative decline depletes homeostatic reserves until a minor stress event triggers a disproportionate change in an individual's health status, often from independent to dependent, mobile to immobile, lucid to delirious⁵. A minor stress event may include infection, a change in medication or change in environment. Frailty has significant implications for individuals, clinical practice and public health and predicts adverse outcomes for individuals in terms of falls, disability, long-term care, hospitalisation and death^{3,5-7}.

Frailty develops as a consequence of age-related decline in multiple physiological systems⁵ and the prevalence increases with chronological age⁶. However, although frailty more closely relates to the biological age of individuals,⁸ ageing and frailty are not equivalent, nor is frailty an inevitable feature of later life⁷. It is estimated that a quarter to a half of people over 85 years have frailty, which means that up to three quarters of people over 85 years might not⁵.

When considering frailty, it is important early on to understand the difference between frailty, multiple long term conditions (so called multi-morbidity) and disability⁹. Many people with frailty also have disability but people with disability may not have frailty⁹. There is a bidirectional relationship, as frailty may in fact be the cause of disability in some patients and the consequence in others. Frailty and multi-morbidity have a similar bidirectional relationship and in a recent meta-analysis, the prevalence of multi-morbidity in individuals with frailty was found to be 72% and the prevalence of frailty among individuals with multi-morbidity was 16%¹⁰.

1.2.1 The main theoretical models of frailty

There is currently no agreed gold standard objective measurement of frailty⁸, but instead there are two principal models that have led the way in frailty research: the frailty phenotype⁶ and the frailty index⁷. Rather than being competitive or mutually exclusive, both approaches are complementary and despite their different approaches in measuring frailty, the models demonstrate statistical convergence in the identification and recognition of adverse outcomes of frailty^{5,8,11,12}.

In 2001, Fried and colleagues used data from the Cardiovascular Health Study to operationalise a phenotype for frailty based on the presence of five criteria that mark underlying multisystem dysfunction: unintentional weight loss of more than 5% in a year, weakness (measured through grip strength in the lowest 20% at baseline), self-reported exhaustion, slowed walking speed and low physical activity⁶. Generally, people with three or more of the criteria are considered to have frailty but this approach defines two additional states where those with no criteria are considered 'robust' and those with one or two of Fried's criteria are described as 'pre-frail, which describes a group at high risk of progressing to frailty⁶. The phenotype model allows for a degree of standardisation in measurement and is commonly used in research¹³. However, the model has been criticised due to its lack of applicability in clinical practice (requiring the inclusion of grip strength and walking speed)¹¹ but also on the

basis that it is unidimensional and focuses heavily on physical characteristics, neglecting social and psychological elements, including mood and cognition⁵.











In 2005, Rockwood, Mitnitski and colleagues developed a cumulative deficit model of frailty⁷. They described that frailty is a multidimensional health state based on an accumulation of deficits across a range of physical, psychological and functional domains. Deficits are widely defined as symptoms, signs, diseases and disabilities that accumulate with age¹⁴. A list of 70 deficits (see Figure 1.2) was created to form the Canadian Study of Health and Aging Frailty Index, whereby a greater number of deficits that an individual has confers a greater degree of frailty⁷. Of the individual deficits used in calculation, no deficit carries an imminent threat for mortality (for example hearing impairment and sleep changes) but the deficits cumulatively contribute to an increased risk of death, consistent with the threat of impending homeostatic failure that is essential to the frailty concept⁵.

Figure 1.2. List of variables used by the Canadian study of Health and Ageing to construct the frailty index (Reproduced from Rockwood et al, 2005⁷)

- | | | |
|--|---|---|
| <ul style="list-style-type: none"> • Changes in everyday activities • Head and neck problems • Poor muscle tone in neck • Bradykinesia, facial • Problems getting dressed • Problems with bathing • Problems carrying out personal grooming • Urinary incontinence • Toileting problems • Bulk difficulties • Rectal problems • Gastrointestinal problems • Problems cooking • Sucking problems • Problems going out alone • Impaired mobility • Musculoskeletal problems • Bradykinesia of the limbs • Poor muscle tone in limbs • Poor limb coordination • Poor coordination, trunk • Poor standing posture • Irregular gait pattern • Falls | <ul style="list-style-type: none"> • Mood problems • Feeling sad, blue, depressed • History of depressed mood • Tiredness all the time • Depression (clinical impression) • Sleep changes • Restlessness • Memory changes • Short-term memory impairment • Long-term memory impairment • Changes in general mental functioning • Onset of cognitive symptoms • Clouding or delirium • Paranoid features • History relevant to cognitive impairment or loss • Family history relevant to cognitive impairment or loss • Impaired vibration • Tremor at rest • Postural tremor • Intention tremor • History of Parkinson's disease • Family history of degenerative disease | <ul style="list-style-type: none"> • Seizures, partial complex • Seizures, generalized • Syncope or blackouts • Headache • Cerebrovascular problems • History of stroke • History of diabetes mellitus • Arterial hypertension • Peripheral pulses • Cardiac problems • Myocardial infarction • Arrhythmia • Congestive heart failure • Lung problems • Respiratory problems • History of thyroid disease • Thyroid problems • Skin problems • Malignant disease • Breast problems • Abdominal problems • Presence of snout reflex • Presence of the palmomental reflex • Other medical history |
|--|---|---|

From this data, Rockwood and colleagues developed the Clinical Frailty Scale (CFS), which was modified to a 9-point ordinal scale in 2007¹⁵. The scale was updated in late 2020 with changes to the nomenclature of the categories, for example ‘mildly frail’ became ‘living with mild frailty’¹⁶, as can be seen in Figure 1.3 (reproduced with permission from Dalhousie University)¹⁵. Using the CFS, healthcare professionals (HCPs) consider information about cognition, activity and function to assign a frailty level on a spectrum from one (very fit) through to nine (terminally ill)⁷.

Figure 1.3. Clinical Frailty Scale (Reproduced from Dalhousie University, 2021¹⁵)

CLINICAL FRAILITY SCALE		
	1	VERY FIT People who are robust, active, energetic and motivated. They tend to exercise regularly and are among the fittest for their age.
	2	FIT People who have no active disease symptoms but are less fit than category 1. Often, they exercise or are very active occasionally, e.g., seasonally.
	3	MANAGING WELL People whose medical problems are well controlled , even if occasionally symptomatic, but often are not regularly active beyond routine walking.
	4	LIVING WITH VERY MILD FRAILITY Previously “vulnerable,” this category marks early transition from complete independence. While not dependent on others for daily help, often symptoms limit activities . A common complaint is being “slowed up” and/or being tired during the day.
	5	LIVING WITH MILD FRAILITY People who often have more evident slowing , and need help with high order instrumental activities of daily living (finances, transportation, heavy housework). Typically, mild frailty progressively impairs shopping and walking outside alone, meal preparation, medications and begins to restrict light housework.
	6	LIVING WITH MODERATE FRAILITY People who need help with all outside activities and with keeping house . Inside, they often have problems with stairs and need help with bathing and might need minimal assistance (cuing, standby) with dressing.
	7	LIVING WITH SEVERE FRAILITY Completely dependent for personal care , from whatever cause (physical or cognitive). Even so, they seem stable and not at high risk of dying (within ~6 months).
	8	LIVING WITH VERY SEVERE FRAILITY Completely dependent for personal care and approaching end of life. Typically, they could not recover even from a minor illness.
	9	TERMINALLY ILL Approaching the end of life. This category applies to people with a life expectancy <6 months , who are not otherwise living with severe frailty . (Many terminally ill people can still exercise until very close to death.)
SCORING FRAILITY IN PEOPLE WITH DEMENTIA		
The degree of frailty generally corresponds to the degree of dementia. Common symptoms in mild dementia include forgetting the details of a recent event, though still remembering the event itself, repeating the same question/story and social withdrawal.		In moderate dementia , recent memory is very impaired, even though they seemingly can remember their past life events well. They can do personal care with prompting. In severe dementia , they cannot do personal care without help. In very severe dementia they are often bedfast. Many are virtually mute.
 DALHOUSIE UNIVERSITY		Clinical Frailty Scale ©2005–2020 Rockwood, Version 2.0 (EN). All rights reserved. For permission: www.geriatricmedicineresearch.ca Rockwood K et al. A global clinical measure of fitness and frailty in elderly people. CMAJ 2005;173:489–495.

1.2.2 How common is frailty?

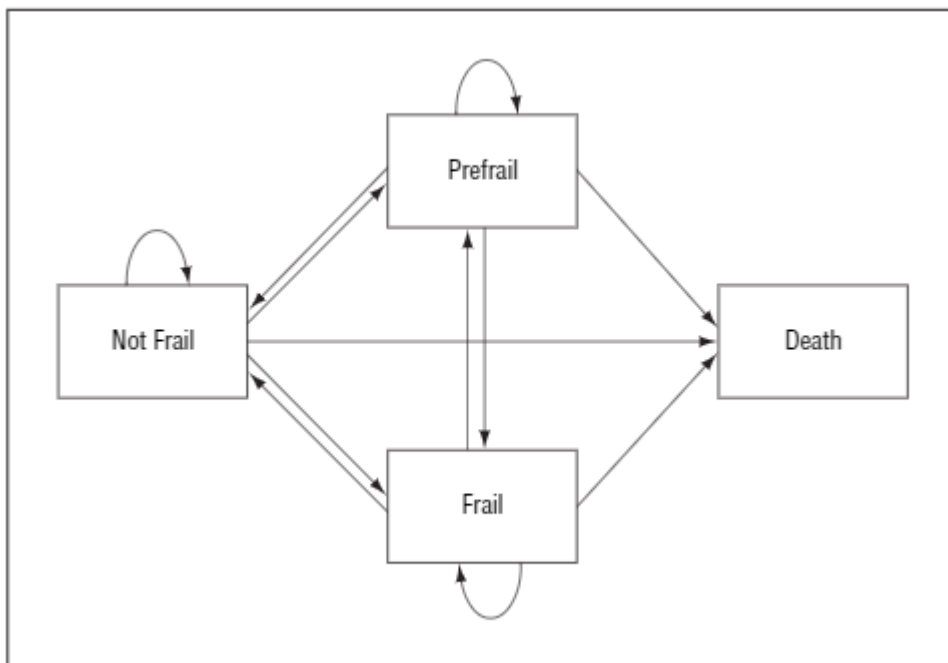
The prevalence of frailty described in the literature can vary widely and is dependent upon the method of assessment and definition of frailty used. The USA Cardiovascular Health Study, from which frailty was first described by Fried et al⁶, had a frailty prevalence of 6.9% in community-dwelling adults aged 65 years and over. The prevalence of frailty from the English Longitudinal Study of Ageing was 14% overall, which increased from 6.5% in those 60-69 years to 65% in those aged over 90 years¹⁷. A meta-analysis involving data from more than 120,000 community-dwelling adults aged 60 years or older found that the incidence of frailty globally was estimated as 43.4 new cases per 1,000 person-years¹⁸. For pre-frailty the incidence was 151 per 1,000 person-years¹⁸. The incidence of frailty and pre-frailty was higher in women than men and there was a higher incidence in low and middle income countries compared to higher income countries¹⁸. Studies have shown that females spend more years of their life with pre-frailty, frailty and severe activity limitation at all ages¹⁹.

1.2.3 Frailty as a spectrum and dynamic health state

As both frailty models describe, frailty is not a binary condition but a graded health state⁵. Depending on the model of frailty used, the nomenclature ranges from non-frail to pre-frail to frail in the phenotypical model of frailty or from being very fit through to those who are living with very mild frailty, through to those who are terminally ill in the CFS, as per Figure 1.3^{6,7,20}. Irrespective of the nomenclature, both approaches describe a spectrum where an individual might require supported self-management through to advance care planning²⁰. An understanding of frailty as a continuum across a spectrum is of importance because of the window of opportunity for targeted improvement, as well as prognostication for planning health and social care. In their original study, Rockwood and colleagues found that there is an increasing risk of death and entry into an institutional facility with each incremental increase in frailty score⁷. Across European countries at age 70 the life expectancy of those with pre-frailty ranged from 0.8-5.5 years, and with frailty 0.1-5.5 years¹⁹.

Frailty is a dynamic process and hence the level of frailty that an individual has will fluctuate⁵. This can be seen in Figure 1.4, reproduced from Gill et al²¹, where the terms not frail, pre-frail and frail are based on the terms used in the frailty index⁶. It is most common that individuals progress to a more advanced degree of frailty but following interventions, as described in Section 1.2.6, individuals can improve to a lesser degree of frailty and even to 'not frail'^{6,21-23}.

Figure 1.4. Model depicting possible transitions between frailty states and death (Reproduced from Gill et al, 2006²¹)



1.2.4 Identification of frailty

The British Geriatrics Society (BGS) guidance states that older people should be assessed for the presence of frailty during all encounters with health and social care professionals to develop, with the patient, an individualised management plan to maximise the biopsychosocial and functional ability of the patient⁹. It is recommended that the identification of frailty is supported using formal screening tools⁹. Many frailty

screening tools have been developed and a recent systematic review identified 67 frailty assessment instruments in use, of which nine were highly cited¹³. In view of the abundance of tools to identify frailty, different tools have been recommended to be used in differing clinical locations, where clinicians should choose based on reliability, validity, clinical opinion, ease of use and personal preference^{9,24}. The CFS is widely used in hospital inpatient settings⁹ and was originally developed to measure frailty following a Comprehensive Geriatric Assessment (CGA) (as described in Section 1.2.6) and yield a holistic care plan²⁵. The CFS is designed to determine an individual's baseline degree of frailty and should be based on the person two weeks before presentation to a clinical setting¹⁶. In the UK, it became a requirement for all General Practitioners (GPs) to identify patients over the age of 65 years living with moderate and severe frailty²⁶ and the electronic frailty index (eFI) is commonly used in primary care as part of this screening²⁷. For patients in outpatient services the BGS recommend the use of gait speed, Program of Research on Integration of Services for the Maintenance of Autonomy- 7 (PRISMA-7) questionnaire and the timed up-and-go test as assessments to identify frailty⁹. In elective surgical settings the Edmonton Frail Scale is recommended⁹. A selection of the recommended tools for use in clinical practice to identify frailty have been summarised in Table 1.1.⁹.

Table 1.1: A selection of the available assessment tools to identify frailty

Frailty tool	Description
Clinical Frailty Scale (CFS)	A nine point ordinal scale using clinical descriptors and pictographs.
Electronic Frailty Index (eFI)	Generates a frailty index based on the accumulation of a range of 36 deficits, taken from established read codes within electronic patient records.
Gait speed	A person is timed to walk four metres.
PRISMA-7 questionnaire	A seven-point self-completion questionnaire.
Timed-up-and-go-test (TUGT)	A standardised measure of gait speed where an individual is timed to get up from a chair, walk 3 metres, turn around and sit down.
Edmonton Frailty Scale	Multi-dimensional scale including cognitive screening and TUGT.

Despite an abundance of tools (or indeed because of), it is recognised that there is currently insufficient use of frailty instruments for the purpose of clinical decision making,¹³ and that frailty remains under recognised in the hospital setting²⁸. This is supported by a recent scoping review that identified 617 papers claiming to measure frailty², where in two-thirds of studies the authors identified their participants as ‘frail’ but did not report on how they measured frailty. Of the 204 articles that did measure

frailty this included established frailty tools (the CFS, Frailty Index and Frailty Phenotype) but also 35 non-frailty tools and in 23% of cases ad-hoc measures were used (for example a person had frailty if aged over 65 years with two chronic conditions)². Four articles used clinical judgement without a tool to identify frailty². This heterogeneity of how frailty is identified alongside multiple identification tools available can impact the generalisability of findings within research and hinder shared understanding when describing a patient as ‘frail’ in the clinical environment²⁹.

1.2.5 Presentation of frailty

1.2.5.1 Background frailty status

As discussed in the section above, frailty is a health state described across a spectrum, is dynamic, and according to BGS guidance, should be identified during routine clinical encounters using assessment tools⁹. In these encounters, patients with frailty may not be unwell and are not likely to have a specific presentation, but rather a varied collection of signs, symptoms and health and social needs dependent on the biopsychosocial and functional status of an individual.

1.2.5.2 Acute presentations

People without frailty have sufficient reserve in their functioning organs whereby the body can typically deal with a minor stress and these individuals present most commonly with classical symptoms of a single disease presentation³⁰. Due to a lack of physiological reserve, patients with frailty commonly acutely present to HCPs following decompensation from a minor stress event^{5,9,30}. The event leading to decompensation can be anything from an acute illness to a change in medication, change in accommodation or a bereavement. Using the example of pneumonia as the stress event, people with frailty (whether this status is known or unknown at time of presentation) can present typically (for example with a cough and shortness of breath) with their frailty status identified through routine screening tools applied at presentation as described above, or could present with subtle symptoms and signs

that are easily overlooked and not classical of the underlying pneumonia, where instead the pneumonia triggers a frailty syndrome^{9,30}. Frailty syndromes include falls, delirium, immobility, incontinence and susceptibility to the side effects of medication⁹ meaning that sudden mobility problems or behavioural changes are often the only signal that a new disease episode of different organ origin occurred³⁰. It is also possible to have a frailty syndrome without having frailty⁹. Lastly, multimorbidity with frailty is common and the requirement to recognise and manage interacting (and potentially opposing) body systems presents challenges³¹. Together, these factors can make diagnosing the patient's original cause of decompensation difficult. Thorough clinical assessment and collateral history are often required to identify underlying causes, and to evaluate which factors are amenable to treatment²⁹. Regardless of how the patient presents, it is crucial for HCPs to recognise and understand frailty because a person's frailty status is intrinsically related to every aspect their hospital journey, and their duration of recovery²⁹.

1.2.6 Management of frailty

1.2.6.1 Of frailty as a health state

There is no cure for frailty but there are individual components amenable to optimisation⁵. The gold standard management of a person with frailty is a CGA³². A CGA is defined as a multidimensional and interdisciplinary diagnostic process focussed on determining a person's medical, psychological, social and functional capability in order to develop a coordinated and integrated plan for treatment and long-term follow-up³². There is evidence that a CGA can reduce falls, hospital admissions and increase patients' likelihood of being alive and in their own homes after an emergency admission to hospital³³. Several interventions incorporating exercise, nutrition, cognitive training, geriatric assessment, hormone therapy, and prehabilitation (the practice of enhancing a person's functional capacity before an event such as surgery) have been evaluated for their effectiveness at delaying or reversing frailty and have demonstrated feasibility³⁴⁻³⁷. The most studied modifiable influence for frailty is physical activity in the form of resistance exercise, both home-based and group-based, which can improve mobility and functional ability^{5,9,38-40}. A

recent systematic review reported that, among the available primary care interventions to delay or reverse frailty, strength training and protein supplementation ranked highest in terms of relative effectiveness and ease of implementation⁴⁰. The role of nutritional supplementation to ensure adequate protein intake, and pharmacological interventions in the form of Vitamin D, Testosterone and ACE-inhibitors have been explored with a particular focus on their effect on muscular function, but the evidence is less extensive^{5,9}. The most compelling evidence is for physical exercise in a group setting, which has additional positive impacts on independence, functioning, psychological wellbeing and perceptions of health⁴¹.

A criticism of 'successful interventions' is that the outcomes are largely measured in terms of physical outcomes and their success in transitioning people between frailty states, not on a person's wellbeing or quality of life⁴¹. It is also unclear how much of the above management strategies translate into practice. Guidelines for GPs on the management of moderate to severe frailty focuses solely on an annual review of medications and assessment of a person's risk of falls²⁶. The BGS recommend that severe frailty should be considered an end-of-life state and should trigger a HCP to discuss advance care planning and shared decision making of the wishes of the patient regarding their care⁴². Shared decision making is an approach in which patients and HCPs communicate together using the best available evidence⁴³.

1.2.6.2 Of a decompensation of frailty status due to a stressor event

Alongside the management of frailty itself, there is the consideration of the management of a person with frailty presenting with a decompensation from a stressor event. In people without frailty, decision making around management strategies can be commonly underpinned by evidence-based algorithms and their recovery typically follows a predictable trajectory²⁹. This differs in people with frailty because people with frailty are not typically included in clinical trials and guidelines lack recommendations for patients with frailty, which results in the requirement of pragmatic decision making based on clinical expertise^{30,44}. Furthermore, in view of

the relationship between frailty and multimorbidity, the National Institute of Clinical Excellence in the UK issued guidance stating that guidelines for single health conditions cannot and should not directly be applied in patients with frailty^{30,45}. Additionally, a person with frailty may be more susceptible to iatrogenic complications related to their presenting condition or treatment, such as adverse drug effects, acute kidney injury or hospital acquired infections²⁹. Frailty affects the initial treatment response and recovery of mobility and balance⁴⁶. The recovery journey of a patient with frailty is highly sensitive to both negative (for example lack of early mobilisation) and positive (for example good nutritional intake) practices, which commonly require the input from the wider MDT²⁹.

Patients with frailty are often less able to tolerate interventions of any kind due to an increased risk of complications⁸. However, treatments must be tailored to the individual based on their background frailty status alongside the severity and nature of the insult(s)²⁹. The life expectancy of a person with frailty as well as their recovery from a condition is difficult to prognosticate, where trajectories of decline are gradual and slow over months to years, punctuated by episodes of acute illness^{47,48}. Assessing the preferences and values of a patient with frailty can inform shared decision-making, requiring an individually tailored approach^{42,29}. Studies have found that relief of pain and focus on the maintenance of independent function and mobility are prioritised above prolongation of life⁴⁹. Irrespective of the underlying insult, there is evidence that patients with frailty benefit from systematic approaches to reduce harm, including CGA, a coordinated MDT response and a focus on early functional restoration and maintenance²⁹.

The most appropriate clinical team and location within the hospital to look after the patient also needs to be considered, which is dependent on the patient's presentation, the skills of the doctor and the variance in clinical and social services⁵⁰. Geriatric medicine is a branch of general internal medicine that is concerned with the clinical and social aspects of illness in old age and is considered a 'generalist' speciality that typically looks after patients with frailty⁵¹. However, this is not clear cut

and patients *without* frailty may be looked after by a geriatrician or frailty may complicate the care of older patients with predominant speciality-defining complaints that require the care from a specific speciality, for example a patient with a perforated bowel under the care of the surgical team⁵¹.

1.2.7 Frailty across clinical specialities

In view of the above, frailty is now understood to be a condition of clinical interest well beyond the boundaries of geriatric medicine⁵². In recent years there has been development of national guidance and frameworks to support HCPs and commissioners in identifying and managing frailty, as well as guiding the development of patient-centred services across disciplines in primary, secondary and tertiary care^{9,53–55}. Improved understanding of how to support people to live well with frailty across specialties is recognised as one of the key challenges for health and care systems in the 21st Century⁵³ and acknowledged as a priority in the National Health Service (NHS) Five Year Forward View⁵⁶.

Patients with frailty are likely to be encountered by every doctor in their practice and every medical student during their training. Frailty is known to impact on treatment pathways and management strategies⁹ and medical specialities outside of geriatric medicine are exploring the implications of frailty on their specialty, including primary care^{27,57,58} emergency and acute medicine^{2,59}, oncology^{60,61} intensive care^{62,63}, renal medicine⁶⁴, clinical biochemistry⁶⁵ and cardiology^{66,67}. Within surgical specialties, frailty has emerged as an independent predictor of morbidity and mortality. In the last year alone, multiple studies have been published that conclude that frailty is an individual risk factor for increased postoperative events following elective surgery. These include gynaecological⁶⁸, neurosurgical^{69,70}, colorectal^{71,72}, orthopaedic⁷³, hepatobiliary⁷⁴, urological⁷⁵, cardiac⁷⁶, breast cancer⁷⁷, vascular surgery⁷⁸ as well as following stem cell transplants⁷⁹ and solid organ transplants^{80,81}. Additionally, frailty predicts mortality across emergency surgical admissions^{82,83}. Most commonly within this literature a person's frailty status is used to identify patients who are likely to

develop complications in response to an aggressive treatment such as chemotherapy or procedural-based interventions to allow for informed decision making of risk and discussions between the patient and team. Across papers there was significant heterogeneity as to how frailty was measured (including Fried's criteria, the CFS or modified frailty criteria) which highlights again the problematic nature of the term. To assist in decision making, web-based decision support tools are available, based on large data sets such as the Age Gap Decision Tool⁸⁴. This tool predicts risk of breast cancer treatments to an individual but require an understanding of frailty to use⁸⁴.

1.2.8 Challenges around frailty

1.2.8.1 Definitions and conceptualisation

The above discussion has highlighted that there is no doubt that frailty exists with significant impact to the individual and society and is relevant to the majority of clinical specialties. The efficacy of the concept of frailty is, however, hampered by how it is conceptualised, despite international attempts to reach a universal definition⁸⁵⁻⁸⁸. A recent systematic review exploring the concepts and definitions of frailty found that of 78 publications included, 30 offered their own definition of frailty⁸⁸. The authors highlighted that that the type of perspective one has on the concept of frailty impacts on the identification of frailty in a daily practice and that there is an ongoing difficulty in finding boundaries between 'normal ageing' and frailty⁸⁸. These studies predominantly focus on physical frailty, with some specifically naming frailty as such⁸⁶. There are fears that a predominant focus on biomedical assessment tools and treatments introduces a reductionist approach to frailty^{89,90}.

For many, the concept of frailty was constructed in response to cultural discourses^{90,91} and is conceptualised as much in the social domain as in the biological, with a plea for HCPs to appreciate that the 'vulnerability' of frailty involves not just cells, tissues and organs but the lived self⁹⁰. There continues however to be dichotomies between physical and social conceptualisations of frailty, often

dependent upon the academic discipline of individuals. A scoping review exploring the concept of social frailty concluded that it is “a continuum of being at risk of losing, or having lost, social and general resources, activities, or abilities that are important for fulfilling one or more basic social needs”⁸⁹. Understanding how frailty is conceptualised is more than merely an academic exercise as it can shape the experiences of frailty of individuals and society through policies, access to services, care practices, social responses and education^{92,93}.

With the challenges of how frailty is defined and conceptualised there have even been attempts to introduce alternative concepts. The World Health Organization introduced the concept of Intrinsic Capacity, defined as the composite of all physical and mental capacities that an individual can draw upon during their life which provides a more holistic approach to health and illness in old age^{90,94}. Physical resilience, meanwhile, has been defined as “a characteristic which determines one’s ability to resist or recover from functional decline following health stressor(s)”⁹⁵. Concerns have been expressed, however, that introducing other concepts may complicate an already confusing scenario^{96,97}. Discussion around frailty in healthcare persists amongst professionals, with some who believe frailty is a fad⁹⁸ or an insufficient concept on which to base discussions⁹⁹, whilst others call for it to be recognised as a long-term condition in its own right, in the same sense as diabetes or Alzheimer’s dementia^{9,100,101}.

1.2.8.2 The language of frailty

A further challenge is that the term frailty is a term used both outside and inside of medicine. Frailty is an adjective in the English language for weakness, fragility and vulnerability in physical ability or character^{92,102} and the term is often used within the clinical environment by HCPs to infer this colloquial meaning^{99,103}. Furthermore, studies suggest that older adults understand the term frailty using lay definitions, rather than as a medical diagnosis^{104–108}. Age UK updated their website in 2020 to read “‘Frailty’ is a term that’s used a lot, but is often misunderstood”¹⁰⁹. The precise

meaning of the term, its conceptualization, and even its use to describe a state or a process can vary significantly between well-informed individuals, yet a shared understanding is often assumed⁹⁶. When using the term it is important that HCPs recognise that the meaning and understanding of frailty differs by care discipline and discursive environment^{20,92}. Across scientific literature and in clinical practice the term frail features overwhelmingly as an adjective for example, 'frail older'. It is ill advised to define a person based on their disease, such as a diabetic patient or demented patient^{110,111} and the BGS recommend to reflect the patient first, for example "individuals should not be labelled as being frail or not frail but simply that they have frailty"⁹. The CFS was updated in late 2020 to reflect patient first language^{15,16}.

There is growing evidence of antipathy to the term 'frail' from older people⁹⁹ and the language of frailty can act as a barrier to engaging with older people who do not wish to be defined by the term^{9,93,105,106,112,113}. Many older adults believe that telling someone that they are frail would then lead to a deterioration of their frailty status^{106,112,114}. Schoenborn et al found that participants without frailty were intensely against being called frail to the extent they would wish to change clinicians if the term were used directly to them, but also found that those with frailty were more receptive to discussions¹¹². Richardson et al suggest that HCPs labelling someone as frail can lead to the stereotyping of an older person as failing to age well, which can cause unnecessary suffering¹¹⁵. Older persons have described that important information can be conveyed without using the specific term of frailty, by emphasizing hope and if using the term, making the distinction that frailty is a medical diagnosis as opposed to a general description¹¹².

At a national BGS meeting, Professor John Gladman warned his audience to be wary about using the 'f word' with its negative connotations¹¹⁶. The use of the term frail is used with caution by many HCPs⁹³. Amongst geriatricians, there is discussion as to whether one should describe frailty to HCPs and patients using the term or through the use of figurative language, such as a paper boat weathering the storm^{99,117}. Figurative language features heavily when describing frailty in the literature¹¹⁸. It can

enhance explanation by using relatable descriptions, but can also oversimplify or hinder a more accurate description of a scientific term, add to the stigma of patients and impact on the patient seeking and receiving recommended treatments^{118,119}. Avoidance of the term could present legal and moral dilemmas around the patient's autonomy if they are unaware they have frailty and it is unlikely in medicine that other medical terms would be withheld^{120,121}.

1.2.8.3 Perceptions of frailty

Related to the definition, conceptualisation, characterisation, and language of frailty, it is perhaps unsurprising that frailty is perceived in a variety of ways. Perceptions are “an idea, a belief or an image you have as a result of how you see or understand something”¹²². At the time of planning and commencing this thesis, there was little known about how frailty was perceived by HCPs and the public. One of the first studies exploring perceptions of frailty was research published in 2015 by Age UK in conjunction with the BGS¹⁰⁵. The study sample was small but included older people with and without frailty, informal carers of people living with frailty, hospital ward managers, practice and district nurses and two GPs. The study found that participants associated the term with cancer, end of life and functional dependency and universally regarded the word frail as a negative label¹⁰⁵. Towards the final stages of this Medical Doctorate (M.D.) there has, however, been an increase in studies exploring perceptions of frailty, as discussed below.

1.2.8.3.1 Older adults, including persons with and without frailty

To date, qualitative studies to explore older peoples' perceptions of frailty have been conducted in the UK^{105–107}, the Netherlands¹⁰⁴, the USA¹¹², Canada¹¹³, New Zealand⁹³ and Australia¹¹⁴. The studies include a spectrum of older adults without frailty, with pre-frailty and those who have mild to moderate frailty, most commonly graded using self-reported health status. Older adults in general viewed frailty as negative,^{104–107,112} associated with loss of ability, control and identity¹¹⁴. They associated frailty with increased age^{112,114} synonymous with disability¹¹⁴ and as a

cycle of decline that results in death^{105,106,112,114}. There was a belief that personality, mental strength and attitude distinguished those people who became frail from those who did not^{93,114}. Multiple studies found that although the conceptualisation of frailty continues to lack clarity, overall, older adults also described frailty as multidimensional, encompassing losses in physical, psychological, social, and functional domains^{93,106,112,113}. However, the perception of frailty from older adults overwhelmingly included physical symptoms, many of which are consistent with Fried's criteria¹¹² and physical characteristics reflecting negative old-age stereotypes including individuals who are hunched over, grey-haired, slow and require walking aids^{106,112,114}.

1.2.8.3.2 Healthcare Professionals

In recent years in Southern Australia, research has been undertaken to ascertain the perceptions of frailty by GPs¹²³ and Orthopaedic surgeons¹⁰³, with further planned work underway for Emergency Department physicians and practice nurses¹²⁴. Ambagtsheer and colleagues found that in a qualitative study including 22 GPs, participants saw frailty as a cycle of worsening decline, viewed frailty prevention as theoretical rather than practised and identified frailty based on visual cues, most commonly by observing movement¹²³. Archibald and colleagues, in the same series of research, collected perspectives from 15 orthopaedic surgeons about their perceptions of frailty and frailty screening¹⁰³. The study found that participants described frailty as multidimensional and that frailty was regarded as a familiar term but its meaning was context-dependent¹⁰³.

Supporting the above findings, a qualitative study in Canada of 15 HCPs including physiotherapists, nurses, a pharmacist, a physician's assistant and an occupational therapist found that HCPs perceived frailty as multidimensional and screened for frailty using clinical judgement through exposure and experience, with disagreement among providers about the appropriateness of screening tools¹¹³. A further study including doctors, nurses and allied health professionals found that frailty was

perceived as multidimensional but that the experience of frailty was mediated by the patient's psychological mind-set⁹³.

In 2018, a qualitative before and after study exploring medical students' (MSs) perceptions of frailty has found that fourth year students did not recognise frailty as a medical entity and instead held lay ideas including being thin, bed-bound, fragile and breakable¹²⁵. Other studies have found that MSs recognised the importance of learning about frailty¹²⁶. In a study authored by myself but led by McCarthy, students reported overall positive attitudes towards older persons and frailty but these attitudes were dynamic across the cohort of MSs and worsened towards the middle of the medical degree¹²⁷. Additionally, qualitative evaluation of how students perceived frailty differed from the quantitative findings and differed from how students perceived older people, where frailty was more negatively perceived¹²⁷.

1.3 Introduction to medical education

Medical education is a broad and far-reaching field, with the main aim being to train, inspire and motivate students and qualified HCPs¹²⁸. The term most commonly refers to the education of MSs and doctors¹²⁸. The work in this thesis is based on frailty in UGME of MSs in the United Kingdom (UK).

1.3.1 Undergraduate medical education in the UK

1.3.1.1 Undergraduate course structures

Typically, UGME in the UK includes a university programme of five years duration, which results in a bachelors degree of medicine and surgery¹²⁹. There are two main entry programmes that are both referred to as undergraduate medicine, despite that some students may be postgraduates of another subject¹²⁹:

1. Standard entry medicine: Open to application from undergraduates or from students who already have a bachelor's degree.
2. Graduate entry medicine: Open to application from students who already have a bachelor's degree.

There are two main course structures that UGME follows in the UK, as summarised in Table 1.2¹³⁰:

Table 1.2: Course structures in UK undergraduate medical education

Course structure	Description
Traditional course	The first two or three years are pre-clinical work where learning is science-based, focusing on aspects such as physiology, biochemistry and anatomy discretely. The rest of the degree is clinical and complements the science-based learning ^{129,130} .
Integrated course	Throughout the duration of the degree scientific knowledge is delivered alongside clinical training. The course material is covered through the learning of body systems or clinical topics. For example, when learning about the cardiovascular system, the anatomy, physiology, biochemistry, pharmacology and clinical skills relevant to that system are taught through clinical cases. The integrated approach can be implemented using a varies of approaches, including problem based learning ^{129,130} .

1.3.1.2 Undergraduate curricula

A curriculum is broadly defined as the totality of student experiences that can occur in an educational process and may incorporate instructional content, resources, and processes for evaluating the attainment of educational objectives¹³¹. In the UK the generic national curriculum for medical undergraduates is Outcomes for Graduates (OfG) (formerly Tomorrow's Doctors), last published in 2018 by the General Medical Council (GMC)¹³². This sets out national key standards of the knowledge, skills and behaviours that new UK medical graduates must be able to demonstrate. OfG is a basis for medical schools to develop their curricula, providing a blueprint for assessment topics and the framework that the GMC use to regulate UK medical schools¹³². Medical schools must map their curriculum to provide the GMC with evidence to demonstrate that MSs' learning is directed towards the OfG outcomes. This evidence must also include medical schools' assessment blueprints showing when and how students are assessed on their learning against the outcomes¹³². Beyond these minimum outcomes, each medical school is free to set its own curriculum, teaching strategies and assessment aims and there is scope for variation in the interpretation, representation and the delivery of OfG recommendations¹³³. In addition to OfG, a number of clinical specialties, through their respective royal college or national society have created undergraduate curricula, which are intended as additional curricular guidance for schools^{134–139}.

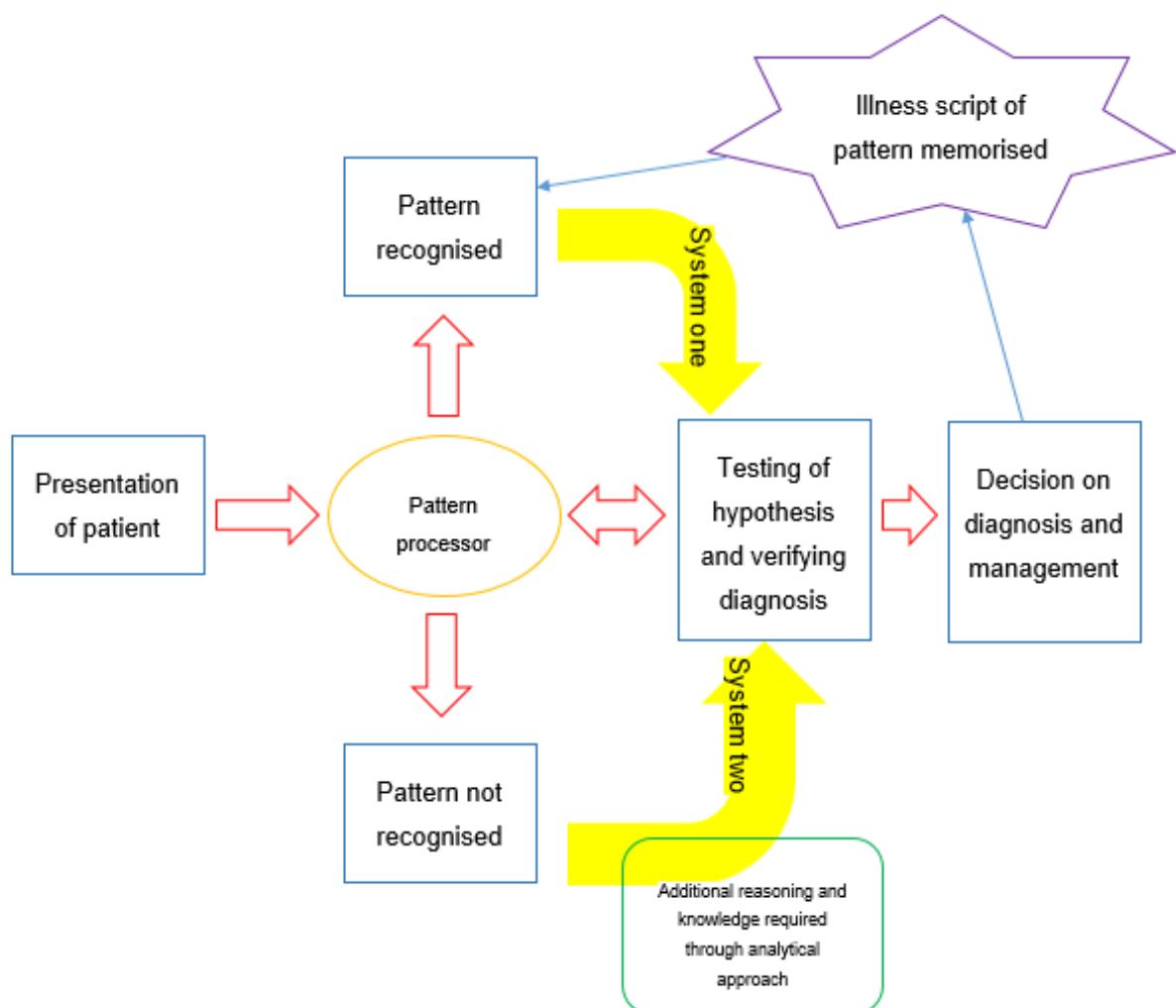
1.3.1.2.1 *Clinical reasoning*

In the UK, the OfG curriculum¹³² includes that MSs must be able to explain their Clinical reasoning (ClinR) when formulating a diagnosis and management plan. ClinR is the cognitive skill, process or outcome where a clinician observes, collects and interprets data in combination with their knowledge and skills, to reach a diagnosis and treat patients^{140–142}. ClinR includes conscious and unconscious cognitive processes and a considerable body of theoretical research exists on the various attributes of ClinR in healthcare¹⁴². Medical care is dependent on the skills of HCPs to make the right diagnosis (or diagnoses) and to recommend the most appropriate

management strategies, and the acquisition of such ClinR skills is understood to be a key requirement of UGME¹⁴³.

There are a number of theories and models of ClinR that originate from fields such as psychology, sociology and education¹⁴² and involve hypothesis generation, pattern recognition and analytical thinking^{142,144}. The dual-process theory is widely understood to be a predominant model of ClinR and includes two fundamental approaches: intuitive (often termed system one) and analytical (system two)¹⁴⁵. The two systems exist on a continuum and may interact with each other so that the final output is a synthesis of the two¹⁴⁵. A visual model of ClinR, adapted by the researcher from Croskerry and Cate can be seen in Figure 1.5^{145,146}.

Figure 1.5. Visual model of the dual processing theory of clinical reasoning



The system one approach is subconscious and largely based on the pattern recognition of incomplete information to form a global interpretation^{145,147,148}. This intuitive approach corresponds to clinical gestalt, based on the Gestalt movement developed in Austria and Germany in the late 19th century¹⁴⁹. In healthcare, the term clinical gestalt is a term often used interchangeably for clinical judgement that is based on intuition and is based on gestalt principles that perceptions including visual, auditory, tactile are globally perceived⁷. Gestalt psychologists proposed that our perceptions of an object or experience are not constructed from individual stimuli, but that individuals have an innate tendency to organise sensory inputs in a manner that creates the most globally coherent perception possible¹⁴⁹. Clinical gestalt can be thought of as a heuristic approach to quickly forming a diagnosis and treatment plan, often within seconds of data collection, via pattern recognition and organisation of clinical observations and our perception of those observations⁸. The library of patterns HCPs store can be referred to as illness scripts¹⁴⁶. An illness script is a representation in the HCP's mind of a condition or syndrome and is based on details such as expected findings in the history and examination and the most likely course and prognosis¹⁴⁶.

System two is an analytical process based on conscious reasoning in a step-wise process where hypotheses are generated or discarded at each step. The analytical system of ClinR is typically engaged when there is uncertainty or complexity¹⁴⁰. The recurrent use of system two for a complex diagnosis eventually leads to this being processed through system one, where an individual can build their own set of cues and this diagnosis later becomes intuitive^{144,145}. System two processes require conscious activation and should be engaged when the patients' symptoms and signs are not recognised as belonging to a specific illness¹⁴⁵. This requires the insight and awareness of uncertainty in an individual's CinR and it is recognised that MSs commonly have a reliance on system one thinking¹⁴⁰. Despite multiple examples of educational models, ClinR is difficult to teach because it is complex, situation and context specific, built up through experience and frequently based on intuitive

processes of pattern recognition that are challenging to verbalise due to the knowledge being tacit^{150,151}.

1.3.1.2.2 The hidden curriculum

Alongside formal curricula and intentional teaching and assessments is the hidden curriculum¹⁵². The hidden curriculum refers to the concept that there is a noticeable difference between what is taught and what is really learned, and is a side effect of formal education processes¹⁵³. It refers to medical education as more than simple transmission of knowledge and skills; it is also a socialisation process where values and behaviours are transmitted to future doctors¹⁵⁴. The hidden curriculum can be transmitted through any interaction between individuals or institutions through their implicit beliefs, values and behaviours^{154,155}. It can undermine the formal messages of the declared curriculum¹⁵³, where the learned values and behaviours are often negative^{155,156}. This is true of negative perceptions of patient groups¹⁵⁷, clinical specialties^{155,156,158} and clinical conditions¹⁵⁹ but also the hidden messages students receive about how to be a 'successful medical student', which is largely based on the perceived value of the acquisition of knowledge and facts, as opposed to learning values and behaviours¹⁵⁶. The structure of each medical course as well as interests and teaching skills of the faculty means that some topics may be overlooked or under-represented at an institution, which has implications within the hidden curriculum of the learned value of that topic. The formal curriculum is typically designed by course teams and quality assured through internal and external specialists, yet the hidden curriculum by its nature gets no such direct scrutiny despite the powerful messages it carries¹⁶⁰. It is suggested that institutions and individuals need to pay much more attention to the hidden curriculum and that much can be achieved by reflecting on whether the hidden messages in teaching and assessment practice align with the aspirations in the formal curriculum¹⁶⁰.

1.3.1.3 Teaching and assessment strategies in UGME

There are a wide range of learning theories¹⁶¹, pedagogical strategies¹⁶² and teaching methods within UGME. Typically teaching integrates seminars, lectures, dissection, clinical skills practice, small group learning, individual study and patient-focused learning through body systems and clinical cases¹³⁰. In recent years there has been a shift from didactic teaching to more student and patient focused teaching strategies¹⁶³. The teaching strategy used depends on multiple factors including the course structure, intended LOs, clinical or educational setting and the teacher's and student's preferences of teaching and learning¹⁶². Teaching may be formally timetabled or opportunistic during clinical placements. It may be longitudinal over a time period or delivered discretely. Teaching may be solely to MSs or alongside other HCPs within Interprofessional Education (IPE)¹⁶⁴. Teachers in UGME can be doctors, other HCPs such as nurses and occupational therapists or from non-clinical backgrounds. There is an increased role of patient-educators^{165,166} and students teaching other students (known as near-peer teaching), with the benefits of these approaches well described^{167,168}.

Assessment is recognised to have a powerful positive and motivating effect on individual learning^{169,170}. Assessment and evaluation are crucial steps in any educational process¹⁶⁹ and an important tool in monitoring the progress of students, as well as demonstrating that graduates are of the standard required to safely practise medicine¹³³. There are various forms of assessment methods available which include clinical examinations such as Objective Structured Clinical Examinations (OSCEs) and Objective Structured Long Examination Records (OSLERs), written examinations including Multiple Choice Questions, Essay-based questions, reflective writing and portfolios, as well as work based placed assessments and log books^{132,169}. Assessments can be formative or summative with different methods assessing different learning domains such as behaviours, skills, and knowledge.

Each type of assessment requires specific expertise to ensure the feasibility, validity and reliability^{133,169} of the exam. All UK undergraduate medical schools individually choose and create their own assessment methods based on the OfG blueprint¹³². Medical schools in the UK schools are also in a partnership to help ensure the quality of assessments through sharing experiences, sharing a bank of exam questions and exploring the equivalency of the standards applied¹³³. In addition to individual medical school assessments, the GMC have developed the Medical Licencing Assessment (MLA)¹⁷¹. This is a compulsory exam commencing in 2024 that UK MSs are required to pass before being allowed to join the medical register¹⁷¹. The MLA has a content map based on the outcomes of OfG and is a two-part assessment made up of a skills assessment and an applied knowledge test¹⁷¹.

1.3.2 Postgraduate medical education in the UK

Although this thesis focusses on UGME, it would be imprudent to discuss UGME without an overview of postgraduate medical education, because what is learnt as an undergraduate provides the basis for the rest of the journey of medical education. Postgraduate medicine refers to the education received as a qualified doctor. When a primary medical degree has been attained, a newly qualified doctor usually receives provisional registration from the GMC and enters a Foundation Programme, which comprises two years of rotations¹²⁹. Typically, each foundation year comprises rotations of four to six month durations and these are within general specialties, such as medicine, surgery, psychiatry and primary care¹⁷². Foundation year doctors must follow and meet the foundation curricula and after successful completion of its first year, the GMC grants full registration with a licence to practise, which is necessary to practise as a doctor in the UK¹⁷³.

After completion of the foundation years, doctors typically undertake core training or a run through programme¹²⁹. Core training includes two to three years of general surgery, internal medicine or acute care common stem, before then completing four to six years of higher specialty training in a chosen field¹²⁹. Run through training

programmes, of varied duration, including primary care and paediatrics, are designed to train in that particular specialty from the outset¹²⁹. On successful completion of a run-through or higher specialty training programme, doctors are awarded a Certificate of Completion of Training (CCT) which allows them entry onto the GMC specialist register where they can work independently as a consultant or GP¹⁷⁴. Doctors are typically described by the specialist area that they practice in, for example cardiology, and by their level of training, for example consultant.

1.4 Frailty in medical education

There is concern that MSs and doctors are trained to be specialists, not the generalists that are required to meet the needs of a changing population^{175,176}. The Francis Report¹⁷⁷, Future Hospitals Commission¹⁷⁸ and Future Shape of Training Review¹⁷⁵ have all highlighted the importance of effective education to deliver expert, holistic care for patients with frailty. The multidimensional nature of frailty that incorporates the management of (often multiple) interacting physical, psychological, functional and social requirements has important consequences for how we provide healthcare to the population, which is no longer best served by a single-disease model of care⁹⁷. Undergraduate and postgraduate medical education is evolving to meet educational requirements through changes in training pathways^{132,179} and evolving curricula^{132,173,180}. However, the process of curriculum change is a complex process and there is an inevitable delay between recommendations and their integration into an existing structure¹⁷⁶.

National frameworks and educational strategies have also been published to help prepare HCPs to identify and manage people living with frailty^{9,53,181}. The BGS, in association with the Royal College of General Practitioners and Age UK, have developed a series of guidance notes on the recognition and management of older patients with frailty in community and outpatient settings⁹ as well as e-learning modules¹⁸². The Frailty Framework of Core Capabilities identifies and describe the skills, knowledge and behaviours required for HCPs to deliver high quality care⁵³. All

of the above are written for a broad audience, ranging from people living with frailty, to practitioners and service commissioners.

As discussed above, postgraduate medicine is an extension from UGME. In postgraduate medicine, doctors are increasingly expected to have an awareness and understanding of frailty. This is true of the foundation doctors curriculum, where a doctor is expected to recognise frailty and formulate appropriate management plans¹⁷³. It also features in the internal medicine curriculum¹⁸³, and in primary care the curriculum states that the scope of a GP should include frailty assessments¹⁸⁴. The postgraduate higher speciality training (registrar level) curriculum for geriatric medicine was amended in 2016 to include a new section of care of the older person living with frailty, which spans across inpatient, outpatient, day hospital and community setting including definitions of frailty, knowledge of frailty scales and identifying clinical presentations in patients with frailty¹⁸⁰.

For medical undergraduates, the 2018 OfG document was updated to include LOs for students to identify the need to adapt management strategies to take into consideration frailty and to demonstrate working collaboratively with other health and care professionals and organisations when working with patients with frailty¹³². Frailty also features on the MLA content map as a presentation and is mapped to the clinical areas of primary care, medicine of the older adult, and perioperative medicine. Of the individual societal curricula relevant to UGME in the UK, national and international curricula for geriatric medicine and the surgical speciality curricula include LOs on the topic of frailty^{137,185,186}. The teaching activities and assessment types to meet these frailty-specific LOs are at the discretion of medical schools and the theory of constructive alignment provides a framework for adjusting teaching and assessment to address the attainment of those outcomes¹⁸⁷. The theory describes that to enhance teaching and learning quality, teaching activities and assessment tasks must directly address the intended LOs of a curriculum^{187,188}. Whilst accepting that curricula do not typically provide suggestions for educational strategies to meet the LOs, in the case of frailty it is unclear what is meant by the term and unclear how

frailty education should be delivered and some guidance, evidence or suggestions of teaching and assessment methods would be helpful.

Frailty does not fit neatly into a body system, modular placement or science-based domain and is complex because of its multidimensional nature as well as the atypical way common conditions present. This has widespread implications for medical education, including; i) when and where in the curriculum frailty should be taught, ii) who should teach about frailty and the effect of this, iii) which teaching and assessment methods should be employed, iiiii) whether any of the above subsequently result in a change in student learning. A recent systematic review, however, found no publications addressing postgraduate educational programmes for frailty prevention and management and little is known of the equivalent in UGME¹⁸⁹. It therefore remains unclear what learning about frailty means in practice.

1.5 Rationale for the thesis

Frailty as a concept is associated with a number of challenges clinically, in research and in medical education, as highlighted throughout this chapter. Despite these challenges, frailty exists, is highly prevalent in the population and results in a higher mortality and morbidity when compared to the background population. Frailty is dynamic with reversible elements, hence the identification of frailty and an understanding of holistic management is key. A person's frailty status is related to every aspect of their healthcare journey²⁹. All MSs will encounter patients with frailty across clinical specialities, and will continue to look after patients with frailty as doctors. All UK medical schools are required to ensure their curriculum and assessments meet the GMC guidance about frailty, but what this means in practice is open to interpretation.

Despite the influx in frailty-related curricula, national guidelines and scientific literature, there is a paucity of evidence exploring the concept of frailty within medical

education. There is no evidence of how best to teach and assess undergraduate MSs about frailty. At the time of writing this thesis, there is no evidence exploring how frailty is perceived and approached by UK undergraduate medical schools. There is minimal literature surrounding clinicians' and MSs' perceptions of frailty, and none on how these perceptions may influence what is taught and learnt about frailty. This thesis aims to answer these unknowns.

1.6 The aim of the thesis

The overall aim of this thesis, is to describe the current landscape of frailty in undergraduate medical education, specifically how frailty is perceived, discussed and approached in the literature, at an institutional level and in the environments in which students learn and are taught, and to explore how these may influence what is being taught and learnt about frailty in UGME.

This aim is divided into four objectives:

- 1) To characterise what is meant by the term frailty when used in the context of UGME in published literature.
- 2) To describe how frailty is currently perceived, discussed and approached by UK medical schools.
- 3) To describe any educational strategies in use to teach and assess frailty and establish whether any approaches are known to be effective in enhancing student knowledge, attitudes, skills or behaviour towards frailty.
- 4) To describe how frailty is perceived, discussed and approached by clinical teachers (CTs) and MSs.

The results will inform recommendations of educational strategies and further research, to develop future practice around frailty in UGME.

1.7 Theoretical perspective

In setting out a framework for research practice, it is important to consider the theoretical perspective. Ontology is concerned with reality of the world and how reality is understood. Epistemology is concerned with the theory of knowledge of reality, which shapes how knowledge is acquired¹⁹⁰. For the purpose of this thesis a realist ontological and a constructive epistemological stance was adopted, in keeping with Critical Realism (CR)¹⁹¹. A Critical Realist perspective accepts that a 'real' world exists, yet argues that this reality is understood through a construction of the perspectives of individuals. In research, the individual perspectives of participants are influenced by their cultural lens (including experiences, knowledge and expectations) as well as their interpretation of the question, and the context in which it was asked¹⁹². Researchers also have cultural lenses, and previous personal and professional experiences of the researcher will affect which questions are asked, what they look for and what they see¹⁹².

Specifically to this thesis, the realist ontological stance acknowledges that frailty exists as a meaningful entity and the subsequent effect on patient morbidity and mortality have an objective and concrete status. Regardless of how frailty is perceived, discussed or taught, the individual patient continues to have biopsychosocial effects of frailty and its associated risks. Yet the epistemological position acknowledges that each participant will perceive and interpret frailty through their cultural lens and that *all* of these views of frailty, no matter how conflicting or diverse, are equally valid. This not only applies to the participants in this research but includes the views of the scholars of literature around frailty that are included in this thesis, as well as the views of the researcher. Throughout the thesis all answers provided from participants (in the literature, the national survey and interviews) where individuals discussed *their* interpretation and perceptions of frailty have been described and equally formed part of the consideration in the analysis.

1.8 Reflexivity

In view of the recognised impact of the researcher, it is important that researchers reflexively piece together their research, meaning they not only examine the object of inquiry, but also scrutinise how their positioning affects their research processes¹⁹³. Reflexivity exposes how the object of enquiry can be interpreted from multiple vantage points, adding depth to the enquiry process¹⁹⁴. Whilst reflecting, researchers should maintain an awareness of how different elements of their identities (gender, age, class) are significant during research¹⁹⁵. As the researcher, I reflected through a research journal (as per Section 6.3.3 in Chapter six) as well as through the medium of collage, of which examples are presented at the start of each chapter.

Collage refers to a genre within art in which materials are cut up and pasted onto a surface¹⁹⁶. Collage is well recognised to contribute to research in several ways; as a reflective process; as a conceptualising approach; as an elicitation for writing or discussion and to show poignancy¹⁹⁶. In this thesis, collage has been used for all of these purposes and supported my cognitive processing of the data. The medium of collage was chosen because I felt it visually represents the methods used in this thesis, where the research has been pieced together using a bricolage approach¹⁹⁴, to best meet the aim and objectives. The collages were created alongside writing the respective chapter and helped me consider the overarching aim of each chapter as well as the reflect on the findings. For example, with the collage at the start of this chapter entitled 'Setting the Scene' I considered what I felt was important to convey, such as the uncertainty around frailty, the importance as seeing the whole patient in healthcare and the importance of holding on to a red thread throughout this thesis as the topic is so broad it would be easy to get lost. Each collage represents an element of figurative speech because the challenges of language around frailty (unexpectedly) feature heavily throughout the thesis. Visual research methods are recognised as having the potential to produce empathetic understanding of the ways in which people experience their world¹⁹⁷. A range of visual research methods have been employed throughout this thesis and are discussed in more depth in the methodology chapter (Chapter four) and in the discussion chapter (Chapter six).

1.9 Introduction to the methodological approach and thesis structure

Critical Realists argue that a pragmatic approach should be taken to choose methods that are best suited to answer the research questions¹⁹⁸. Bricolage describes a pragmatic approach, referring to the deliberate mixing of research methods in order to address a specific problem. It can be considered a critical, multi-perspectival, multi-theoretical and multi-methodological approach to research¹⁹⁴. Denzin states “A bricoleur can interview;... think within and beyond visual research methods;... use qualitative computer software... engage in policy formulation”¹⁹³. Using a bricolage approach can be complementary as quantitative methods enable researchers to develop reliable descriptions, identify patterns and tease out new causal mechanisms, and the qualitative methods help to reveal complex concepts and relationships¹⁹⁸.

This thesis includes a scoping literature review (Chapter two), national survey of UK medical schools (Chapter four) and qualitative interviews of CTs and MSs (Chapter five). The thesis combines research methods in combination with visual research methods to best answer the research aims, and the methods of the national survey and interviews are discussed in Chapter three. Chapter six is a discussion chapter to integrate the findings, discuss the implications and provide recommendations to develop future practice around frailty in UGME.

1.10 Conclusion

This chapter introduces the concept of frailty and medical education in the UK and provides the rationale for, and structure of, this thesis. This thesis aims to describe the current landscape of frailty in undergraduate medical education inform

recommendations of educational strategies to develop future practice around frailty in UGME.

Chapter 2. A scoping review: What is meant by frailty in the context of undergraduate medical education



Figure 2.1. A can of worms: To attempt to solve one problem, that creates a litany of other problems that were not there in the first place (Researcher's collage)

2.1 Chapter overview

This chapter describes a scoping review undertaken to explore what is meant by the term frailty when used in the context of UGME. The design and methods of the review are detailed within this chapter, guided by the Joanna Briggs Institute (JBI)¹⁹⁹ and PRISMA- Scoping Review Checklist (PRISMA-ScR)²⁰⁰. Findings are presented in a descriptive format, with the implications discussed and suggestions for future research made.

2.2 Introduction

2.2.1 Rationale for the review

Frailty was introduced into the UK undergraduate curriculum in the 2018 GMC guidance¹³². Chapter one explored how frailty in the clinical context is perceived differently between HCPs, patients and older persons. It remains unclear as to what it means to teach or learn about frailty, and how this could or should be approached. This scoping review intends to synthesise the available literature surrounding frailty in UGME to describe what is already known and identify gaps for further research. The knowledge of what is meant by frailty in an educational context, the teaching and assessment strategies being used, and any impact on student learning could help inform and support CTs, medical school institutions and policy makers in creating frailty-related LOs and in the planning and delivery of educational strategies.

2.2.2 Rationale for scoping review methodology

Traditionally, systematic reviews have been conducted to assess the effectiveness of health interventions by critically examining and summarizing the results of randomized controlled trials^{201,202}. Increasingly, however, researchers are concerned with research questions that require a more nuanced approach or evaluate different types of data, which is reflected in the wide range of research approaches available^{201,203}. In 2009, Grant and Booth identified 14 different types of literature

review used to synthesise evidence²⁰⁴, and by 2019 this reached 48 review types, including scoping reviews²⁰⁵.

Scoping reviews are exploratory projects that systematically map the literature available on a topic, identifying key concepts, theories, sources of evidence and gaps in the research¹⁹⁹. Scoping reviews have become an important research methodology since their inception in 2005²⁰⁶. Clear guidance exists regarding the definition, conduct and process of scoping reviews, supported by the JBI and PRISMA-ScR^{199,200,203,207–210}. Scoping reviews may be considered similar to systematic reviews in the structured search process they follow but the key methodological difference is that they aim to identify the breadth of evidence, not critique and review the quality of an evidence base^{199,203,207,209,211}. Broadly speaking, scoping reviews can develop an overview of a topic area where there is uncertainty regarding the extent of the knowledge base^{199,203,211} and are useful in clarifying concepts or developing a new understanding in areas that are considered complex or have not been extensively reviewed^{203,211}. They are particularly helpful in reviews where the literature is heterogeneous¹⁹⁹. For these reasons a scoping review was felt to be the best review method for this topic.

2.3 Objective

The objective of this scoping review is to map and synthesise the literature to characterise what is meant by the term frailty when used in the context of UGME.

The sub-objectives are:

- 1) To describe any frailty-specific curricula, teaching or assessment methods in UGME that have been detailed.
- 2) To describe the impact of these educational strategies on student knowledge, attitudes, skills or behaviour towards frailty.

2.4 Method

As described above, the scoping review was conducted in accordance with the JBI methodology for scoping reviews, last updated in 2020^{199,209}, and reported using the PRISMA-ScR checklist²⁰⁰. The objectives, inclusion criteria and methods for this scoping review were specified in advance and documented in an Open Science Framework (OSF) Registration protocol number GJC47²¹², as detailed at <https://osf.io/j9fe8>.

2.4.1 Search strategy

An initial limited search of MEDLINE was undertaken to identify articles on the topic. The text words contained in the titles and abstracts of relevant articles, and the index terms used to describe the articles were used to inform a full search strategy, in conjunction with a librarian. As the research aim and objectives focus specifically on the term frailty within an educational context, it was felt that the search term 'frail' or 'frailty' should be included in the title, abstract or keywords of relevant literature, and the paper must be related to UGME. Due to the ambiguity of the term and the theoretical stance of the thesis, the review identified and included studies that wrote about frailty in the context of UGME, no matter how the term was intended. A definition of the term within the study was not required but if present, was recorded. This approach enabled scrutiny into how frailty is used and understood within UGME the literature. This scoping review considers all publications including original papers, systematic reviews, conference abstracts and letters to the editor. Only studies published after 2001 were included, since this is when the first paper describing frailty as a medical concept was published⁶. Only studies in English language were included. The inclusion criteria are summarised in Figure 2.2.

Figure 2.2. Inclusion Criteria of scoping review

<p>Inclusion criteria:</p> <p>English language</p> <p>Since 2001</p> <p>Any paper type</p> <p>Frail or frailty in title, abstract or keywords</p> <p>Related to undergraduate medical education</p>
--

The individual search strategies for each database searched are presented in Appendix A. Keywords and medical subject heading terms were combined using Boolean operators and truncations. The systematic electronic search was conducted on the 18th January 2021 using AMED, BEI, CINAHL, Embase, ERIC, MEDLINE and PsycINFO. Further searches were completed on Google Scholar and Greylit.org for grey literature. The reference lists of all included sources of evidence were screened for additional studies.

2.4.2 Study selection and data extraction

Retrieved articles were exported into Microsoft Excel, de-duplicated and tabulated for review. Titles and abstracts were independently screened by two reviewers (TL, RW) to identify studies that potentially met the inclusion criteria (see Figure 2.2). Where agreement with the inclusion criteria was unclear, studies were moved forward for full text review. Where further clarification was required, authors were contacted for additional data. This was required in two instances, firstly to clarify the teaching topics covered during a teaching week¹²⁵ and to clarify the professional role of an author²¹³. Any disagreements between the two reviewers at each stage of the selection process were resolved through discussion. If consensus could not be met,

there was a pre-agreed process to pass to a third reviewer (JW). The full text of all potentially eligible studies were retrieved and independently reviewed by two reviewers (TL, RW) and data extracted from each eligible study using a specifically designed form (shown in Appendix B).

2.4.3 Analysis and presentation of results

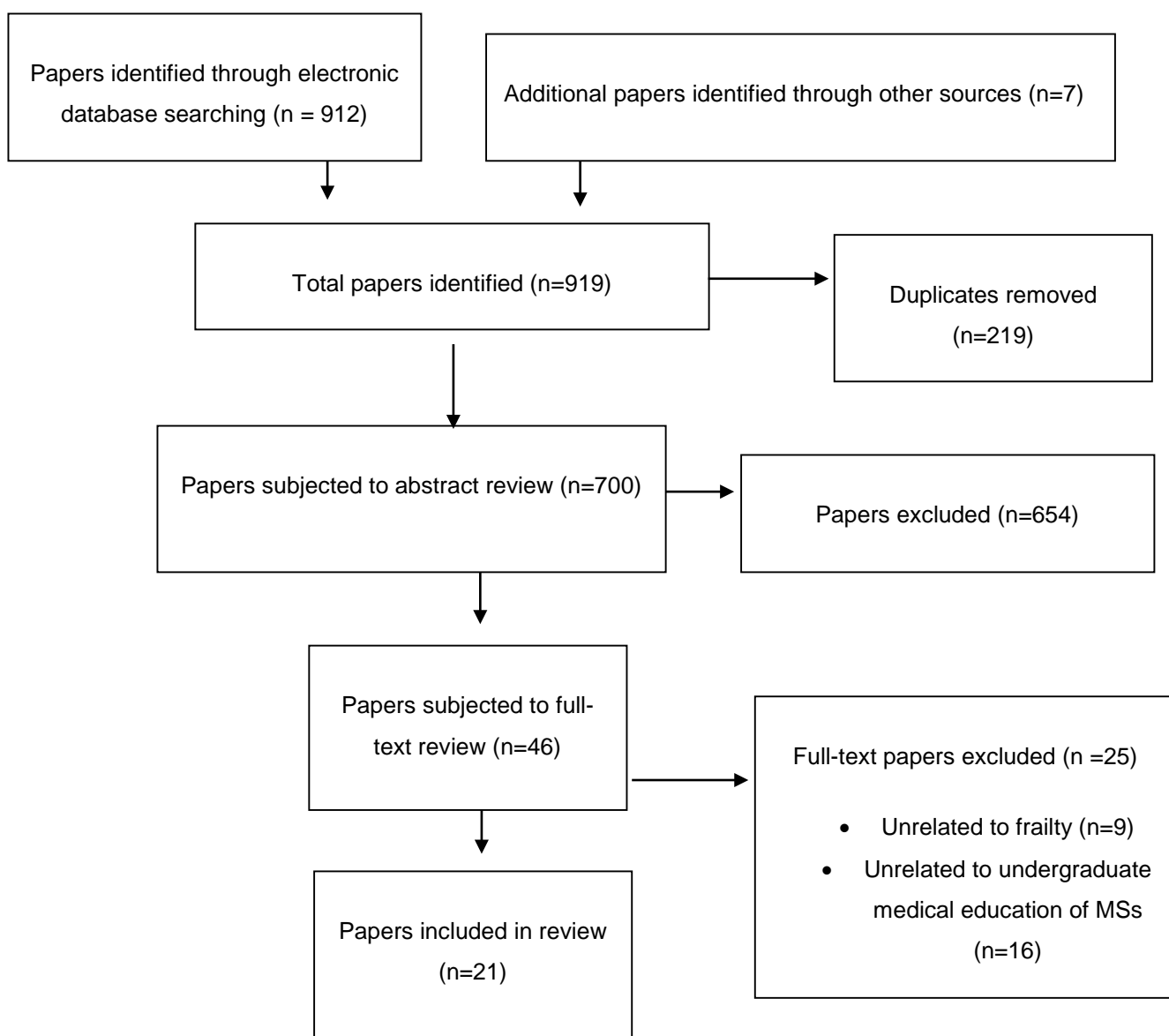
Results were summarised using a PRISMA flow diagram (Figure 2.3) and a table (Table 2.1). The extracted data were subsequently synthesised in a descriptive format to identify key characteristics of what is meant by frailty in an educational context. This included any definitions of frailty, or descriptions of the way the term has been used, followed by descriptions of the frailty-related teaching methods and curricula that include reference to 'frail' or 'frailty.' Where papers have evaluated student attitudes, knowledge, skills or behaviours about frailty these have been described. In scoping reviews, critical appraisal or risk of bias assessment is generally not recommended and has therefore not been included²⁰⁹.

2.5 Results

2.5.1 Overview of results

Electronic database searches identified 919 potentially relevant papers, as shown in Figure 2.3. Seven eligible papers were identified from the references of the included papers. No additional relevant articles were retrieved from Google Scholar or GreyLit.org. After the removal of duplicates, the abstracts of 700 papers were reviewed. Papers were moved forward to full text review based on the inclusion criteria in Figure 2.2. The paper was excluded if 'frail' or 'frailty' was not included in the title, abstract or keywords. An exception to this were two papers that did not have an abstract or keywords but were felt by both reviewers to be relevant and otherwise met the inclusion criteria, so were moved forward to full text review. The full text of 46 papers were reviewed resulting in 21 papers that met the full eligibility criteria. 25 studies were excluded at full text stage due to being unrelated to either undergraduate medical education of MSs or to the medical concept of frailty (for example, they were about the frailty or weakness in education departments in general).

Figure 2.3. PRISMA Flow Chart



This review includes 21 sources; 14 journal articles, six conference abstracts and one letter to the editor, shown in Table 2.1. This table presents the author, year and country the article was written, tabulated in chronological order starting with the most recent. An 'X' marks which educational strategies the paper details as well as whether a definition of frailty has been included. Examples of direct quotes to demonstrate how the term has been used have been included. Further details of

each paper have been summarised in Appendix C. The included papers were international in scope, with the majority based in the UK (9/21) and USA (5/21). The first authors were most commonly geriatricians (8/22) or trainee doctors (5/22). Where the first author was a trainee doctor, all had a geriatrician as the final author. Of the 12 papers that detailed teaching strategies, these were delivered across year groups as follows: 1st years (n=2), 2nd years (n=2), 2nd and 3rd years (n=1), 4th years (n=2), 5th years (n=2), unknown (n=3).

Table 2.1: Overview of scoping review results

Article	Definition of frailty included	Examples of how frailty as a term is used	Article describes curriculum		Article describes teaching strategies		Article describes evaluation of student		
			Development	Requirements/ suggestions	About frailty as a concept	Including a 'frail' patient	Attitudes towards		Knowledge of frailty
							Frailty	Older people	
Martins 2020, Australia ¹²⁶	X	"Frailty is defined as" "... at risk of frailty"				X	X		X
McCarthy, 2020, UK ¹²⁷	X	"Frailty is defined as..." "Patients with frailty"					X	X	
Perera, 2020, UK ²¹³		"...by the frailty pharmacist"			X	X			X
Van Lierop, 2019, The Netherlands ²¹⁴		"...frail elderly patient"				X			

Linscott, 2018, UK ²¹⁵		"...of frail and older patients"						X
Nimmons, 2018, UK ¹²⁵	X	"...attitudes towards frailty" "Help frail"			X		X	X
Kaplan, 2017, USA ²¹⁶		"...frail patients"						X
Yamanaka, 2016, Japan ²¹⁷		"...the frail elderly"						X
Nguyen, 2016, USA ²¹⁸		"...malnutrition and frailty"			X			X
Buhr, 2014, USA ²¹⁹		"...the frailest and most vulnerable"						X
Forrester, 2014, UK ¹⁸⁵		"...frail older patients"	X					
Masud, 2014, UK ¹⁸⁶		"...older, frail adults " "... concept of frailty"	X					

Oakley, 2014, UK ²²⁰		"...older patients with frailty" "Frail older" "The frailest"		X	
Tullo, 2014, UK ¹⁷⁶		"...with frail older patients"		X	
Lim, 2012, Singapore ²²¹		"...among frail elderly patients"			X
Parikh, 2012, UK ²²²	X	"...frail older people" "...of frailty"		X	
Dolkart, 2011, USA ²²³		"...with frail seniors"			X
Just, 2010, Germany ²²⁴		"...and frailty complicate care"	X^		
Gordon, 2007, Canada ²²⁵		"Frail elderly patients"		X	
Naganathan, 2006, Australia ²²⁶	X	"...frail patients" "...frailty is"	X		

Medina-Walpole,
2005, USA²²⁷

“...or frail older
adults”

X

*mentions teaching session on 'frailty' but no further information ^Learning outcomes describe frailty but do not use the term

2.5.2 The use of the term in an educational context

All of the included articles used the word frail or frailty in the title or abstract, as well as within the article. A definition of frailty was provided in only 24% of the articles (n=5/21), as per Figure 2.4. The definitions differed but most described loss of physiological reserve, increased vulnerability to adverse events and relation to ageing.

Figure 2.4. The definitions of frailty provided in the scoping review articles

- “Loss of ‘reserve’ and is central to understanding the ageing process [...] the presence of impairments, activity limitations and participation restrictions”. Naganathan²²⁶
- “Frailty is complex and manifests as a decline in several physiological systems, depletion of homeostatic reserve, and increased vulnerability following minor stressors”. Nimmons¹²⁵
- “Frail is defined as a state of increased vulnerability to reversible causes, leading to increased risk of disability, falls, hospitalisation and mortality”. Martins¹²⁶
- “A distinctive health state related to the ageing process in which multiple body systems gradually lose their in-built reserves”. McCarthy¹²⁷
- “An accumulation of deficits which ‘transcend’ specific disease states and ‘compromises quality of life’”. Parikh²²²

Most commonly (76%, n=16/21), the term was used in the articles as an adjective to describe the patient population used in the teaching or curriculum such as ‘frail patient’. Almost unanimously this was followed by a term to suggest ageing, such as ‘frail elderly’. Where this term was included, no papers described whether indeed the patients actually had frailty or whether the colloquial meaning of weakness and fragility was inferred and if the ‘frail patients’ had frailty, how this had been determined (for example using a frailty scoring tool). No papers discussed frailty as a spectrum. All five papers that specifically taught about frailty as a concept or

assessed attitudes towards frailty used the term 'frailty' as a noun, such as "older people at risk of frailty" and "patients with frailty".

2.5.3 Curriculum

2.5.3.1 Developments and implementation

The results included the development and implementation of national curricula as well as papers offering suggestions to tackle the mismatch between demographic trends and the current way in which UGME is provided. The four included curricula are not specifically about frailty but discuss frailty as a LO; three are curricula for geriatric medicine from Australia, the EU and UK^{185,186,226} and the fourth is a palliative medicine curriculum²²⁴. In 2006 the Australian Society for Geriatric Medicine revised a curriculum, detailing updated medical student LOs for geriatric medicine. They include LOs about frailty: "Students should understand the concept that frailty is a loss of 'reserve' and is central to understanding the ageing process" and also about how the decision-making process of patient management should be "Made on the basis of co-morbidities and frailty (the presence of impairments, activity limitations and participation restrictions) rather than chronological age alone"²²⁶.

In 2014 the EU geriatric curriculum¹⁸⁶ and updated BGS curriculum¹⁸⁵ were published. Masud et al¹⁸⁶ document the development of the European Geriatric Curriculum, detailing the expert consensus of the minimal requirements a medical student should achieve by the end of medical school. The curriculum covers geriatric medicine in its entirety where frailty is a specific learning outcome (LO): "Define the concept of frailty in older people" as well as "Define comprehensive geriatric assessment and list its components". The curriculum includes frailty syndromes as part of geriatric medicine such as falls, delirium and incontinence as well as recognition of "the atypical (non-specific) presentation of disease in older patients (presentations are not the "typical" presentations taught elsewhere in medical curriculum)". In the UK, Forrester-Paton et al¹⁸⁵ mapped the existing BGS undergraduate curriculum²²⁸ to GMC guidance. The BGS curriculum is broad and

similarly to the EU curriculum it includes LOs regarding frailty syndromes and competencies around CGA but differs in that it does not require student understanding of frailty as a concept. Following the mapping exercise, a LO was added for students to be able to “discuss the generalisability of existing research studies to frail older people”. Of note, where the LO is documented later in the article the term frail has been removed: “research considerations specific to older patients have been added to the BGS curriculum”.

The fourth curriculum by Just et al²²⁴ describes the development of an interdisciplinary curriculum focussing on the palliative care needs of the elderly. The authors highlight that multimorbidity, dementia and frailty complicate care at end of life in elderly patients LOs included: “Student knows and accepts the impairment in life quality caused by seemingly “trifle” diseases” and “Student knows that while treating symptoms in the elderly, the fragile equilibrium of an elderly person’s physiology has to be considered and protected at all cost”²²⁴. The authors suggest teaching methods for the LOs which include teacher-based instruction, case-based learning and role play. Despite frailty being used within the article, the LOs describe the broad definition of frailty but do not formally use the term.

2.5.3.2 Curriculum requirements and the mismatch of medical education to demographic trends

A group of papers discussed that there is a need to change curricula to bridge a mismatch between the medical education currently provided to MSs and the demographic trends of the increasingly ageing population^{176,220,222,225}. Oakley et al²²⁰ present recommendations of what medical undergraduates should be taught about ageing, consider whether these are being met and describe teaching innovations that might bridge the gap. They highlight the mismatch between the proportion of clinical workload made up by the diagnosis and management of “older people with frailty” and the amount of undergraduate teaching devoted to it. The authors discuss how geriatric medicine teaching can be improved through the use of novel teaching

interventions including e-learning, simulation and IPE as well as the challenges of engaging “the frailest and most dependent patients in structured teaching programmes”.

Tullo et al¹⁷⁶ supports this claim that medical education is not adequately preparing MSs for the ageing population. The authors describe that students are being prepared to be specialists when most will be generalists and that common conditions such as dementia and delirium do not prominently feature in undergraduate curricula in the UK. They suggest that students infrequently “come into contact with frail older patients”, yet efforts to involve “frailer, cognitively impaired patients” remain rare and that the involvement of patients with frailty should be prioritised alongside IPE as a teaching method. Lastly the authors describe that ageing should be a cross-cutting theme rather than solely residing under geriatric medicine¹⁷⁶. Parikh et al²²² discuss that experiential learning is essential but the best way to deliver an undergraduate programme that includes ‘frail patients’ is unclear. They conclude that by not emphasising how presentations differ as a result of frailty we are failing to equip trainees with the concepts to allow for ClinR in practice.

Studies expressing the above concerns are authored by trainee doctors, consultant geriatricians, professors in geriatric medicine and professors in medical education and all describe the requirement to include patients with frailty in teaching. A medical student also voiced concern that the problem-based cases in a medical course were not representative of the patients she was expected to care for²²⁵. This prompted a review of the course which concluded that the under-representation of elderly persons gives students an unrealistic understanding of the medicine that they will practice. The author’s opinion was that attitudes may develop early about what is ‘real’ medicine and can contribute to frailty syndromes such as delirium and falls being mistakenly seen as ‘social problems’ rather than as presentations of acute medical illness. They expressed that “authors of the cases believe that including frail elderly patients would make cases too complex to meet learning objectives”²²⁵. Gordon concludes that “frail elderly patients are the present and future reality of

health care. Medical schools have a responsibility to their students, and to society, to provide education that is relevant for the population to be served”²²⁵.

2.5.4 Teaching

2.5.4.1 Teaching that includes ‘frail older patients’ where frailty is not the intended learning outcome

The review found that where teaching was described, the term frail was used as a linguistic term to describe the population that the teaching was about, such as ‘frail elderly’. As above, no paper specified how the frailty status of the ‘frail elderly patients’ was determined and, whilst students may have encountered patients with frailty during these sessions, frailty was not the intended LO nor was it clear whether frailty had been explicitly signposted to the students. Teaching using the adjective descriptor of ‘frail patients’ was most commonly included within educational activities undertaken in the community. The LOs focussed on IPE^{214,216,217,219,223} as well as learning about community environments such as home visits^{214,217,223,227} and institutional long term care²¹⁹. Buhr et al²¹⁹ described a teaching method used to expose early clinical students to the institutional long-term care setting, where the focus of the teaching was to interview the different HCPs about their roles. Yamanaka²¹⁷ similarly developed a two week community medicine clerkship program where MSs learned about home care medicine and the roles of HCPs in the community by spending time with physicians, visiting nurses, social workers and care managers. Van Lierop²¹⁴ described the development of a student-led MDT meeting, including medical, nursing and allied healthcare students. During the community rotation MSs visited a ‘frail elderly patient’ and presented a care plan at the MDT meeting. Similarly, Dolkart²²³ described a “Geriatric Medical Home Learning Laboratory” for MSs, pharmacy students, nurses and doctors in their geriatric medicine rotations. The group participated in role play sessions in a simulated the medical home, and presented care plans during “home visits with frail seniors”²²³.

Other teaching involved students learning about longitudinal responsibility for a 'frail patient' through clinical experiences. Kaplan²¹⁶ described that first-year medical and nurse practitioner students were integrated into a MDT as health coaches for "frail surgical patients with planned operations", where they followed and contacted patients throughout their surgical journey. Medina-Walpole and colleagues²²⁷ sought to incorporate geriatrics, primary care, and palliative care into three home visits with a patient. The first visit focused on medical diagnoses and symptoms, the second on functional assessment/geriatric syndromes, and the third on end-of-life values. Authors concluded that a longitudinal home visit experience can positively affect students; attitudes toward "frail older adults, those with chronic illness, and patients at the end of life"²²⁷.

'Frail patients' were also discussed within the umbrella of geriatric medicine teaching within simulated experiences and bedside teaching. Linscott and colleagues²¹⁵ described simulation to develop students' (n=73) abilities to manage "frail and older patients" using a high-fidelity, mannequin following the journey of a patient with advanced Parkinson's disease. Four sequential scenarios included delirium, sepsis, reduced consciousness and a dying patient²¹⁵. Conversely, Lim et al²²¹ explored the difficulties experienced by second year MSs (n=99) when performing geriatric assessment skills during bedside teaching in comparison to simulation teaching they had received. Students expressed difficulty in performing these skills "among frail elderly patients" in real life. The challenges were mainly due to the ability to communicate with 'frail patients' but also the technicality of undertaking assessments in patients with reduced movement and cognition. They concluded that patient contact enhances the authenticity of the learning experience of these skills, which is not provided through simulation. It is unclear whether the frailty-status of the patients in all of the above studies had been considered and, if so, how it was determined.

Martins and colleagues¹²⁶ described teaching fifth year students (n=61) during a "dedicated geriatric medicine module in the geriatric curriculum, focusing on frailty". The focus of the paper was to explore fifth-year MSs' perceptions of the importance

of frailty and competence in assessing, diagnosing and managing frailty before and after a geriatric medicine course. The topic headings of the sessions include falls, urinary incontinence, polypharmacy, dementia, delirium and bone health but there was no session on frailty. Following teaching the authors specifically assessed students' knowledge and the perceived importance of the concept of frailty, which is discussed in Section 2.5.4 (p73). There was a lack of constructive alignment, as discussed in Chapter one, between the teaching offered (about broad topics of geriatric medicine) and the assessment of knowledge (focussing specifically on frailty as a concept) which may reduce the effectiveness of learning.

2.5.4.2 About frailty as a concept

Three papers described teaching about frailty which specifically included teaching on frailty as a concept or the process of identifying and quantifying frailty through a CGA. Nimmons et al¹²⁵ described a geriatric medicine teaching week delivered by e-modules, small group teaching sessions and patient interactions for fourth year MSs. On further communication with the author, it became clear that the teaching week included teaching sessions on the definition of frailty, frailty-related screening tools and patient outcomes of frailty. Additionally, a teaching session on completing a CGA was included at a multidisciplinary outpatient clinic or rehabilitation unit. The authors assessed student attitudes and conceptualisation of frailty before and after the teaching week, which is discussed in Section 2.5.5. Perera and colleagues²¹³ designed teaching about the CGA for final year MSs (n=9), delivered by members of the MDT. The sessions included: an overview of the CGA delivered by geriatricians; polypharmacy by the frailty pharmacist; functional assessment by physiotherapy team; cognitive assessment by the dementia and delirium team; and life as an F1 on geriatric medicine by trainee doctors. The study then explored student knowledge pre- and post- teaching session about the CGA, which is discussed in Section 2.5.5. Nguyen²¹⁸ implemented simulation based, Interprofessional Geriatric Surgery teaching focusing on “common perioperative surgical issues faced by the elderly including post-operative dementia, delirium, polypharmacy, malnutrition and frailty”. The sessions involved IPE with students from medicine, pharmacy and nursing (n=16). It is unclear what was meant by frailty in this instance or what was included

in the session. The post-teaching questionnaire focussed on “knowledge of the geriatric field”, team structure, roles and communication skills and did not specifically focus on the concept of frailty. The authors concluded that the sessions “provide an opportunity to learn about vulnerable populations” and reported that students developed a better understanding of the importance of IPE.

2.5.5 Attitudes and knowledge about frailty

The following articles assessed student attitudes and/or knowledge about frailty following teaching interventions. Nimmons et al¹²⁵ undertook qualitative research exploring fourth year MSs’ (n=10) attitudes towards, and conceptualisation of frailty and delirium before and after the introduction of a new geriatric teaching week, as described in the section above. After the teaching week, the study found that students had a richer conceptualisation of frailty and that their attitudes towards frailty improved. All follow up interviews were completed within two weeks, so there is no evidence to support that a change in learning was sustained past this. The study included fifth year MSs who had not undergone the teaching week in order to act as a comparison group (n=11). These students described frailty as “someone who is not at a baseline, weaker, or less independent than before or compared to others, a decline that could not be improved”¹²⁵. After teaching the fourth year students were reported to be clearer in their conceptualisation of frailty, providing a more structured response. Before the teaching week students recognised frailty through observation and following teaching used more specific language, such as the Frailty Index, Fried score, gait speed and CGA. The exposure of students to patients with frailty with focused and formalised learning was seen as key in these changes¹²⁵.

The study also explored student attitudes towards frailty. Students before teaching felt that frailty was associated with increasing age. Many had “stereotypical views, including being thin, bed-bound, fragile, breakable”¹²⁵. The authors noted that the negative views were based on older people seen in the media or patients

encountered in a medical setting. They conclude that the teaching week did not change these views completely, but that subsequently students appreciated that frailty is complex, multi-factorial, and not a natural part of ageing.

Martins and colleagues¹²⁶ assessed students' attitude and knowledge of frailty before and after a four and a half week geriatric teaching module, as described above. This was assessed quantitatively where students rated the importance of each question and their self-perceived competence of each question on a Likert scale measure. The items assessed included: 1) define frailty; 2) explain to the patient or their family what frailty is; 3) explain to the patient or their family the consequences of frailty to their health; 4) assess whether someone is frail; 5) assess whether someone is at risk for frailty; 6) treat or reverse frailty; 7) undertake a comprehensive assessment of patients to identify remediable health issues. The perceived importance of frailty within the above domains was high before and after teaching, with no significant difference recorded after teaching. 100% of students felt the patient should have a frailty assessment, and that patients and family should have the consequences of frailty explained to them. Student self-reported competence around frailty was low across all domains before teaching (ranging from 3% for reversing frailty to 34% for undertaking a CGA). Self-reported competence statistically increased across all domains following the teaching and students felt most confident at explaining to patients and relatives what frailty is, as well as undertaking a CGA.

Perera and colleagues²¹³ taught final year students about frailty and the CGA, as described in the section above. The evaluation of the teaching focussed on student knowledge of the CGA before and after teaching. Students undertook a pre- (n=9) and post- (n=7) questionnaire regarding the CGA. The numbers of students completing the questionnaire were very small but baseline student knowledge of the CGA was poor across multiple areas, which improved following teaching. The exception to this was knowledge about the barriers to a CGA which may have worsened after teaching, although the denominator pre- and post- questionnaire differed, making it impossible to be certain. It is unknown from the conference

abstract how soon after teaching the questionnaire was undertaken (and hence whether knowledge retention was sustained) and also how a correct response was assessed (for example in response to each question there are likely multiple variations of potentially correct answers).

Work from our group, led by McCarthy¹²⁷ did not provide a teaching intervention but instead aimed to investigate medical student attitudes towards both older persons and frailty over an entire UK medical school cohort. They used a mixed-methods approach using validated questionnaires^{229,230} and the creation of word clouds about older persons and frailty. Participants (n=187) reported generally positive attitudes towards older persons and frailty. The most positive attitudes towards both older persons and frailty were held by year one students, and most negative by year three for older persons and year four students for frailty. The most negative attitudes towards older persons were towards their reduced functional ability. The qualitative word clouds for older persons and frailty, differed noticeably from one another whereby MSs associated positive qualities far more with older persons whereas frailty was associated with more negative words. The five most common terms when students were asked to think about frailty were vulnerable, old, weakness, dependence, and illness, compared to experienced, wise, old, kind, and grandparents for older persons.

2.6 Discussion

This review aimed to synthesise the literature to better understand what is meant by frailty when used in the context of UGME. The review found an inconsistency as to what is meant by frail or frailty across all educational strategies detailed in this literature. This incongruity is largely due to the language surrounding frailty where the term is used as a lay adjective to describe the older population and was, on occasion, substituted for an alternative term such as 'complex' later in the article. This was even true of a LO about 'frail older patients' in a national curriculum¹⁸⁵. Whilst this subtle linguistic difference may seem like a moot point, the removal or

substitute of the term suggests that even within the medical community when describing a population, the term is used in the lay sense. It is unknown how the lack of distinction between the lay and medical meaning of frailty in teaching (and indeed universally) impacts what MSs understand about frailty and whether students (and CTs) have an awareness the two differentiations exist.

In this review only five papers provided a definition of frailty and no paper defined whether the population of 'frail patients' *had* frailty as per a medical definition. One paper described the concept of frailty as a LO but did not name it as such²²⁴. The lack of formal nomenclature and definitions of frailty alongside the lay use of the term may impact the ability for a medical student to conceptualise frailty, which is required for ClinR²²². This review found that MSs held stereotypical lay beliefs about frailty such as thin, bed-bound and fragile people¹²⁵. This conceptualisation of frailty persisted following teaching, although students did develop an understanding of its multifactorial nature¹²⁵. The lay conceptualisation may be because individuals feel that they know and recognise frailty from early in their lives, which creates a visual image of how the 'frail' look that remains deeply imprinted in our minds²³¹. It would be prudent to further understand how MSs perceive frailty and enhance knowledge as to whether formally teaching the medical concept of frailty changes knowledge, attitudes and behaviour.

This review found that teaching with 'frail patients' occurs across all year groups but frailty specific teaching was in the latter years. In terms of teaching activities detailed in this review, most commonly the term described the population involved in the teaching, where frailty was not the intended LO. The majority of this teaching focussed on learning the roles of the MDT through IPE, based in community settings such as primary care, institutional homes and home visits. Whilst there will be overlap between frailty and geriatric medicine patient populations, this thesis intends to understand how frailty as a medical concept is perceived and approached in medical education more broadly. These papers provide useful examples of teaching MSs in the community and ways to teach using IPE, but they do not enhance the

understanding of how frailty as a concept is approached educationally. What the papers do highlight is that the community appears to be a rich learning environment for MSs to learn about patients with frailty. In OfG it is a key recommendation for MSs to have community placements to provide contextual learning^{132,232}, and it would be of interest to see what MSs are learning about frailty within community settings in the UK.

Three papers in this review specifically focus on teaching about frailty as a concept. These sessions focussed on understanding the definition of frailty, having an awareness of frailty-related screening tools and understanding the CGA including polypharmacy, functional and cognitive assessments. The topics covered closely match the amalgamated LOs about frailty from the Australian, BGS and EU Geriatric Curricula^{186,233}. Additionally, the curricula have a LO of understanding the impact of frailty on the decision-making process which was not covered in the teaching sessions described. The impact of frailty on decision-making is complex and it is known to be used in risk-stratification^{16,234}. The sessions were delivered by allied health professionals, alongside doctors using electronic learning modules, small group teaching and with patient interactions, although it is unclear as to how patients participated in these sessions or their level of frailty.

The involvement of patients with frailty in formal teaching was described as a significant challenge to medical education^{176,220,222} but no paper expanded as to what the challenges are. The review found that a lack of experiential learning including patients with frailty has consequences on student learning. Students described feeling unprepared when communicating to patients with frailty and undertaking skills on patients with frailty, despite confidence in simulated environments^{215,221}. Students expressed their concern that training does not reflect real life, yet teachers held a belief that including patients with frailty would be too complex²²⁵. Further research is required into how patients with frailty are involved in formalised teaching, the associated challenges and how these have been overcome.

Whilst MSs' attitudes towards older persons are acknowledged^{157,235}, little is known regarding MSs' attitudes towards patients with frailty. This review found consensus that attitudes towards frailty, and people with frailty improved following formalised teaching, especially with the inclusion of patients with frailty. The attitudes held by students appear to be dynamic and were more negative in year four. The speculative reasons may be the shift in perception from students' experience of older persons in relation to their relatives, neighbours and less unwell individuals encountered earlier in training through to dedicated elderly medicine placements where unwell, functionally impaired and older adults who are dying are seen. This is supported by findings from a qualitative study that found healthcare students early in training held positive experiences towards older adults²³⁶, where students imagined old age to be characterised by strong family relationships and respect due to their personal experiences²³⁶.

This review found that knowledge across a number of domains about frailty increased, including the definition, assessment, and reversibility of frailty, as well as ability to communicate about the topic. Although this was covered in a limited number of articles only, students had the greatest improvement in self-reported competence in explaining to the patient or their family what frailty is, as well as undertaking a CGA. This is surprising considering the challenges of defining frailty and the associated negative perceptions held by patients. The assessment of knowledge was either by self-reported competence¹²⁶ or using a questionnaire²¹³. In the latter, it was unclear how the knowledge components were marked as there were multiple potentially correct answers to the questions asked, for example what is included in a CGA and which members of the MDT contribute to frailty-related care.

The review found no published literature describing which methods provide reliable and valid assessment of MSs' knowledge and skills of frailty. This is an important consideration, since assessment has been shown to drive learning and there is a significant link between the weighting of a subject within an assessment scheme and MSs' reported motivation towards learning the subject¹⁷⁰. Assessment is known to

play a pivotal role in learning and thus, the failure to assess core concepts may result in a failure to learn about them. There are a variety of assessment types that could be used around the topic of frailty, as discussed in Chapter one. Each assessment will potentially come with its own challenges, such as the requirement for discrete answers in multiple choice exams or whether patients with frailty can relay a history succinctly over multiple times in OSCEs. Further understanding around which assessments are being used and the specific challenges of frailty within assessment is required.

2.6.1 Limitations

The inclusion criteria stipulated that papers needed to include 'frail' or 'frailty' in the title, abstract or keywords. The employed search strategy in this paper was chosen and justified because the review is exploring educational approaches related specifically to the topic of frailty, not all conditions relating to the older person. This was necessary as 'frail' is used as an adjective for a considerable number of papers, most commonly to describe older patients but also in terms of the frailty of education. Although this is a limitation, the review included papers where frail or frailty is used as a descriptor for this population group, even if teaching is not focussed on them. It highlights the importance of defining the term and moving it forward to a more formal medical use, instead of a colloquial adjective. Guidance created for literature reviews on older people acknowledges the challenges associated with the variability of what is meant by frailty²⁰².

The literature found in this scoping review holds a dominance from the UK and USA. This might reflect linguistic differences in the way frailty is referred to in other countries, leading to exclusion based on the search terms used. Additionally, it may reflect differences in how frailty is conceptualised by other countries as well as cultural differences of the importance given to frailty and frailty within in medical education. In view of this, the review might provide a biased view of how frailty is

perceived and discussed, however, the review did also reflect literature from other countries in Europe and Asia, where the findings were comparable.

As described in Chapter one, the philosophical stance and cultural lens of the researcher has an impact on research findings. Whilst every effort has been taken to reduce bias, others may disagree with the reviewers as to what constitutes 'frailty' teaching. This bias has been minimised by including all papers that discuss 'frail' or 'frailty' in UGME. The number of papers in this review that described frailty in the context of UGME were small. It may be that frailty-related educational activities are occurring but not being researched or published. Additionally, whilst it is not the intent of scoping reviews to critically appraise articles it should be noted that within the included articles were six conference abstracts and a letter to the editor which had limited descriptive detail due to style of article and word counts, as well small sample numbers. They have been useful to map and synthesise existing literature and have highlighted areas for further exploration.

2.6.2 Recommendations

In view of the educational-demographic mismatch, challenges of frailty in medical education, and questions raised from this review, there should be further investigation through discussion with UK medical schools of their current and intended changes to their undergraduate medical curricula to deliver the required GMC recommendations on frailty¹³². This broadly should focus on how frailty teaching and assessment is approached and the associated challenges of including frailty and patients with frailty in their undergraduate curriculum. Further research is required to understand the dynamic nature of student attitudes towards frailty to optimise when frailty related teaching is provided and understand how education can best challenge these negatively held views as well as enhance knowledge and develop ClinR. How students can learn and be taught skills or behaviours relating to frailty is another area that should be further researched. Furthermore, this review unexpectedly highlights the importance of language around frailty in UGME and the

widespread use of the lay terminology. It would be important to understand how frailty is perceived and discussed by medical institutions, CTs and MSs to explore how these may impact on student attitudes, knowledge and behaviours.

2.7 Conclusion

In UGME, frailty is commonly used as an adjective to describe the patient population, but it is not often the intended LO or teaching focus. Within these papers, frailty is rarely defined and it is not clear whether 'frail patients' have frailty or whether frailty is signposted during the learning experience. However, some specific teaching that focusses on frailty as a concept exists in the literature. In these few examples, the teaching improves student knowledge and attitudes towards frailty but the longevity of this effect remains unknown. No studies described the teaching or evaluation of student skills or behaviour towards frailty. Geriatric Curricula include frailty-related LOs that MSs should be able to define frailty, define the CGA, and to have an awareness of the different approaches to the management of patients. The literature acknowledges a mismatch in frailty-related education with a call to include more patients with frailty, yet there are challenges associated with this. There is concern that without being able to conceptualise frailty and without exposure to patients with frailty students cannot learn appropriate ClinR.

This chapter has provided some background of what is meant by frailty in UGME but also raised many unknowns. Further research is required to evaluate how frailty teaching and assessment had been approached in undergraduate medicine in order to provide evidence-based recommendations for UK, and broader, undergraduate curricula planning and development. This should involve discussions between UK medical schools of their current and intended changes to their undergraduate medical curricula to deliver the GMC recommendations on frailty¹³². The subsequent chapter explores some of these unknowns through a national survey of UK medical schools regarding their perceptions of and approach to frailty-related education in medical school.

Chapter 3. Methods

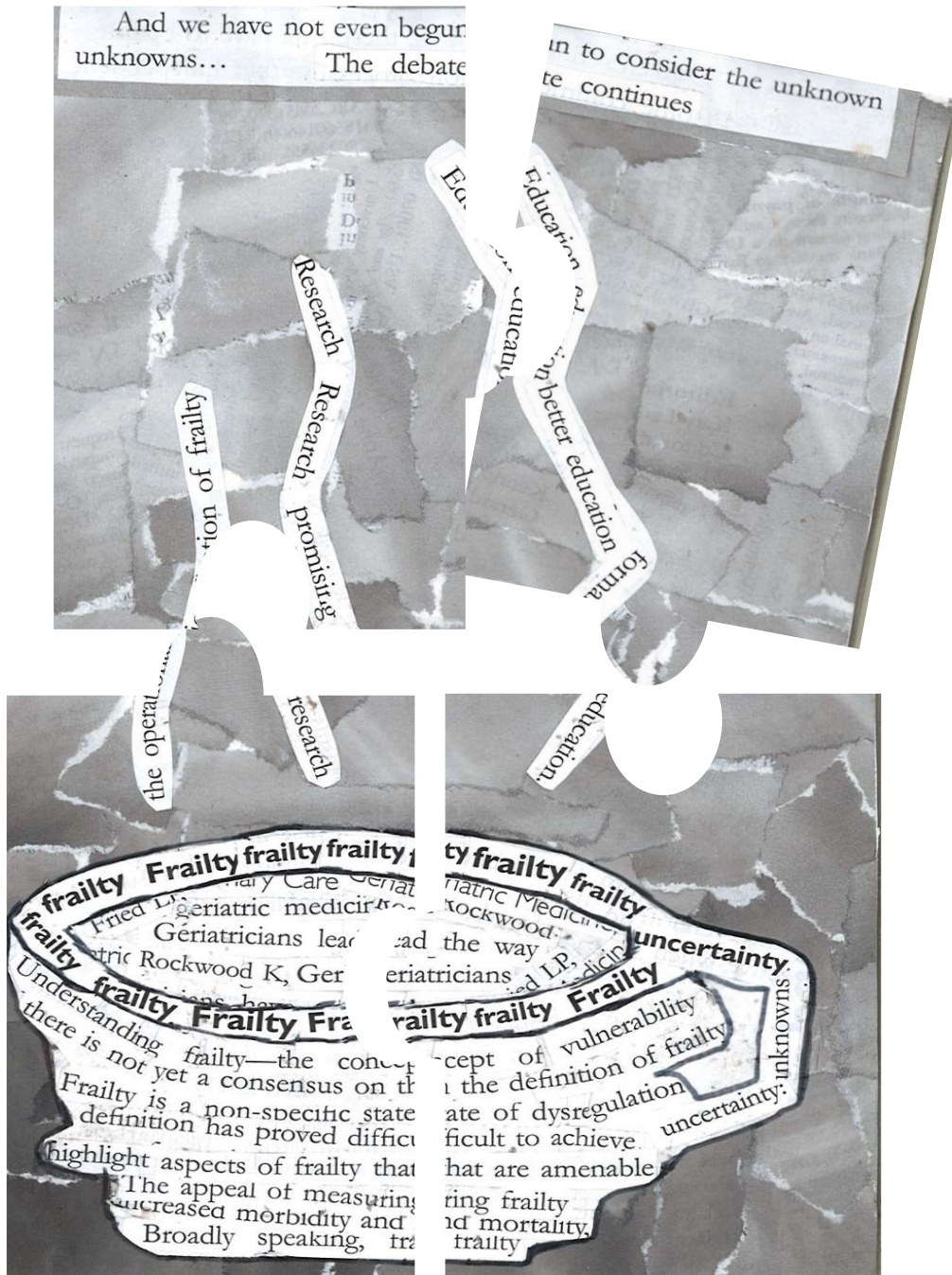


Figure 3.1. Piecing it together: to create something by joining the separate parts together (Researcher's collage)

3.1 Chapter overview

This chapter describes the objectives, methodological approach and ethical considerations when designing, undertaking and analysing the national survey of UK medical schools and qualitative interviews. The design of these studies was informed by the scoping review presented in Chapter two. Results of the national survey and qualitative study are presented in Chapters four and five respectively.

3.2 Theoretical perspective

As discussed in Chapter one, in setting out a framework for research practice, it is important to consider the theoretical perspective. This thesis adopts a critical realist perspective where the researcher believes an objectively 'real' world exists, yet accepts that this reality is constructed through the perspectives of individuals¹⁹². The realist ontological stance acknowledges that frailty and the subsequent effect on patient outcome has a concrete status and that regardless of how frailty is perceived or taught, the individual patient continues to have frailty and its associated risks. The epistemological position acknowledges that each participant will perceive and interpret frailty through their cultural lens and that *all* of these views of frailty are equally valid. Where participants in the subsequent studies discussed *their* interpretation and perceptions of frailty these have been described and equally formed part of the consideration in the analysis. Researchers also have cultural lenses, and previous experiences of the researcher will affect which questions are asked, what they look for and what they see in the data¹⁹². The researcher has reflexively pieced together their research, exploring the data and considering how their positioning affects their research processes¹⁹³ through the use of collages and a research diary, as discussed in Sections 1.8 and 6.3.3.

3.3 National Survey Method

3.3.1 Objective

The objective of the national survey was to outline the current perception of and approach to frailty in UGME within UK medical schools, to provide a cross section of information including frailty-related LOs, frailty-related teaching and assessment methods and to describe planned changes to meet the OfG recommendations¹³².

3.3.2 Recruitment

The Medical Schools Council (MSC) is the representative body for UK medical schools. The council is made of the Deans of UK medical schools, who meet to share best practice and shape the future of medical education in the UK²³⁷. Each institution nominates a Medical Education Lead (MEL) to represent them at the MSC education subcommittee. The specific role of the MEL at their institution varies across medical schools but typically they are Head of School or Head of Undergraduate Programme. The MELs from all 34 UK medical schools were identified and contacted via email through the MSC. If there was no response, the MEL was sent an email reminder at two weeks.

The MELs were asked to identify a representative in their institution with a comprehensive overview of the curriculum, and a knowledge of where frailty teaching and assessments may feature in their undergraduate medical degree. The nominated representative could be from any clinical, academic or administrative role depending on the institutional arrangement. The nominated representative was emailed with an overview of the project and a web link to the survey. Each representative was sent routine reminders at two, four and eight weeks. If a medical school had not responded to this recruitment strategy, they were contacted once by Training and Education Representatives in the BGS Trainees Council, who have links to members of faculty at medical schools throughout the UK. To make the results representative of the cohort all medical schools were invited.

3.3.3 Survey questions

Questions were designed based on BGS Good Practice Guide of Frailty²³⁸, national frailty guidance⁹ and published similar national surveys^{239–241}. The survey included multiple choice answers alongside free text boxes, where participants were invited to expand on their response. It concentrated on formal, timetabled teaching delivered to all undergraduates at each medical school. The survey was generated using Qualtrics software²⁴², an electronic survey tool that participants could complete at their own convenience. The survey was piloted before use by five senior faculty members at BSMS and following their feedback, the survey was shared with the BGS Education and Training Committee who then endorsed the survey for circulation. The final survey questions can be found in Appendix D. Following the survey response, all participants were invited for a follow up telephone call to clarify any areas of potential ambiguity and expand on responses.

3.3.3.1 Amendments to survey

The survey data collection process was iterative, with continuous monitoring and reflection of responses received. After ten responses it was felt that one of the survey questions could be considered double-barrelled, meaning where two or more questions are asked but only one answer is possible. This was discussed in depth with the supervisory team and additional advice was sought from a professor with an expertise in designing and validating surveys. It was decided that the question would be amended on the electronic version so that all whom subsequently completed the survey saw an updated version. Those who had already completed the survey were contacted via email highlighting the change in wording of the question, as summarised in Table 3.1. No participants changed their answer following this amendment.

Table 3.1: Original and amended questions from national survey

Original question	Amended question
Does your institution assess students on their knowledge, attitudes, skills or behaviour towards frailty?	Does your institution assess students on frailty?

3.3.4 Analysis of results

Data were collected over four months (May to August 2019). Medical schools were anonymised and randomly assigned a code between M1 and M25. Responses from the survey were exported into Microsoft Excel. Prior to each phone conversation, the responses from the survey were reviewed and notes of further follow up questions were made, for example to clarify what the changes were in responses to the OfG guidance or to expand on examples of assessment questions. A summary of the information provided over the telephone was typed directly onto a Microsoft Excel spreadsheet in real-time during the telephone call. If specific information such as a LO or exam question example was discussed, the participants emailed over examples of this and this information was added directly to the survey response document. All data were combined for analysis.

Data were then analysed using descriptive statistics of numerical data, presenting frequencies and percentages where relevant, and descriptive content analysis for the free text responses. Descriptive content analysis is a general term for a number of different strategies used to analyse text²⁴³. It can be considered a systematic approach used for systematically summarising and collating large amounts of textual information to describe the characteristics of the document's content²⁴³. To demonstrate the variety of content included within the frailty-related LOs, the LOs were independently grouped by three researchers into categories and mapped to a learning domain within OfG (values, skills, knowledge or a combination)¹³². This was

subsequently discussed between researchers and a consensus was reached. The results of the survey are presented in Chapter four.

3.4 Qualitative Study Method

3.4.1 Objective

The objective of the qualitative study was to describe how frailty is perceived, discussed and approached by CTs and MSs and explore how the current perceptions and discussions of frailty may influence what is being taught and learnt about frailty in UGME.

3.4.2 Participant sampling and recruitment

This qualitative study includes MSs and CTs (including GPs and consultant clinicians in secondary/tertiary care). This approach allowed exploration of the experiences of the two groups (teachers and learners) and enabled similarities and differences of opinions to be identified both between and within groups. In Brighton and Sussex Medical School (BSMS) MSs complete a five-year undergraduate course, which is a typical duration of UGME in the UK²⁴⁴. In terms of CTs, the study recruited doctors in primary, secondary and tertiary care who have achieved their CCT. This group was chosen because although doctors of all grades are required to teach, consultants and GPs are expected to lead in the teaching and training of doctors and MSs in their specialty field²⁴⁵. From here on in the study, the term CTs will be used to mean hospital consultants and GPs collectively, unless otherwise specified. All participants were recruited via email distribution lists. The inclusion criteria are described below.

3.4.2.1 Medical student inclusion criteria:

- Medical Student at BSMS
- Voluntary participation

3.4.2.2 Clinical teacher inclusion criteria:

- Clinician at consultant level working at BSUH or as a GP within Brighton and Hove locality
- Have regular clinical contact with patients living with frailty (regular is taken to mean a minimum of one programmed activity per week)
- Teach BSMS MSs
- Voluntary participation

3.4.2.2.1 *Sample size*

It is crucial to use a sample that is appropriate to provide an adequate amount of data to answer the research questions guiding the study²⁴⁶. Sample size is not a simple question and is informed by many pragmatic factors including timing and logistics, recruitment of participants and the results of data^{246,247}. Through using techniques suggested by Marshall et al²⁴⁶ and Braun and Clarke²⁴⁷ an initial estimate of a minimum sample size of 20 participants was obtained to guide time scales and recruitment strategies. This included using guidelines from methodologists^{192,248} as well as through precedent of similar studies¹²⁵.

The concept of data saturation is broadly defined as the point at which no new themes or codes are yielded from data and evolved from the more tightly conceived notion of theoretical saturation in grounded theory²⁴⁷. Traditionally data saturation was considered as an unquestioned gold standard of qualitative research to justify a sample size but there is increasing discussion related to the imprecise use of the concept, multiple definitions and understandings of what data saturation is, as well as the relevance to all forms of qualitative research^{247,249–251}. This incompatibility is particularly relevant with reflexive Thematic Analysis (RTA), the method used for data analysis in this thesis²⁴⁷. In RTA, the themes are developed from codes with the potential for new theoretical insights to be made for as long as data continues to be collected and analysed²⁴⁷. This is in contrast to other approaches to Thematic

analysis (TA), for example in coding reliability where coding is typically conceptualised as a process of allocating data to pre-determined themes^{247,252}. It is also important to consider the theoretical underpinning of this research in this context. Data saturation relies on the notion that there is no additional information to be sought, which relies on a realist ontology where one true reality exists^{247,253}. A CR perspective asserts that meaning is understood through a construction of the perspectives of individuals, including the researcher and therefore through interpretation of data new meanings are (theoretically) possible²⁵³.

In this thesis, the researcher agrees with the notion that coding and deeper analysis do not inevitably reach a fixed end point and determining sample size is a pragmatic exercise shaped by the time and resources available, not through data saturation²⁴⁷. The researcher made a situated judgement about the final sample size, when to stop coding, when to move to theme generation and when to move to mapping thematic relationships. This was an iterative process, shaped by the adequacy of the data (including richness and complexity) and the narrative of the themes to address the research aims.

3.4.2.3 Sampling process

Stratified purposive sampling was used to ensure a cross-section of MSs within BSMS and range of CTs across specialities. The purpose of a stratified purposive sample is to capture variations and broader experiences rather than to identify a common core, although the latter may also emerge²⁵⁴. CTs and MSs were recruited on a first-response basis to aim for CTs across a range of clinical specialties and clinical experience and MSs across year groups.

Using the estimated sample size described above as a guide, the MS subgroup included up to two students per year of study to ensure inclusion of the voices of MSs with different levels of experience (in view of the recognised link between MS

attitudes towards older people and frailty dependent on their year of study^{127,255,256}). The CT subgroup was divided into two approximately equal sized groups of experts and non-experts in frailty where GPs and geriatric medicine consultants made up the expert clinical teacher group. This decision was made based on findings of the scoping review and national survey results that highlighted that frailty-specific teaching mainly occurs in the geriatric medicine block with plans to evolve teaching strategies into primary care alongside guidance where geriatricians and GPs are largely considered to be those who will predominantly look after patients with frailty⁹. The division of frailty experts and non-experts to explore perceptions of frailty has been undertaken in previous research related to speciality nursing and auxiliary staff, not previously with doctors¹⁰⁵. The participants in the non-expert clinical teacher group included consultants across a spectrum of hospital specialities.

3.4.3 Development of the interview method

There are multiple methods available for conducting a qualitative study, based on which best answers the aims of the study alongside the researcher's underlying philosophical approach²⁵⁷. Qualitative methods such as interviews, focus groups and observations in the clinical and educational environments were considered. Observations of CTs and MSs was felt not to be the right method to explore perceptions of participants, alongside pragmatic reasons such as the skillset of the researcher and time available to undertake the research (in view that classical ethnography requires extended stretches of fieldwork to allow meaningful data to be gathered)²⁵⁸. There was concern that by using focus groups participants may feel uneasy describing their own views of frailty in the presence of colleagues (in view of the challenges of defining frailty and the recognised negative perceptions) and would not discuss their opinions openly²⁵⁹. Interviews are recognised to be appropriate where little is known about the topic or where detailed insights are required from individual participants and it was felt that one to one interviews would be the best method to answer the research aim and objectives²⁵⁹. Three pilot semi-structured interviews were undertaken in November 2018 using a topic guide with registrars from a range of clinical specialties. Informed consent was received from participants. Each participant was asked to create a visual diagram in answer to "What is frailty or

what does frailty mean to you?”. The use of visual methods is discussed in Section 3.4.3.2. All participants in the pilot completed visual work as per Figure 3.2, Figure 3.3 and Figure 3.4.

Figure 3.2. Visual representation of frailty from pilot interview one



Figure 3.3. Visual representation of frailty from pilot interview two

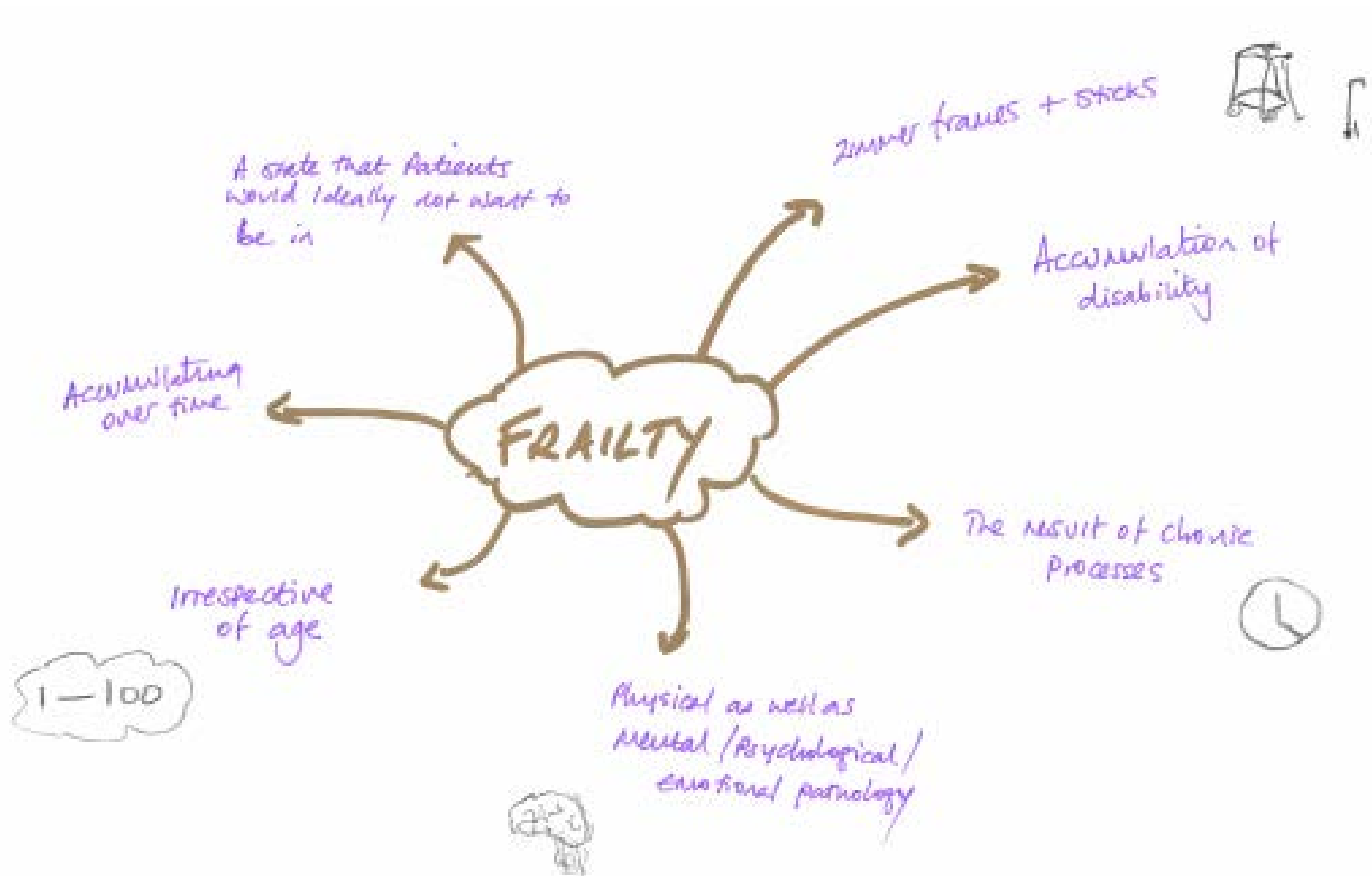
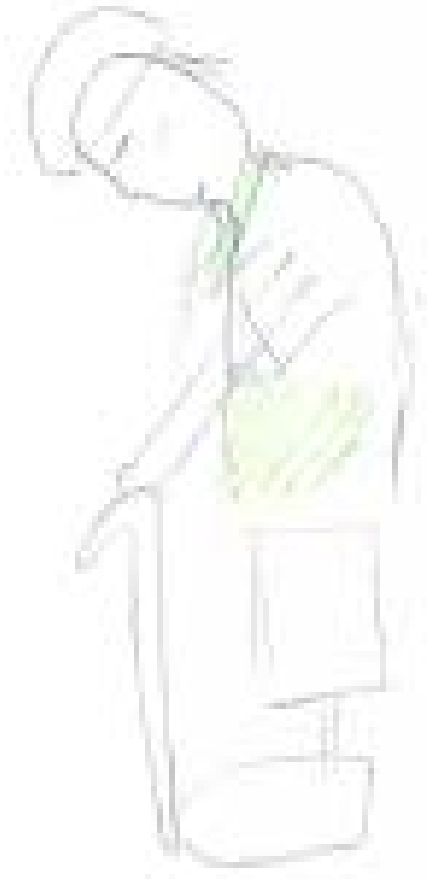


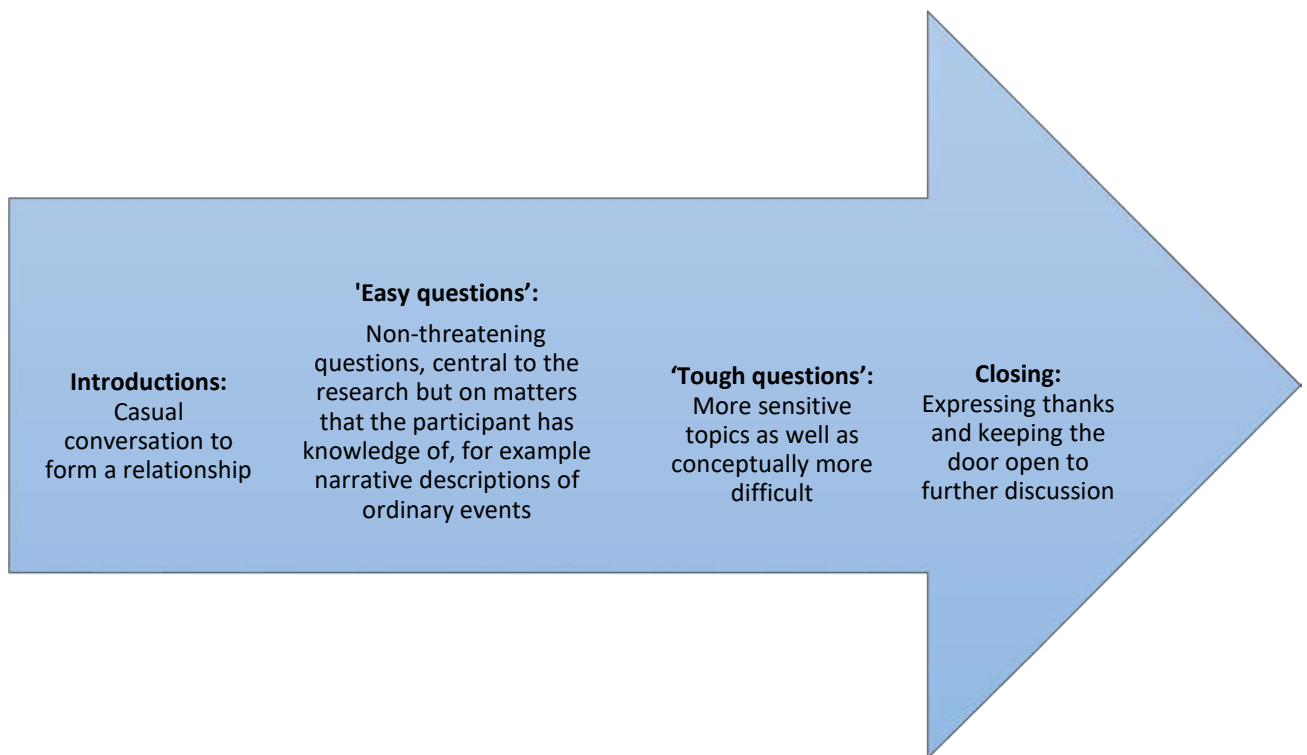
Figure 3.4. Visual representation of frailty from pilot interview three



It can be seen that participants in the pilot chose to complete both drawings and visual diagrams using a range of materials (pens, pencils, crayons). Each pilot interview was transcribed and reflected upon in a research diary and feedback from the participant was sought. The participants responded well to visual methods and noted that it helped them discuss frailty. These reflections combined with feedback were discussed with a supervisor to help understand, reflect upon and improve the interview style and technique. This reflection revealed that the pilot interview questions and responses felt too closed and stunted. Feedback from one participant was that it felt their views about frailty were being challenged, which was unintentional and surprising, and highlighted emotive aspects of frailty alongside hierarchy between the researcher and participants. This led to the exploration of alternative methodological approaches for the verbal part of the interview, specifically the adoption of response interviewing.

The responsive interviewing method is a style of qualitative interviewing that allows the researcher to understand the experiences of participants through their own words and stories to create meanings²⁵⁷. Responsive interviewing is a style of qualitative interviewing that emphasises the importance of conversational partnership and forming a mutual relationship during the interview between the researcher and participant. The tone of questioning is gentle and due to the conversational manner the participant holds an active role in determining the shape of the interview²⁶⁰. Due to the nature of responsive interviewing, the design remains flexible throughout the project and, although a topic guide is used, questions evolve in an iterative process in response to what the participants have said²⁶⁰, as per Figure 3.5 (Adapted from Rubin and Rubin, 2012, Chapter seven²⁶⁰).

Figure 3.5. Stages of the responsive interview



The responsive interviewing technique allows the researcher to understand experiences through the participant's words to create meaning and recognises that although participants have individual interpretations of their experiences, they may also add to the collective understanding of cultural perspectives of a particular group²⁵⁷. This method helps address previous interview challenges faced in the pilot and allowed participants to discuss freely about their experiences and perceptions, but also allowed an element of standardisation of the interview process. This included introducing the study to each participant in the same way and using a broad interview topic guide to standardise the 'easy questions'.

3.4.3.1 Interview topic guide

At the time of planning and undertaking the interviews, there was little published data on doctors' perceptions of frailty. Therefore, the initial interview guide was developed based on the results of the scoping review, national survey and the M.D. research

aim, following the principles of Rubin and Rubin in Figure 3.5. The topic guide provided a framework of 'easy questions' for the interview (for example, "Can tell me about a time you have taught about, or involved, a patient who has frailty in your teaching?") but was kept deliberately succinct and 'tough questions' iteratively evolved with the direction of the interview. The topic guide can be found in Appendix E.

3.4.3.2 The use of visual methods

In the pilot interviews the participants created a visual piece of what frailty means to them as can be seen in Figure 3.2, Figure 3.3 and Figure 3.4. The complementary use of visual methods in health research can help participants to openly express complex and challenging issues and has been shown to offer insightful knowledge about participants' perceptions and beliefs about medical conditions²⁶¹. Interpretive research aims to understand the invisibility of life but when a researcher works in a similar environment to the participants, such as in the case of this thesis, there is a danger that findings can be overshadowed by the enclosed world of common understanding¹⁹⁷. Introducing a visual element to the process of data collection can potentially give different ways of understanding and showing and may be an element that overcomes language, opens experience and makes the familiar more explicit¹⁹⁷.

Visual diagrams focus on the meaning associated with visual representations of experience, knowledge, perception, or memory and the relationships between these²⁶². It has been found that participants who complete a visual diagram on a topic were better able to recall, organize, and frame their reflections and provided more in-depth responses during interviews²⁶³. It is important, however, to be aware of the aversion that participants may have to visual methods of data production¹⁹⁷. This includes perceived artistic ability leading to omissions because the participant feels they cannot represent a concept visually¹⁹⁷. This was addressed through reassurance from the researcher, as well as providing examples of potential options

such as diagrams or stick drawings for those participants who had concerns about their artistic ability.

Following the pilot, the decision was made to include visual research methods, which were given as an option to all participants at the start of the interview. The verbal instructions given to the participants included that they may complete any form of visual representation of 'What does frailty mean to you?' or 'What do you think of when you hear frailty?'. Equipment was provided including coloured pens, pencil crayons, charcoal, paint, coloured paper and glue. When a participant decided to undertake a visual representation, participants were given the option for the researcher to leave or stay during this, and all participants invited the researcher to stay. Participants regularly chose to refer back to their drawing or diagram during the interview and used their image as a prompt for discussion. The interpretation of images is subjective and often conversation around the image is used to communicate meaning¹⁹⁷. In this study, the visual representations were used as a discussion point during interviews and although some images have been described to illustrate points of discussion, the images have not been analysed.

3.4.3.3 The final interview process

All interviews were facilitated on a one-to-one basis by the same researcher to provide consistency. The interviews were performed in a location chosen by the participant either in university buildings or the clinical environment. Participants were made aware of the purpose of the study and were advised that it was part of an M.D. project during the initial email contact, this was reiterated during the study visit and written informed consent was received in accordance with Good Clinical Practice guidelines²⁶⁴. Interviews were recorded using a digital audio recording device and accompanying short field notes were taken. At the start, all participants were invited to create an optional image about frailty, as above. The interview was based on the responsive interviewing method²⁶⁰, using an interview topic guide (as per Appendix E). The interview duration varied from 29 to 60 minutes (mean duration 44 minutes).

3.4.4 Transcription

Participants were assigned a pseudonym to protect their identity at the point of transcription. All interviews were transcribed verbatim by the researcher within 24 hours of undertaking the interview. This took approximately eight hours for each interview process and involved full immersion in the recording. Orthographic transcription was used and hence verbal utterances, including words and non-semantic sounds were included. The exception to this is when the researcher used 'mmm' to convey active listening to the participant which was not transcribed as it broke up the flow of the data considerably. The decision was taken to exclude punctuation from the transcription because in making decisions about punctuation use, such as where to begin and end a sentence, it may alter the interpretation of the text¹⁹². However, punctuation has been subsequently added to extracts of data included in the written reports to add readability¹⁹². Without altering the nature of the data, information pertaining to locations and any names of persons that were discussed have been removed. A key for the common notations used in the included quotations can be found in Appendix F. Participants were emailed a copy of the transcription within a week of the interview, to check for content, accuracy and ongoing participant agreement prior to any analysis of the data. No changes to the transcription were made following this process.

3.4.5 Data analysis

Data were analysed using inductive semantic RTA, as described by Braun and Clarke¹⁹². TA is an umbrella term for a set of approaches for analysing qualitative data that shares a focus on identifying themes across a dataset²⁶⁵. TA is a popular method for analysing qualitative data across many disciplines and has been widely used across social, behavioural and applied sciences, including health and education²⁶⁵. RTA is a term recently coined by Braun and Clarke to distinguish their version of TA from other approaches. RTA is theoretically flexible (it can be used

within different philosophical frameworks) but has a set procedure for the development of themes.

In RTA, a specific version needs to be chosen based on the research question and philosophical stance of the researcher, to ensure the analysis is theoretically coherent and consistent²⁶⁵. Inductive RTA was chosen as there is so little known about how frailty is perceived and discussed by CTs and MSs. In Inductive RTA themes are directed from the content of the data (analysis is not shaped by initial theory although is shaped to some extent by the researcher's knowledge and philosophical stance)²⁶⁵. Both codes and analysis can focus at the semantic level or latent level, where semantic reflects the explicit content of the data and latent involves more conceptual interpretations of the data²⁶⁵. Commonly, inductive, semantic and critical realist approaches tend to cluster together²⁶⁵.

A code can be considered as a succinct label of part of the data where they capture a single idea associated with a segment of data²⁶⁵. A theme captures a common and recurring pattern, based on a multiple codes, demonstrating different facets of the idea²⁶⁵. In RTA, themes are identified through a rigorous analysis process of data familiarisation, data coding, and theme development and revision, based on Braun and Clarke's six phase process. Each step of this process has been described based on Braun and Clarke in the context of this thesis (See Figure 3.6 for a summary of the process)^{192,265}.

Figure 3.6. The six phase process of analysis in Reflective Thematic Analysis

Phase	1: Familiarisation with the data
	2: Coding
	3: Generating initial themes
	4: Reviewing themes
	5: Defining and naming themes
	6: Writing up

3.4.5.1 Familiarisation with the data

This stage involved full immersion in the data by re-reading and re-listening to the transcripts written at the time of interview, alongside reading the reflective notes made about each interview.

3.4.5.2 Coding

Initial semantic codes were produced that identified important features of the data that might be relevant to answering the research question. It involved coding the entire dataset using inductive coding and then collating all the codes and relevant quotes for later stages of analysis. NVivo 12 Pro software²⁶⁶ was used for this step of the process and an example is included in Figure 3.7.

Figure 3.7. Data extract with example of initial coding

“Mostly I think when people are talking about frailty they are talking about *physical* frailty but I like also if possible to think about mental frailty”

Key of codes:

Assumption of how others interpret frailty

Physical frailty

Mental frailty

3.4.5.3 Generating initial themes

Codes and data extracts were iteratively examined to identify potential themes, which also involved reviewing the viability of each potential theme. This step was undertaken manually with the codes generated by the researcher using NVivo 12 Pro software²⁶⁶. An overview of this process can be seen in Figure 3.8, where the red represents potential sub-theme names and the white represent codes .

Figure 3.8. A representation of the generation of initial themes



3.4.5.4 Reviewing themes

Potential themes were checked against the dataset, to determine that they were appropriately addressed the research question. In this phase, the themes were refined, which involved them being split, combined, and discarded. This process was undertaken through verbally discussing themes with supervisors, writing summaries of themes and through writing up the themes to check that the themes individually

and unitedly answered the research question, told a convincing story of the data and that each theme shared meaning underpinned by a central idea. This was an iterative process over the course of four months and included multiple rounds of themes.

3.4.5.5 Defining and naming themes

This phase involved developing a detailed analysis of each theme, clarifying the scope and focus of each theme and deciding on an informative name for each as well as creating a thematic map to show how the themes relate to one another (Figure 5.2). Throughout all stages the supervisory team was consulted for validity, but not to seek inter-rater reliability. Coding quality in RTA stems from depth of engagement with the data, and situated, reflexive interpretation, not from consensus between coders²⁴⁷. Reliability, and replicability, are rooted in a realist view of a single external reality whereas a critical realist approach acknowledges multiple realities hence coding can, and should be subjective²⁶⁵.

3.4.5.6 Writing up

This final phase involved intertwining together the analytic narrative, themes and data extracts in relation to existing literature. The participant's pseudonym and role (and in the context of MSs their year of study) are presented alongside the supporting quote or image. The results of the qualitative study are presented in Chapter five.

3.4.6 Ethical considerations

It was important to consider the ethical issues surrounding this M.D. in advance of, and throughout, the project. The researcher considered the risks and benefits of for participants of the interviews and made these clear in the participant information sheet (Appendix G) and consent form (Appendix H). The BSMS Research

Governance and Ethics Committee (RGEC) granted ethical approval to proceed with the qualitative study (Reference: ER/BSMS9638/2) (Appendix I) and national survey project (Reference: ER/BSMS9638/1) (Appendix J) in December 2018. Additionally, the researcher underwent training by the National Institute for Health Research (NIHR) on Valid Informed Consent and Good Clinical Practice to ensure the quality of the ethical conduct of the research. Participants in both studies provided written informed consent.

The protection of research participants was considered at all times, this includes anonymity, providing support in case of any distress and acting with integrity to finish data collection and accurately represent data. It is well recognised that the results of qualitative studies can present a different story from that told by participants¹⁹² because analysis of data involves interpretation through a lens. For the qualitative interview study all participants were provided with a summary of their transcription and electronic copy of their visual media to check for accuracy and ongoing participant agreement prior to any analysis of the data. Participants of the survey and interviews were reminded they could request a copy of the final report and would be notified of completion.

To maintain confidentiality all data were anonymised and stored securely on a password protected hard-drive in a locked office. Hard-copy data, along with signed consent forms, will be stored in a secure filing cabinet in a locked office for a minimum of 5 years. Confidentiality is complex because the research displays words and images of real life individuals and institutions and anonymity is almost impossible to guarantee¹⁹². Interview participants were described using pseudonyms alongside details of their level of experience or clinical speciality and participants from the national survey described using codes. There is a risk that participants may be identifiable for example, institutions in the national survey described specific modules and teaching sessions that are unique to them. In the interviews one of the CTs discussed his background including his sub-specialist clinical interest, professional roles outside of clinical medicine and details of his doctoral degree.

These are specific information that could identify them and this was discussed during informed consent and was considered when writing the thesis. In anonymising data the researcher holds a responsibility to be sensitive to what might be identifying but to avoid changing it so much that it alters the meaning¹⁹².

Lastly, the role of the researcher as a doctor means that the researcher has a professional responsibility to break confidentiality in the event of seeing or hearing anything that may indicate a risk of harm to an individual and the pathway for this was described to participants during informed consent. This may have altered what the participants disclosed during the interview but no participants disclosed information that required further action.

3.5 Conclusion

This chapter has outlined the methods used in conducting and analysing the national survey and qualitative study conducted as part of this M.D. and discussed the ethical considerations of these methods. Results of these studies are presented in Chapters four and five.

Chapter 4. Results of the national survey: How frailty is perceived and approached by UK medical schools



Figure 4.1. The elephant in the room: A problem which is obviously present but is avoided as a subject for discussion (Researcher's collage)

Part of this chapter has been published (See Appendix K): Winter R, Al-Jawad M, Wright J, Shrewsbury D, Van Marwijk H, Johnson H, Levett T. What is meant by “frailty” in undergraduate medical education? A national survey of UK medical schools. *Eur Geriatr Med.* 2021. doi:10.1007/s41999-021-00465-9.

4.1 Chapter overview

This chapter describes the results of a national survey of UK medical schools exploring how schools have perceived and approached frailty within their undergraduate medical course. The results are discussed in the context of the scoping review findings.

4.2 Introduction

The previous chapter (Chapter two) found that, where teaching about frailty is described in the literature, it commonly refers to teaching that includes ‘frail patients’, but frailty as a concept or health state does not feature as part of the LOs. The review found that some frailty specific teaching exists and this can positively impact knowledge and attitudes towards frailty. This scoping review highlighted gaps in knowledge about frailty in UGME which include: further understanding of how teaching about frailty has been perceived and approached; exploration of which learning domains the teaching focuses on, such as knowledge, skills or values; understanding of whether patients with frailty are included in teaching and the associated challenges of this; and which assessment types are in use about the topic of frailty. Since in the UK it is a requirement that medical schools include frailty in their curriculum¹³², the gaps of knowledge found in the scoping review will be approached using a national survey of UK medical schools to provide a cross-section of current practice.

4.3 Objective

The objective of the national survey was to outline the current perception of, and approach to, frailty in UGME within UK medical schools, to provide a cross section of information including frailty-related LOs, frailty-related teaching and assessment methods and to describe planned changes to meet the OfG recommendations¹³².

4.4 Method

A detailed description of the method used in designing and undertaking this study, including details of the recruitment strategy and data analysis, is provided in Chapter three. To summarise, all UK medical schools were invited to complete an electronic survey. Schools described educational strategies used to teach and assess frailty and provided frailty-related LOs. Data were analysed using descriptive statistics and descriptive content analysis for the free text responses. The LOs were independently grouped into categories and mapped to a domain within OfG (values, skills, knowledge or a combination).

4.5 Results

Responses were received from 74% (25/34) of medical schools across the UK. 24 schools were recruited via the Medical Schools Council (MSC). One school was recruited via the BGS. One medical school declined to participate, two schools initially agreed to complete the survey but then did not respond to subsequent contact attempts. Six medical schools did not respond to the request from the MSC or BGS. 56% of respondents (14/25) participated in follow up telephone calls, which lasted for a mean duration of 11 minutes (range 7-18 minutes).

4.5.1 The roles of respondents

92% (23/25) of respondents had both clinical and academic roles at their institution. Of these, 70% of respondents (16/23) were the lead of geriatric medicine modules, and 87% (20/23) of respondents were consultant geriatricians. The remaining three respondents held roles in general practice, paediatrics and psychiatry. The two respondents who did not have dual roles were a curriculum manager and director of medical education.

4.5.2 Teaching about frailty

Of the responding medical schools, 80% (20/25) identified that frailty is taught in their curriculum, this is expanded upon in the further subsections.

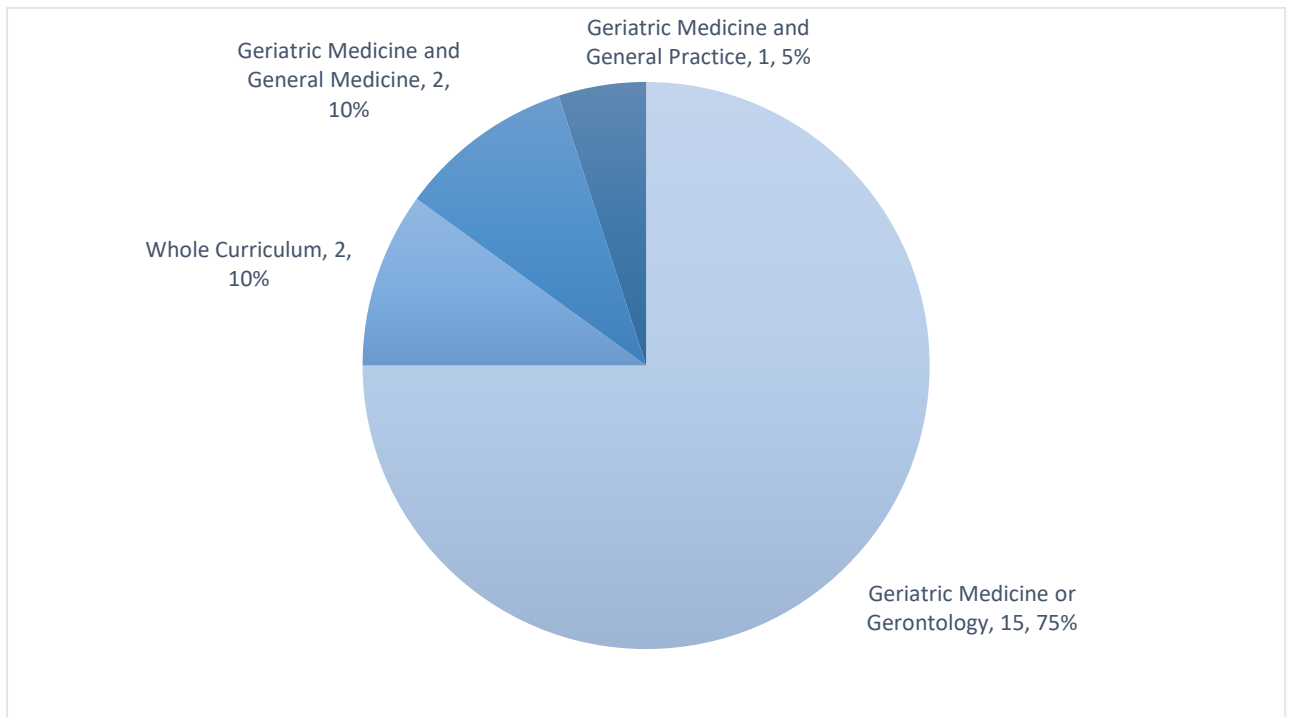
4.5.2.1 Time allocated to frailty teaching

40% (8/20) of respondents commented that it was challenging to disentangle the amount of time given to teaching frailty within their curriculum, two medical schools felt unable to provide a quantified response. 90% (18/20) of medical schools provided a value of time allocated to teaching about frailty and of these, 73% (13/18) provided values in terms of formal delivered teaching (lectures or small group) and time spent on placement, for example *“3-hour lectures and 10 weeks on elderly medicine placement”* (M3). The time allocated varied immensely; the shortest time provided was 10 hours (M20) yet this included specific frailty-related topics including the definitions of frailty, frailty syndromes and undertaking a CGA. Others stated longer time frames but were less specific and referred to opportunistic learning about ageing and frailty throughout the medical degree: *“4 to 5 weeks in total as frailty is a visible theme throughout the course”* (M9) and *“An ageing lecture and then experiential learning in a range of clinical settings”* (M17).

4.5.2.2 The location of frailty teaching in curricula

100% of respondents (20/20) indicated that frailty teaching occurred within geriatric medicine modules or placements. 75% (15/20) stated that frailty teaching occurred *exclusively* within geriatric medicine or gerontology rotations. Other combinations of frailty teaching can be seen in Figure 4.2.

Figure 4.2. The location of frailty teaching in the curricula of UK medical schools



4.5.2.3 The delivery of frailty teaching

4.5.2.3.1 Teaching faculty delivering frailty teaching

Frailty teaching was delivered by a geriatrician in 100% of cases, and exclusively by a geriatrician in 20% (4/20). The remaining 80% of schools described combinations of MDT members as faculty, with a minimum of three disciplines (for example geriatrician, occupational therapist, physiotherapist). In 25% of schools (5/20) GPs deliver teaching on frailty.

4.5.2.3.2 The method of delivery

Frailty teaching was delivered by a range of methods. Most medical schools (95% - 19/20) perceived that frailty teaching occurred opportunistically on clinical placement: “Frailty [is] not formally specifically delivered to all however likely to ‘crop up’” (M7) and “The integrated teaching ethos ensures exposure to frailty at all stages. Undergraduate students should get some exposure to clinical geriatrics during

medical ward attachments and this will include patients with frailty" (M25). In a free text box, 25% (5/20) of medical schools described that students learnt about frailty through completing or observing the CFS⁷: *"The CFS is used in clerking proforma's so all students encounter frailty frequently"* (M3) and *"Students encounter frailty in the form of the clinical frailty scale being done on all patients when they come into hospital"* (M7). 85% (17/20) taught about frailty via case studies, typically based around patients presenting with a fall, delirium or a chronic condition such as heart failure. 80% used small group teaching and 80% used lectures. 45% of medical schools taught about frailty via community visits, 30% used reflective writing to teach about frailty and 30% used computer aided learning.

4.5.2.3.3 Which year groups are taught about frailty

In 65% (13/20) of cases, frailty is taught in more than one-year group, most commonly years two and four although several combinations of a junior year (years one and two) and senior years (three, four, five, six) were provided. MSs in year four most commonly received frailty teaching (13/20).

4.5.2.3.4 Who is frailty teaching taught with (Interprofessional education)?

20% (4/20) of medical schools taught about frailty with students from other professions. These included prescribing workshops involving MSs, pharmacy students and nursing students (M2, M15). Other IPE sessions included teaching around ethical issues in ageing (M2) and frailty, and a seminar about discharge planning (M17).

4.5.2.4 The content of frailty teaching

The content of frailty teaching includes: the definition of frailty (100%); frailty screening and assessment tools (95%); roles of the MDT in frailty care (95%); frailty diagnosis (90%); and frailty management (90%). 55% of schools taught about frailty

prevention. There was a variety of frailty-related content described across schools, ranging from broad topics around the older person: “*Mainly [we cover] - epidemiology of ageing, setting the scene of hospital admissions and basic science, polypharmacy, falls, delirium, dementia etc [there is] not much on [frailty] scoring, language*” (M8) to more specific content including lectures about the concept of frailty and alternative concepts such as Intrinsic Capacity (M1).

4.5.2.5 Examples of current frailty teaching in practice

Four examples of frailty-related teaching have been selected by the researcher to demonstrate the diversity of how frailty-related teaching is currently being approached across UK medical schools in Table 4.1. The descriptions of the examples were provided in the survey and have been summarised by the researcher. Each example is taken from a different medical school.

Table 4.1: Examples of frailty-related teaching in practice

Teaching modality	Teaching content
<p>Pre-reading of two seminal papers on frailty and sarcopenia^{5,267}</p>	<p>Students complete a workbook based around a patient with heart failure who has frailty. They decide the patient's frailty status based on the phenotype and cumulative deficit models. This is then discussed in small group sessions. The CGA is taught in a clinical skills session on gait and balance assessment is delivered by non-medical HCPs. (M23)</p>
<p>Completion of a case-based workbook</p>	
<p>Small group discussion</p>	
<p>Clinical skill session with MDT</p>	
<p>A frailty teaching ward round (WR)</p>	<p>Led by a Teaching Fellow (TF), within and parallel to the consultant WR. The TF identifies and highlights key learning opportunities to the students. Students are taken aside for a short tutorial led by the TF, running parallel to the WR, to discuss a topic in more depth, to help break down the complexity and uncertainty surrounding patients with frailty. (M3)</p>
<p>Online tutorial and video</p>	<p>Normal ageing and frailty are introduced via e-learning, including watching Mrs Andrews' story²⁶⁸. Important learning points are discussed in small groups around a clinical case. (M11)</p>
<p>Small group discussion</p>	

Year-long longitudinal primary care placement

Students attend placement weekly with a specific focus on patients with frailty. They complete a CGA and management plan on a patient they have seen.

Reflective writing

Students undertake a three-part reflective written piece on the meaning of frailty from the perspectives of the patient, MDT and student, bringing in a critical evaluation of their management plan and the literature around frailty.
(M10)

4.5.3 Frailty-related learning outcomes

60% (12/20) of schools provided frailty-related LOs. This included 61 LOs which demonstrated the variety of how frailty has been interpreted by schools. The LOs were grouped into nine categories and mapped to the three learning domains from OfG; knowledge, skills and values (See Table 4.2). From the LOs provided, 13 LOs covered more than one learning domain. Knowledge was represented most commonly (66% - 40/61) followed by values (30%, 18/61) and skills (26%, 16/61). Only 17% (2/12) of medical schools provided LOs across all three domains of knowledge, skills and values.

M19 described challenges of providing frailty-related LOs which again reflects the nature of how differently frailty can be interpreted from a specific long-term condition to a concept that affects many conditions and highlights how curriculum mapping may need to evolve to be more frailty-related: *“[Mapping frailty] presumes that these are distinct sessions. This is not the case with modern integrated medical curricula where, for example, aspects [of frailty] may be woven into multiple sessions”*

Table 4.2: The categories and learning domains of learning outcomes about frailty in UK medical schools

Category	Example learning outcome	Total LOs in category	LO domains
The concept of frailty, including frailty scores	Understand and describe the concept of frailty (M4)	11/61	Knowledge: 9 Skills: 2 Values: 1
Comprehensive Geriatric Assessment (CGA)	Understand what comprehensive geriatric assessment is, its importance; be aware of the evidence supporting this approach in improving health outcomes in frail older people. (M17)	11/61	Knowledge: 8 Skills: 6 Values: 0
Chronic conditions and polypharmacy in the older person	Understand the basic principles and options / strategies for "Chronic Disease Management" in the Older Patient. For example. CCF; COPD; Dementia; Chronic Leg Ulcers with reduced Mobility; Osteoporotic fractures; Cerebrovascular Disease; Parkinson's (M2)	11/61	Knowledge: 10 Skills: 1 Values: 0
Impact of illness and ageing on the older adult and society	Recognise that ill health in older people is often due to a complex mix of medical, physical, psychological, and social problems. (M15)	10/61	Knowledge: 7 Skills: 0 Values: 8
MDT roles, and discharge planning	Recognition of the need to work constructively and considerately with other members of the MDT, family and carers (M3)	7/61	Knowledge: 1 Skills: 1 Values: 5

Ethical and legal topics around the older patient	Assess patient's capacity in accordance with legal requirements and GMC guidance. This includes the Mental Capacity Act 2005, Deprivation of Liberties Safeguards and the role of Best Interest Decisions (<i>M11</i>)	3/61	Knowledge: 1 Skills: 1 Values: 3
Advance Care Planning, End Of Life Care and Death	Understand the basic principles of "Realistic Medicine," "Advance Care Planning," "Anticipatory Care Planning," "End of Life Care" / Palliative Care (especially in relation to Older Patients) (<i>M2</i>)	3/61	Knowledge: 1 Skills: 2 Values: 1
Investigations	Initiate, justify and interpret appropriate haematological, biochemical, radiological and other relevant investigations pertaining to the clinical condition(s) (<i>M11</i>)	3/61	Knowledge: 1 Skills: 3 Values: 0
Gerontology	To develop an understanding of the biology of Ageing and the factors that can promote/ lead to healthy ageing (<i>M4</i>)	2/61	Knowledge: 2 Skills: 0 Values: 0

4.5.4 Assessments about frailty

80% (20/25) of medical schools identified that they assess students around the topic of frailty. In 90% (18/20) of cases, the same medical schools that are teaching students about frailty are also assessing about frailty. One medical school (M13) reports that they teach about frailty but do not assess and another (M18) reports they assess but does not teach about frailty.

OSCEs (85%) and Single Best Answer (SBA) (70%) examinations were the most common assessment methods used. Examples provided include cases around 'frail patients' with a fall, delirium, pressure sores or deterioration of a chronic condition rather than frailty as a concept. Schools do not routinely assess about the definitions of frailty, frailty screening and assessment tools, roles of the MDT in frailty care, frailty diagnosis and frailty management, despite over 90% of medical schools teaching about them, as per section 4.5.2. Case discussions (45%), reflective writing (30%) and Short Answer Questions (25%) were also used. Formative assessments including logbook completion and Workplace Based Assessments were common, and in one institution the logbook completion was summative. In terms of SBAs, an example was provided that included a short patient case which then led to "Which of the following test results best predict frailty?" Answers included: "Forced Vital Capacity, Forced Expiratory Volume in 1 second, Loss of vibration sense, Slow gait speed".

Some challenges of including patients with frailty in assessments, and the artificial nature of timed assessments were discussed: *"Patients need to be able to travel by car/taxi independently, communicate succinctly and be examined a number of times... Do we really want to assess a number of complex issues in an OSCE or OSLE in a number of minutes? How does that train students to approach complexity, and does that train them to think you can do a frailty assessment in 6 minutes, we would criticise that in an F1 [Foundation year one doctor]"* (M19)

4.5.5 Planned GMC changes related to frailty

60% of medical schools (15/25) have planned changes to meet the OfG recommendations surrounding frailty. One medical school plans to evolve their programme to include more frailty based on the BGS undergraduate curriculum²³³; three schools are extending the time allocated in primary care placements to deliver frailty teaching in the community. 12% (3/25) were unsure of any planned changes to the curriculum to teach and assess about frailty. 28% (7/25) of the respondents denied making any changes to their curriculum. Of these, all had identified that they are already teaching and assessing about frailty and met the GMC recommendations. The two schools that do not teach or assess frailty are planning curriculum changes. One school provided details of the proposed changes: *“We are developing our teaching around complexity and multi-morbidity which will include, but not be exclusively focused on frailty. We are aware that patients with complex multiple morbidity and biopsychosocial issues...may not fall within the frailty definition whilst also having high (and sometimes greater) needs.”* (M22)

4.6 Discussion

The survey provides the first detailed description of teaching and assessment of frailty in UGME, exploring how frailty has been perceived and approached by UK medical schools. Its main finding is that the majority of schools identified that frailty is being taught and assessed in their institution yet there remains significant variation in the perceptions of what frailty is and how frailty in UGME has been approached. This varied between geriatric medicine in its entirety through to specifics of frailty and alternative concepts. The relativism expressed was also noted in the time schools provided to teaching frailty, where some described hours but specifically taught about the concept of frailty in comparison to others who detailed the time duration of a whole medicine course because frailty was felt to be a common thread throughout. It may well be that the institutions that provide conscious attention to frailty sessions (that last only hours) in comparison to those who perceive frailty as a common thread across the curriculum actually provide more frailty-related education.

The challenges around frailty in UGME are many, but predominantly are due to the perceptions of frailty and the way it is understood through the language used. This appears to have significant implications through UGME across curriculum design, teaching and assessment in UGME. From the review of LOs and teaching examples provided it can be ascertained that some institutions perceived frailty as a medical concept (teaching about the concept and definition of frailty, frailty assessment tools such as the Clinical Frailty Scale) and others considered frailty to equate to the whole of geriatric medicine (chronic conditions in the older patient, social impact of ageing, gerontology). This variation has significant consequences for the topics taught and assessed under the umbrella of frailty and reflects ongoing discussion amongst academics and clinical educators²⁶⁹. Despite a variety of perceptions of frailty, within the LOs provided, the concept of frailty, CGA and the roles of the MDT featured most commonly.

The teaching provided by medical schools covered the definition of frailty, the roles of the MDT and the diagnosis of frailty in over 90% of institutions as well as additionally frailty-related screening tools and the management of frailty within a CGA framework. These are similar to the findings of the scoping review and appear to be the core aspects of frailty currently being taught. Broadly, these align with the OfG LOs to adapt to management proposals and strategies in patients with frailty and to demonstrate working collaboratively with other health and care professionals and organisations when working with patients with frailty¹³². It is perhaps surprising that all medical schools teach a definition of frailty yet there is a lack of consensus as to the definition of frailty⁸⁵⁻⁸⁸ and the scoping review found that definitions of frailty in UGME vary across literature. Knowledge about frailty was the learning domain represented most commonly with deficiencies in education relation to values and skills. OfG now discusses the domain of values in replacement of attitudes but this finding mirror previous surveys describing UK undergraduate teaching on delirium and dementia, which identified failure to address student attitudes^{241,270}.

The survey found that students were taught about frailty across multiple year groups, most commonly in year four. The scoping review also found teaching that included 'frail patients' was across year groups but teaching about frailty as a concept, where present, was provided in the latter years of medical school. Many schools use a systems-based approach to learning and given that frailty is a multi-system condition it is unclear of the optimal stage in undergraduate training to introduce teaching and assessment about frailty.

The survey provides descriptions and examples of frailty-related teaching strategies which are varied in content and delivery, most likely due to the diverse ways in which frailty has been perceived. Case based teaching commonly involved a patient with fall, delirium or a chronic condition such as heart failure. It is unclear whether frailty as a concept was discussed or whether the focus of the teaching was on a topic but involving a 'frail patient' as per the scoping review. 95% of schools stated frailty teaching occurs opportunistically through exposure to patients with frailty on ward rounds and clinical placements. It is not clear from the responses whether this involves teaching about frailty including the use of the medical term, or purely experiential learning whilst in the clinical environment. Simply being present in a clinical environment does not guarantee that students will recognise or understand the concept of frailty or way having frailty impacts on ClinR and decision making.

Additionally, a number of schools discussed that students learn about frailty by completing or observing the CFS⁷. The CFS was designed to enable frailty to be measured in the outpatient clinical setting, not to teach about frailty⁹. As an opportunistic teaching tool, the visual scale may over-simplify frailty when trying to teach the complexity and nuance of frailty and this requires further exploration. It is unclear how the conceptualisation of frailty and subsequent ClinR is learnt through osmosis of being on the wards, and furthermore, what is being learnt.

Only one institution (M10) described formally involving patients in teaching, where students complete a CGA on a patient with frailty during a longitudinal teaching experience in the community. No medical schools described a patient involved in small group or large group teaching and reasons for this should be explored further. The lack of patient-educators is a missed opportunity as it is recognised they have a significant role in supporting students' learning¹⁶⁶. The personal insights of patients could be crucial to how MSs perceive frailty among older persons, especially in view of the negative perceptions of frailty held by older people themselves as well as MSs^{105,127,166}. The challenges of involving patients were highlighted in terms of the ability of the patient to 'perform' (succinctly communicate, repeated examinations, ability to travel) as well as concerns as to whether it is counterintuitive to teach students to undertake complex assessments in short timed examinations that do not reflect the time that it would require and be provided in reality as a doctor (nor involve the MDT of which is recommended when completing a CGA²⁷¹). This discrepancy between training and reality was also found in the scoping review.

Only a small proportion of medical schools currently teach about frailty in the community and the most commonly reported medical school change to meet OfG included increasing time that students spend in primary care. The scoping review highlighted that the community could be a rich learning environment to teach about patients with frailty. The positioning of frailty within geriatric medicine, within the hospital does not represent the demographics of all patients with frailty^{17,18}. People that have frailty live in the community and receive health and social care in the community and the concern is that restricting frailty to hospitals allows for students to only understand frailty when patients present with a health or social crisis. Further concerns are that by associating frailty only within geriatric medicine rotations it may be too reductive for student learning. The ClinR around frailty is complex and if students only learn about frailty within geriatric medicine they may not be able to identify frailty in other environments or have an awareness of how frailty impacts the patient's management strategy, as per GMC recommendations¹³².

This survey suggests that currently geriatricians hold the responsibility for delivering frailty teaching in UGME. It also suggests that the gatekeeper, in this case a senior member of medical school faculty, perceives that frailty is the responsibility of geriatric medicine. This is similar to the findings in the scoping review where the authors who taught frailty as a concept were geriatricians describing frailty teaching in geriatric placements. There is, however, a wealth of data regarding the relevance of frailty on patient outcome in clinical specialties other than geriatric medicine^{62,66,83,272}. Additionally, there is an increasingly recognised role of primary care in identifying and managing frailty; in 2017 NHS England introduced a new requirement for all general practices to identify and appropriately manage all patients over the age of sixty-five with moderate or severe frailty^{26,27}.

A multi-disciplinary approach is required to meet the complex care needs of older people living with frailty⁹ and encouragingly, 80% of medical schools use at least three members of the MDT to teach about frailty, in keeping with GMC guidance¹³². Conversely, the proportion of schools framing Interprofessional education (IPE) around frailty was low at 20%. This finding was supported by the scoping review that highlighted a requirement for more IPE. IPE occurs when students from two or more professions learn about, from and with each other to improve health outcomes. It has been shown to be effective in positively changing patient outcomes²⁷³⁻²⁷⁵ and is advocated in OfG¹³². IPE needs to be developed within curriculum and applied within authentic settings²⁷⁶. Without IPE, graduates are at risk of entering their chosen profession with limited understanding of how other professions can contribute to patient care²⁷⁶, which is crucial in patients with frailty.

The assessments in use were most commonly OSCEs and SBA questions but included reflective writing and the use of student logbooks. In view of the challenges of defining frailty as per the introduction chapter, the use of SBAs is of interest, since it could be considered challenging to create frailty-related questions that have a clear single best answer. Of the examples provided it was unclear of their value in assessing student knowledge, since the other optional answers provided were not all

plausible, nor homogenous. Subsequently, the correct response appeared easy to deduce even if the lay meaning was considered. The clinical assessment examples most commonly described OSCE scenarios included a history or communication station involving a frailty syndrome (fall, episode of delirium) or prescribing stations demonstrating polypharmacy. In the examples provided, the station included a 'frail patient' but frailty was not the focus of the station, in keeping with the scoping review. Additionally, the assessment examples provided do not appear to reflect the LOs provided, nor the diversity of the teaching that has been described. For example, all medical schools teach the definition and diagnosis of frailty, yet none assess this. This suggests a lack of constructive alignment; where all components in the educational system including the LOs, teaching methods and assessment methods should align to each other¹⁸⁸. As discussed in the scoping review chapter, assessment drives learning¹⁷⁰. Consensus should be reached prior to the commencement of the national MLA in the UK of how frailty will be best assessed.

4.6.1 Limitations

A strength of this study is the high response rate for a survey of this type, capturing a breadth of experiences, with participation maximised through a number of recruitment measures. The survey has some limitations. Not all UK medical schools were represented and data were collected from one individual at each medical school. It is unlikely that one individual can hold an in-depth understanding of the curriculum and related educational strategies, particularly devolved parts, and this may introduce bias. An alternative method would be to request the curriculum from each institution and for the researcher to extract frailty-related LOs, yet this option would provide the researchers interpretation of frailty related LOs, not the perceptions of the respondent. Additionally, LOs do not necessarily translate into teaching strategies, for example, the survey found that much of frailty teaching was opportunistic on WRs or completing a CFS with no such corresponding LOs.

The participants who denied teaching or assessing about frailty may be considered by some to provide teaching and assessment on frailty, and this can be equally true to the contrary that some who have stated they teach and assess about frailty, do not. Of the five schools that stated they did not teach about frailty, two provided comments describing (to the researcher) an insightful understanding of frailty. They both described that frailty syndromes were taught but that frailty as a concept were not. It is recognised to be challenging to self-assess your performance (or that of your institution) and an individual with more knowledge about frailty may paradoxically be more likely to evaluate themselves poorly compared with peers due to their 'known unknowns'.

The integrated nature of frailty across multiple conditions and body systems alongside the nature of some medical schools' curricula meant that the structure of a survey may have made it more difficult for schools to detail responses and extract frailty-related LOs. However, to align with the OfG document, medical schools will need to be able to map frailty to their curriculum. The survey does not include where universities have evaluated educational strategies, through either student feedback, patient feedback or changes in student knowledge, values or skills. With a cross-sectional survey, relatively limited and superficial responses can be achieved and these provide a snap-shot at best. Each respondent was emailed for telephone follow up to clarify and enhance understanding of their responses; 14 respondents participated in telephone follow up. All who completed the electronic survey provided complete responses, however some respondents provided only minimal information and did not respond to the telephone follow up option. Medical schools were anonymised but due to the variation in curriculum design and delivery of frailty teaching it is not possible to ensure that medical schools are unidentifiable. This may have led to a social desirability bias where respondents take pride in good provision and wish to be reported as such and may over report their educational strategies around frailty. Lastly, this survey focuses on the UK only and results may not be generalisable.

4.6.2 Recommendations

Recommendations from the national survey are discussed in combination with the recommendations from the qualitative study in Chapter six.

4.7 Conclusion

The survey provides the first analysis of teaching and assessment of frailty in UGME and has furthered understanding about frailty in UGME whilst supporting the findings of the scoping review. The majority of schools identified that frailty is being taught and assessed in their institution. The findings emphasised relativism in participants' understanding and approach to frailty; medical schools do not mean the same thing as one another when they discuss frailty in UGME. Consequently, there are significant variations in frailty-related LOs and in the content and delivery of frailty specific educational strategies, with a lack of constructive alignment within medical schools. Teaching focuses on knowledge, not values or skills. Assessments about frailty are not commonplace, and where they exist focus on other conditions that involve a 'frail patient'.

There appeared to be little consensus as to which aspects about frailty should be core in UGME but within the LOs provided, the concept of frailty, CGA and the roles of the MDT featured most commonly, in keeping with findings from the scoping review. The survey further highlighted that frailty is seen as the responsibility of geriatricians and that there is a belief that frailty teaching and learning occurs informally and opportunistically during clinical rotations, mostly in the hospital setting. In view that teaching about frailty refers to opportunistic learning in the clinical environment, further research is required to understand how MSs and CTs across specialties perceive and discuss frailty and how these impact on what students are taught and learn about frailty. The findings are discussed further in Chapter six, alongside future recommendations.

5.1 Chapter overview

Through the process of reflexive thematic analysis, this chapter presents the findings of the qualitative interview study. The findings are discussed intertwining together the analytic narrative, themes and data extracts in relation to existing literature.

5.2 Introduction

The results from both the scoping review and national survey emphasised relativism in individuals' understanding and approach to frailty, whereby individuals do not mean the same thing as one another when they discuss frailty. The scoping review described the importance of language around frailty in medical education, where the term is commonly used by medical professionals and students in a colloquial sense. The survey highlighted that frailty is seen as the responsibility of geriatricians and that there is a belief that frailty teaching and learning occurs informally and opportunistically during clinical rotations. This part of the study aims to understand how frailty is perceived, discussed and approached by CTs and MSs to ascertain what is being taught and learnt in clinical and educational environments.

5.3 Objective

To describe how frailty is perceived, discussed and approached by CTs and MSs and explore how the current perceptions and discussions of frailty may influence what is being taught and learnt about frailty in UGME.

5.4 Method

A detailed description of the methods used in designing and undertaking this study, including details of the ethical considerations, recruitment strategy and data analysis, are provided in Chapter three. To summarise, CTs (including GPs and hospital

consultants) and MSs were interviewed on a one-to-one basis using a responsive interviewing method²⁶⁰. Data were analysed using inductive semantic reflexive thematic analysis, as described by Braun and Clarke¹⁹².

5.5 Analysis

5.5.1 Interview participants included in study

The sample included MSs across all year groups at BSMS, and CTs across a spectrum of clinical specialities and years of experience (described to the nearest 5 years). Table 5.1 provides an overview of the demographic information collected of the interview participants.

Table 5.1: Demographic information of interview participants

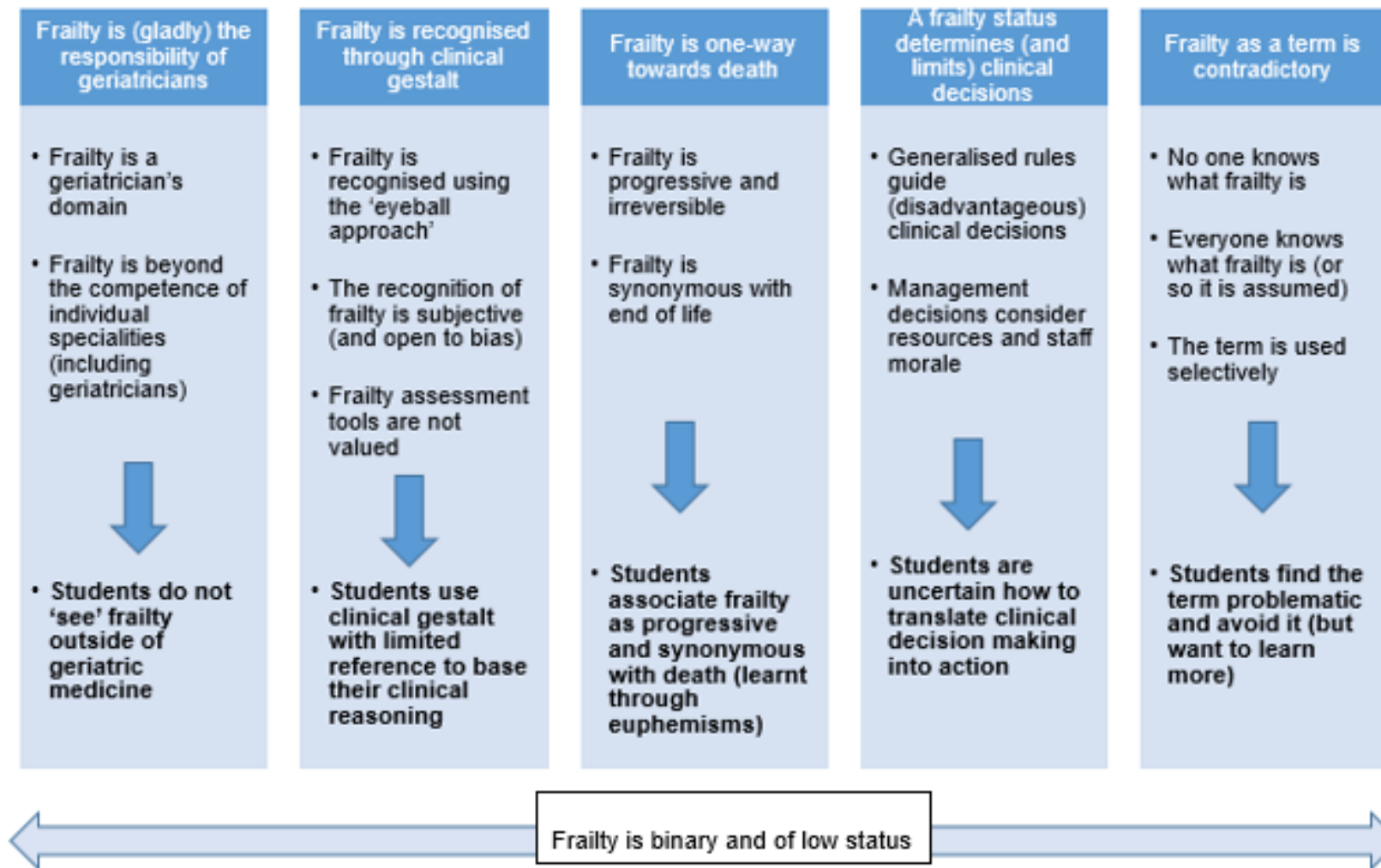
Pseudonym	Role and stage of experience
Ben	Medical Student, 3 rd year
Charlotte	Medical Student, 1 st year
Hannah	Medical Student, 1 st year
Katie	Medical Student, 2 nd year
Jenny	Medical Student, 3 rd year
Joe	Medical Student, 4 th year
Rachael	Medical Student, 5 th year
Andrew	Consultant General Surgeon, qualified 35 years ago
Colin	Consultant Cardiologist, qualified 30 years ago
David	Consultant Radiologist, qualified 20 years ago
Elizabeth	General Practitioner, qualified 25 years ago
Greg	General Practitioner, qualified 10 years ago
Isabel	Consultant Geriatrician, qualified 10 years ago
Kieran	Consultant Ophthalmologist, qualified 30 years ago
Laura	Consultant Gastroenterologist, qualified 15 years ago
Mia	Consultant in Intensive Care and Acute Medicine, qualified 15 years ago
Owen	Consultant Endocrinologist, qualified 45 years ago
Paul	General Practitioner, qualified 30 years ago
Simon	Consultant Geriatrician, qualified 40 years ago
Tom	Consultant in Palliative Medicine, qualified 20 years ago
William	Consultant Geriatrician, qualified 25 years ago
Yvonne	Consultant Oncologist, qualified 25 years ago

5.5.2 Overview of findings

The study identified five major themes: frailty is (gladly) the responsibility of geriatricians; frailty is recognised through clinical gestalt; frailty is one-way to death; frailty determines (and limits) clinical decisions; and frailty as a term is contradictory, as per Figure 5.2. The low status of frailty implied by participants is an evident thread throughout all themes. It is known that frailty is negatively perceived by older adults^{104–107,112} and that geriatric medicine is of low status²⁷⁷, yet little is known about how HCPs and MSs perceive the status of frailty. Furthermore, the binary nature of frailty is also a common thread throughout this study: participants described where an individual either has frailty or does not.

The themes are discussed separately, supported by quotations and visual representations from interview participants. Each theme is considered in relation to each of the participant groups (CTs then MSs) to demonstrate both the similarities and differences in the voices of participants and demonstrate how the findings of the theme may impact on what is taught and learnt about frailty. It is important to consider the philosophical stance of this thesis, as per the introduction chapter. The epistemological position acknowledges that each participant (and the researcher) will perceive frailty through their cultural lens and that even within individual perceptions these may be contradictory. As a result, it must be noted that many of findings of this study indicate notable contrasts and contradictions, both *between* themes and *within* themes. This is deliberate because this work has found that frailty *is* contradictory and highlights the challenges involved with how frailty is perceived.

Figure 5.2. Thematic map of qualitative findings



5.5.3 Theme One: Frailty is (gladly) the responsibility of geriatricians

5.5.3.1 Introduction to theme one

This theme discusses how CTs perceive that geriatricians are the experts in frailty and responsible for the care of patients with frailty. It highlights that many CTs would prefer not to look after patients with frailty and discusses their reasons behind this, which include the low status of frailty and that frailty is seen as beyond the competence of individual clinical specialities (including geriatricians) due to lack of training on the topic. The theme then discusses how MSs perceive frailty as synonymous with geriatric medicine and have a limited scope of reference to recognise frailty; they only 'see' frailty in the context of geriatric medicine placements.

5.5.3.2 Theme one data

5.5.3.2.1 *Frailty is a geriatrician's domain*

This study found that CTs overwhelmingly assumed frailty to be the responsibility of geriatricians, in keeping with the findings from the scoping review (Chapter two) and the national survey (Chapter four). The responsibility was most commonly vocalised in terms of a requirement for more geriatricians to look after people with frailty: *"What we need is more gerontology experts doing this stuff [looking after patients with frailty], not general physicians"* (Owen, Consultant Endocrinologist). Owen implies that he does not perceive the responsibility of looking after patients with frailty to be part of his responsibility as a general physician. It is recognised that in the UK, the shape of services and training has resulted in a lack of generalist physicians and a pressure on generalists to focus on their 'ology'⁵¹. However, Owen's avoidance may be due to lack of desire to look after patients with frailty, and other medical CTs revealed their disappointment that they had patients with frailty under their care, despite the patient often having speciality-specific needs, such as a requirement for chemotherapy: *"We don't have erm geriatricians volunteering to look after our*

patients... unfortunately” (Yvonne, Consultant Oncologist). The tone of Yvonne’s quote possibly suggests that the patient group is an inconvenience, which is supported in the literature where conditions (especially frailty, multimorbidity and dementia) outside that of the set conditions of a clinical specialty, are seen as ‘complications’²⁷⁸. The sentiment of not wishing to look after patients with frailty that Yvonne expresses was described by other CTs who discussed wanting to pass on patients to other colleagues: *“You know, off the record a lot of my colleagues probably would rather just palm them [patients with frailty] off to geriatricians”* (Laura, Consultant Gastroenterologist). In the quote from Laura, the language used is negative both referring to patients with frailty as ‘them’ as a group and also using the term ‘palm off’ which means “to persuade someone to accept something that you do not want or has no value”²⁷⁹. This likely links to the low status of geriatric medicine²⁷⁷ and negative perceptions of frailty^{105,112} and how these impact on whether other specialties ‘want’ the responsibility of looking after patients with frailty.

It was highlighted that labelling a person as having frailty helps direct the responsibility of the patient to geriatricians: *“I see the frailty badge is a way of distributing out the work in handover meetings [to the geriatricians]”* (Tom, Consultant in Palliative Medicine). It was discussed by CTs that the desire to pass on responsibility of patients with frailty was to such an extent that frailty scoring systems had sometimes been manipulated by colleagues: *“There is a lot of up-scoring of the Rockwood [CFS] when it suits doctors to try and bounce them [the patient to the care of a geriatrician]”* (Simon, Consultant Geriatrician). Simon describes that the desire to handover patients is to suit the doctor’s need, not the patient’s, which links with Theme four. Although this deliberate up-scoring of a frailty status may reflect a desire not to look after patients with frailty due to the low status of frailty, it also may reflect the uncertainty many CTs expressed about frailty and management, and their vulnerability in knowing how best to look after patients, as discussed further in this theme. Either way, older people with multimorbidity or frailty have been found to feel undervalued by HCPs due to the design of hospital services and coordination of care²⁸⁰.

5.5.3.2.2 *Frailty is beyond the competence of individual specialities (including geriatricians)*

The geriatricians in the study expressed that they desire a role of liaison or shared care to all clinical specialities looking after patients with frailty, to optimise patient outcome:

“In an ideal world what the NHS should be is like what orthogeriatrics is today in that sense that geriatricians [...] help these wards who struggle with them [patients living with frailty] and the nursing staff, to have all specialities having help from frailty specialists” (Simon, Consultant Geriatrician).

In his quote, Simon assumed that non-geriatric specialities struggle to look after patients with frailty, assumed that geriatricians are the frailty specialists and that shared care models are the future of medicine, rather than doctors in other specialities upskilling and individually looking after patients. It is unclear whether this was to protect his role as a geriatrician or because he did not believe others could individually look after patients with frailty effectively. The latter view was supported by Andrew, a senior surgeon, who highlighted that in modern medicine he did not believe it to be feasible to be an expert in frailty as well as a competent surgeon and explained that the training required to reach a level of skill to achieve both was not possible, even with the best training:

“We [surgeons] are dying, we are dinosaurs and we shouldn’t really be working like this anymore [looking after patients with frailty] because it is not to anyone’s advantage. It’s not to the patient’s advantage...It is so complicated now looking after, say you are my ninety-year-old patient, the complexity of your needs and the chance that I might be able to understand all of that and be a technically competent surgeon...no [...] The last person they [a patient with frailty] need is a surgeon looking after them” (Andrew, Consultant General Surgeon).

Andrew's use of language demonstrates his strong concern that the structure of medicine and medical training needs to evolve to meet the needs of an increasingly complex population. He admitted a vulnerability that even as a very experienced surgeon, he cannot offer the patient as a whole the best care and therefore supported that the care of the patient should be shared. Recent literature recognises that frailty represents a challenge to existing surgical services and in a qualitative study of surgeons and geriatricians, participants agreed that the current system did not meet the needs of surgical patients with frailty²⁸¹. Conversely to Andrew's perception, Howie et al found that surgeons were concerned about being de-skilled and that their role would be narrowed to that of an operating technician, alongside a lack of recognition from surgeons of the role and requirement for a geriatrician²⁸¹. In this study, CTs across specialties recognised skills of geriatricians as the specialists of frailty:

"We find it very difficult...I just finished a [ward round] [...] 14 of those were care of the elderly patients. So patients with frailty that had no gastrointestinal problems at all at the time of presentation. So I think we find ourselves a bit erm... erm at a loss what to do and how to actually help these patients in the best possible way. I think our ability to recognise certain situations such as, let's say urinary retention secondary to constipation [...] but I think probably the care of the elderly consultants are much better at spotting these things, knowing specifically what issues would arise in someone that has had a pelvic fracture let's say that doesn't require orthopaedic intervention and how to mobilise and how to allow them to actually be discharged from hospital as soon as possible to decrease the erm repercussions a long hospital stay will have on their ability to go back in to the community" (Laura, Consultant Gastroenterologist).

Similarly, to Andrew, Laura described a vulnerability in looking after patients with frailty and a concern that 'outlier' patients with frailty have a worse outcome under her care. Specifically, she supported the notion that the outcome of a patient was

likely to be worse under her care in comparison to that of a geriatrician. Medical outliers (taken to mean patients that have been placed on a ward that is not specifically designed or designated for the type of care that patient requires) may have an increased length of hospital stay in comparison to patients who are looked after by the designated team for their presenting complaint²⁸². HCPs have previously expressed safety concerns for medical outliers due to a lack of specialist expertise of the patient condition and that staff perceived outlying patients to be of lower priority²⁸³. The above quotations from Andrew and Laura also highlight that an element of the uncertainty towards frailty experienced by CTs is due to lack of training about frailty, which is supported by Taylor et al where UK doctors across all grades felt more training on frailty was required²⁸. Many CTs described that they had only heard of the term frailty as a registrar or consultant and did not fully understand what frailty is or whether their management decisions were appropriate. Literature suggests that the education and training of all HCPs does not prepare them well for the challenges of multimorbidity, frailty or long term conditions since clinical experience throughout undergraduate and postgraduate training is delivered through discrete, time limited placements²⁷⁸. A lack of training was also true of specialties that see higher numbers of patients with frailty, such as Geriatricians and GPs *“I don’t remember being taught about frailty as an undergraduate, you know it was a while ago and I probably wasn’t”* (Elizabeth, General Practitioner) and Geriatricians: *“It’s also a reflection on my training as well, you know, frailty is a relatively new phenomenon [...] It only came in mid-registrar training and so...not that I’m not au fait with it, or not ok with it, but maybe I haven’t been role modelled in the way of being taught frailty on a ward round as a medical student so it doesn’t come”* (Isabel, Consultant Geriatrician).

This implies that geriatricians and GPs also may see themselves out of their depth, which contrasts with the assumption from other specialties in this study, alongside the national survey and literature, that this is their familiar domain. Frailty as a concept in medicine was introduced 20 years ago yet Isabel describes that through

lack of role modelling about frailty as both an undergraduate and postgraduate she struggles to conceptualise and discuss frailty. Where Isabel discusses being aware of frailty mid-point though registrar training, she is referring to when frailty as a LO was added to the geriatric higher speciality training curriculum¹⁸⁰, which suggests even as a postgraduate and expert in frailty, seeing frailty as an explicit LO may focus individual learning priorities. This links with Theme two and Theme five where if frailty is not formally discussed, nor ClinR about frailty verbalised, it can be challenging for individuals to conceptualise frailty.

5.5.3.2.3 Students do not 'see' frailty outside of geriatric medicine

Even at an early stage in their clinical experiences, MSs had experiences of patients with frailty being passed on to geriatricians in a discarding manner: *"In my experience anyway especially on <acute medical ward> being frail is quite an easy way just to pass them off to whoever is care of the elderly that day in handover meeting"* (Jenny, 3rd year Medical Student). Jenny uses similar language to Laura in passing off the patient and a similar content to Tom, whereby frailty implies passing on responsibility of the patient to geriatric medicine. This behaviour was recognised and learnt from observation in a handover meeting and is likely learnt through role modelling via the hidden curriculum¹⁵⁴, as discussed in Chapter one. There is a risk that by observing these patterns in handover, MSs learn that other specialities do not want patients with frailty as well the assumption that patients with frailty should *always* be looked after by geriatricians, which may not be in the best interest of the patient.

All MSs consistently spoke about frailty and geriatric medicine as interrelated. MSs described patients with frailty they had seen but, where frailty was recognised, this was limited to patients they had encountered during geriatric medicine hospital rotations, despite other clinical experiences. MSs also described how they had not used the word frailty outside of their geriatric medicine placement. This may reflect

that the term has not been signposted to Joe outside of geriatric placements, or may reflect his confidence to use the term appropriately in other areas of medicine, as discussed in Theme five. Additionally, MSs only associated frailty assessment tools with their geriatric medicine placement and described that they had not been exposed elsewhere: *“Not this year I haven’t [seen a frailty assessment tool] ...I think I remember a proforma from third year on my elderly placement”* (Rachael, 5th year Medical Student). Guidance suggests that the routine use of a frailty screening tool is recommended on the admission of all older patients, across specialities⁹. It is unclear why Rachael can only recall frailty assessment tools from her geriatric medicine placement but one suggestion may be that the use of the tool is formalised during these placements and used to distribute patients, as described above, and it is possible that MSs have subsequently learnt an association between frailty tools and geriatric medicine.

MSs were asked to describe a patient they had seen on their current placement and the majority described a patient that had frailty (based on their description or using the CFS or Fried’s criteria^{6,7}) yet the students did not initially recognise the patient had frailty:

“I had a renal clinic this morning which I’ve never had before and [...] three out of the four had mobility problems but I’m not certain that they were actually frail...interesting...maybe they were frail. So one man in particular was... wheelchair bound due to diabetic neuropathy and that kind of stuff and I guess from my picture [referring to her own image drawn of frailty] he was socially isolated, he couldn’t leave his house... he did take a lot of medications and he had been bounced in and out of hospital for various things but...yeah...I guess by my own drawing he is frail” (Jenny, 3rd year Medical Student).

“I saw another patient who had a rash on her back she was in her eighties and the rash was very dry in keeping with eczema [...] Now that I look at my own [drawing]

[...] she is frail and I would use words potentially vulnerable and erm potentially overlooked. We gave the cream and it was only when she paused and I wondered if she had anyone at home and yeah so I suppose...but yeah I think in my head with frailty I always imagine someone in a hospital bed...I don't know why" (Rachael, 5th year Medical Student).

When Jenny and Rachael had been placed in a different context (speaking to a geriatrician, about frailty explicitly) and with the use of their own visual representation of frailty they had come to their own conclusion that a patient had frailty. This may be through the use of system two ClinR that used a more analytical approach through their own diagram¹⁴⁵, through the efficacy of visual aids in aiding reflection¹⁹⁶ or through reflection on action, as coined by Schön²⁸⁴. Schön is the first to link reflection to professional practice, whereby reflection is a process that makes the hidden theoretical knowledge an individual holds more explicit and transforms it into practical knowledge²⁸⁴. This was not the intended use of their visual work but highlighted that MSs initially did not 'see' these patients had frailty, but could following reflection. The strong association that patients with frailty are only present within geriatric medicine appears to limit the scope of clinical reference for MSs to 'see' frailty in other contexts. This is of significance because HCPs across clinical specialities will encounter patients with frailty within hospitals and the community¹⁸. MSs in their future practice will need to be able to identify, communicate and understand the management principles of frailty within their chosen specialty¹³² and currently it appears that they do not appear to routinely 'see' frailty, think of frailty or speak of frailty outside of geriatric medicine.

5.5.3.3 Summary of theme one

This theme highlights how frailty is assumed to be the responsibility of geriatricians and that other specialties would prefer to not look after patients with frailty. It shows that individuals use a frailty label as a way of directing patients to geriatricians and

that frailty scores are sometimes manipulated for this purpose. Frailty is seen to be beyond the competence of any individual speciality, including geriatricians who are perceived by others as the experts. The lack of desire for CTs to look after patients with frailty is possibly due to the low status of frailty as well as uncertainty surrounding how best to look after patients with frailty, described alongside a lack of training. MSs see frailty as a way to direct the responsibility of a patient to geriatricians and spoke of frailty and geriatric medicine as synonymous. This is likely to have been learnt through clinical encounters and role modelling of CTs, through the hidden curriculum. MSs have a limited scope of reference of frailty where they appear to only use the term and have an awareness that a patient has frailty within geriatric medicine rotations; they do not 'see' frailty outside of this context.

5.5.4 Theme Two: Frailty is recognised through clinical gestalt

5.5.4.1 Introduction to theme two

This theme shows that frailty is perceived as something you know when you see, recognised by clinical gestalt based largely on visual cues. The theme describes the common visual cues CTs and MSs used to recognise frailty and highlights the similarities and differences between these groups. The theme discusses the subjective nature of this clinical gestalt based on the individual, clinical speciality and environment within which medical professionals are seeing the patient. The theme then highlights that frailty scores are not widely used by CTs to support their recognition of frailty and explores reasons behind this. Lastly the theme discusses the impact of the above on MSs' learning, namely that MSs have a limited scope of clinical reference on which to base their diagnosis of frailty as well as a lack of awareness of how to use an analytical approach to ClinR to diagnose^b frailty.

5.5.4.2 Theme two data

5.5.4.2.1 *Frailty is recognised using the 'eyeball approach'*

ClinR is the cognitive process where a clinician observes, collects and interprets data to reach a diagnosis, as discussed in Chapter one^{140,141}. Making a correct diagnosis sets off a chain of events for the care of the patient including investigations, therapeutic treatments and subsequent appropriate management¹⁴⁰. Unanimously in this study, when CTs diagnose^b frailty they describe the process as intuitive through gut instinct. This is true for those who feel more familiar with frailty such as geriatricians: *"I have already subconsciously acknowledged that they are frail [...] you do it through instinct"* (Isabel, Consultant Geriatrician) but also those from other clinical specialities: *"I think it almost happens at a subliminal level so you see someone, you are talking to and at the back of your mind thinking [...] you are*

^bThe word diagnose here is used to mean identify or recognise frailty, since participants were uncertain if frailty is a diagnosis, as discussed in theme five.

eyeing them up” (Andrew, Consultant General Surgeon) and *“I think you get quite a lot of visual stimulus from a patient as to whether they are frail or not”* (Mia, Intensive Care and Acute Medicine). As verbalised by Mia, the individual cues that CTs used to create the ‘pattern’ of frailty were principally visual.

The diagnosis was most commonly described through rapid intuition, based on observation of the patient before a conversation had occurred with the patient: *“I go into the waiting room and I know straight away”* (Colin, Consultant Cardiologist) and *“All those kind of things we pick up and then before they are sat down we have probably already made some type of frailty assessment”* (Greg, General Practitioner). This suggests the process of recognising frailty and planning future treatment is fast, using a system one approach, or clinical gestalt, as described in the introduction. It also implies that the ClinR for diagnosing frailty is based on recognising cues for an advanced stage of frailty and may miss patients with pre-frailty and those who are mildly frail who do not yet have such clear visible indicators (as well as those with more advanced frailty who do not).

Unanimously frailty was described in terms of the requirement of a walking aid. *“In my mind they are the ones you know they have difficulties in getting around, they are either walking with a stick or they are walking with a frame”* (Elizabeth, General Practitioner). Walking aids appeared to be so ingrained in participants’ view of frailty, that no participants described or drew frailty without including a Zimmer frame or walking stick. These findings are supported by a recent study indicating that GPs commonly reference reduced mobility in developing their clinical impressions of patients with frailty²⁸⁵. Low body mass, a kyphotic posture and the presence of walking aids were commonly discussed in combination as key cues: *“I think... frailty erm would give the impression of some... some deficits some weakness perhaps like a thin older person with a stooped back, holding a stick, walking more slowly”* (Kieran, Consultant Ophthalmologist). It is plausible that low body mass, kyphosis and walking aids are so heavily linked to how frailty is perceived in part due to the

CFS, often referred to as the Rockwood Scale based on the lead author (Figure 1.3)⁷. Alternatively, the perception of frailty held by HCP may represent a more colloquial understanding of frailty. Qualitative studies exploring how older adults perceive frailty overwhelmingly included physical characteristics reflecting negative old-age stereotypes, including individuals who are hunched over, grey-haired, slow and require walking aids^{106,112,114}.

Visual elements used to make up the CTs' diagnosis of frailty also included unfixed elements, most commonly regarding the patients' clothing: *"How are they dressed is very telling, you know, people don't always do up their buttons correctly or inside out [...] or if they have got bits of plasticine holding their glasses together."* (Paul, General Practitioner). The description of not being able to dress appropriately may be being used as a visual cue by proxy to a marker of the patients' function and ability to undertake activities of daily living. Clothing was also discussed in terms of appropriate sizing: *"When I have seen people over a number of years and they start to look like their collar is two sizes too big I start to think you know 'that's not good'"* (Andrew, Consultant General Surgeon). This also may be a visual cue by proxy to unintentional weight loss, which is recognised in Fried's criteria to be a marker of frailty⁶. Clothing was highlighted by geriatricians as something that changes the way people view the frailty status of a patient. Although said in jest, geriatricians noted that treatment pathways are altered by the clothes patients wear, which can be manipulated to suit the needs of the patient (or doctor): *"You hear tales about if you want that surgical opinion and you wanted someone operated on you'd sit them out dress them up properly whereas if you didn't want them doing it you just left them in their pyjamas in bed"* (William, Consultant Geriatrician). Manipulation was also discussed in Theme one where frailty scores may be manipulated by clinicians for the patient to be under the care of geriatricians. Both of these in their most positive sense are to achieve the best outcome for the patient, but both also may represent a lack of desire to look after the patient due to lack of training, uncertainty and the recognised low status of frailty as per Theme one.

The visual indicators CTs described were most commonly combined with older age and co-morbidities. All CTs gave examples of older people within their descriptions of frailty, suggesting they strongly associate frailty with chronological ageing: *“We all have some concept of what frailty means don’t we...we see the person in front of us, elderly.”* (Owen, Consultant Endocrinologist). CTs did not specify a chronological age that they perceive frailty ‘begins’ or what is meant by elderly. Within key frailty literature, frailty is understood to be a condition related to ageing, whereby homeostatic mechanisms start failing resulting in a decline of physiological reserve⁵⁻⁷. Although there is some evidence to suggest frailty is also associated with younger age, greater understanding of the implications of frailty in younger ages is required^{286,287}. Three CTs did mention frailty in the context of younger age:

“Of course, one could be young and be quite frail and a child can be frail and someone whose mental health is up and down could be quite frail as well [...] an example might be a child who has a diagnosis of a chronic disease for example cystic fibrosis and that might mean they have more contact with healthcare professionals” (Greg, General Practitioner)

The use of language such as “Of course” suggests that Greg perceived frailty in younger people to be the exception. All CTs who associated frailty with a younger age were GPs. Reasons for this are likely to be multifactorial in nature and related to the spectrum of patient groups and clinical conditions that GPs encounter but also may link with the subjective nature of frailty which is dependent on experience, clinical specialty and the environment that a patient is seen. Like other GP participants, where Greg has described frailty with younger age, this was linked with advanced or chronic physical illness or poor mental health. A considerable body of literature exists to support an association between frailty and depression, dementia and delirium²⁸⁸.

All CTs also strongly associated frailty with a person who has multiple comorbidities: *“I am basing that word [frailty] on complex multi-morbidity with interactions between renal disease, cardiovascular disease, respiratory disease and cognitive impairments to a greater or lesser extent”* (Nick, Consultant Vascular Surgeon). Like Nick, most commonly participants referenced specific body systems more likely to be affected, not specific conditions. Multiple conditions have been linked with frailty and the electronic frailty index is based on 36 deficits which include clinical signs (such as a tremor), symptoms (including visual and sleep disturbance), diseases (such as atrial fibrillation and diabetes), disabilities, the requirement of social care and abnormal test values²⁸⁹. However, the association between frailty and body systems may link to the recognition that the presence of abnormal results in three or more body systems is a significant predictor of frailty where the number of abnormal systems is more predictive than abnormalities in any particular system^{5,290}.

5.5.4.2.2 *The recognition of frailty is subjective*

The cues discussed thus far were common amongst all CTs, yet it was apparent that the cues used to diagnose frailty were subjective using differing combinations to make the diagnosis. All three GPs in the study described that familiarity with patients is an indicator used in their gestalt of frailty: *“The frail ones would be the ones who I would know in my mind because I have frequently done visits on”* (Elizabeth, General Practitioner) and: *“So for me the process will often start if I see the person’s name I might recall this person, recall [...] the last time I saw them I admitted them to hospital”* (Greg, General Practitioner). This finding is supported by a recent study of GPs in Australia found that participants could readily identify patients with frailty on a list¹²³. Both Elizabeth and Greg immediately described recognising frailty due to frequent contact with patients or visiting them at home. These roles are typically specific to a GP that holds continuity of care for patients, so hospital-based CTs and GPs that work as locums or outside of general practice may not use these cues to recognise frailty⁹. It suggests that the identification and understanding of frailty may be subjective depending on your clinical speciality, which was recognised by CTs: *“I*

work side by side with care of the elderly consultants, it's amazing how differently we perceive the same person because all the things that make us who we are clinically are set to try and understand a very different clinical conundrum. [...] we have all specialised to think about our bit of the puzzle" (Nick, Consultant Vascular Surgeon). This subjectivity may be due to the training received (both formally and through the hidden curriculum) but also is possible to be dependent on the distinctive personality traits found to be associated with specialty choices^{291,292}. Colin described that the subjective nature in which an individual perceives frailty was necessary to be able to collectively provide effective care for patients: *"We have the expertise of how they will come through a relatively major procedure and the geriatrician will have the expertise on a probably a longer perspective on what would be likely to happen in their life"* (Colin, Consultant Cardiologist). He suggests that the way specialties perceive frailty can translate into providing complementary expertise on management, which also links into Theme one, where some participants suggested that specialties need to share care to each provide expertise for specific parts of the clinical conundrum.

The environment of where you see the patient was also felt to be relevant in the recognition of frailty:

"That's the great virtue of doing community geriatrics you don't see people in bed you see them in their own home and that gives you a completely different perspective. I mean our community service was pretty advanced and was geographically linked to wards at the acute hospital so they would phone me up and say 'This patient is going home we think they are frail they need advance care planning'. I go around and see them and they have just come back from shopping having walked a mile down the road to Tesco's and carried it back. Because they see them in bed in their pyjamas perhaps a little bit delirious and I see them in their normal surroundings...a completely different circumstance" (Simon, Consultant Geriatrician).

Simon describes significant discrepancies between the ClinR of a frailty status and prognostication when a patient is seen in hospital compared to in the community. Of course, the patient may have improved during a time period between clinical reviews but this is of interest because the same cues that CTs use to recognise frailty (low body mass, a kyphotic posture, the presence of walking aids) are likely to be present in individuals the community (since commonly these factors do not change acutely), which suggests that the context itself changes how the patient is seen. It is especially of importance since the national survey highlighted most frailty teaching is within geriatric medicine placements on the wards and this may limit the scope of reference of how MSs see patients, which is expanded later in the theme.

The geriatrician participants acknowledged there is a degree of unreliability when relying on their clinical gestalt and explained this through the unreliable nature of low body mass as a key cue:

“There is always the eyeball diagnosis of frailty but it’s patchy. Particularly in some women, they have been small and thin all their lives and can look quite frail and stick-like in their nineties but actually they are really good. So I think if the eyeball diagnosis is incorrect it is mostly in woman and less so in men. So the subgroup of the very thin very active woman who keep going until they are one hundred and five playing bridge or whatever, they look frail but they are not. They are surprisingly robust and the eyeball fails you” (Simon, Consultant Geriatrician).

Whilst Simon described that people who are thin are assumed to have frailty, William described that without low body mass he struggles to diagnose frailty: *“My stereotypical frail person is underweight, probably female [...] when you don’t have those bits I struggle to diagnose frail. So the frail overweight people I find really difficult to call frail”* (William, Consultant Geriatrician). William and Simon were aware of the unreliability of using body mass index as a cue, and held an awareness that obesity is also associated with frailty²⁹³. Despite this, they continued to use body

mass index as a cue for frailty which suggests dysrationalia, defined as a process where system one ClinR overrides system two¹⁴⁵. Additionally, Simon and William both described a female and felt their gestalt of frailty was more likely to be wrong in a female. During this study, participants always described a person of unspecified gender or a female. Whilst women have been found to better tolerate frailty than men, as evidenced by lower mortality rates at any frailty level or age in females compared to males, men still have frailty²⁹⁴. Exploring gender bias in the ClinR of frailty is beyond the scope of this thesis but merits further exploration.

5.5.4.2.3 Frailty assessment tools are not valued

Guidance states that the identification of frailty should be supported using formal screening tools⁹, yet CTs felt that the use of validated frailty screening tools was unnecessary: “[undertaking a frailty score] is just at the bottom of the list when their frailty is already part of the calculation” (Isabel, Consultant Geriatrician). Isabel suggests that as she has already intuitively ascertained that a person has frailty, the requirement of analytical ClinR through tools is surplus to requirements, suggesting self-confidence in her use of clinical gestalt. Recent studies support this finding, and found that a reliance on visual stimuli undermined the acceptance of formal screening from clinicians, largely due to concerns that screening might translate into an obligatory exercise^{28,103,123}. The only frailty assessment tool to be named by CTs and MSs in this study was the CFS (Figure 1.3), again suggesting the dominant association HCPs hold between the CFS and frailty as discussed earlier in this theme¹⁵.

Other CTs described that the use of scales was reductive: “I think the problem is the moment you get into any gradation, they [the assessment scales] are really limited, you know, performance status, Rockwood scale, you are either four categories or ten or nought to one hundred but it’s meaningless” (Tom, Consultant in Palliative Medicine). Tom discusses that it is the gradation of frailty on a scale that is futile and

describes it as meaningless. This may imply that he does not see benefit to the knowledge of whether a patient is living with very mild frailty compared to a person who is living with very severe frailty but also may suggest that he felt the scales themselves do not measure anything meaningful to his clinical practice. This is of particular note since Tom is a palliative medicine consultant and Rockwood and colleagues found that there is an increasing risk of death with each incremental increase in frailty score, which has implications for advance care planning⁷. The oversimplification of the CFS was also discussed as problematic due to its visual nature:

“The clinical frailty score is undoubtedly the best validated and I think the little pictures make it really easy, you might argue it’s too easy, because if someone uses a frame they always score them a six whereas the frame may be the only thing they have and they are actually getting out to Tesco’s with the frame. The pictures have a use but they are an oversimplification and not many people bother to read the words” (Simon, Consultant Geriatrician).

Simon describes that the scale that is made to help diagnose frailty may actually hinder it, due to the tendency of people to rely on the visual images on the scale, such as the use of a Zimmer frame and not relate the person’s frailty status to the CFS descriptions. This was also supported by other geriatricians who stated that the value on the scale is based on the walking aid the person uses:

“It’s just too simplistic [...] I think people don’t really read the bits written underneath the picture to guide it I think they just think ‘they have a wheelchair, must be frail’ [...] I like the pictures but generally you just eyeball the walking aid they are using and gauge it from that I suspect that’s largely how it’s used” (William, Consultant Geriatrician).

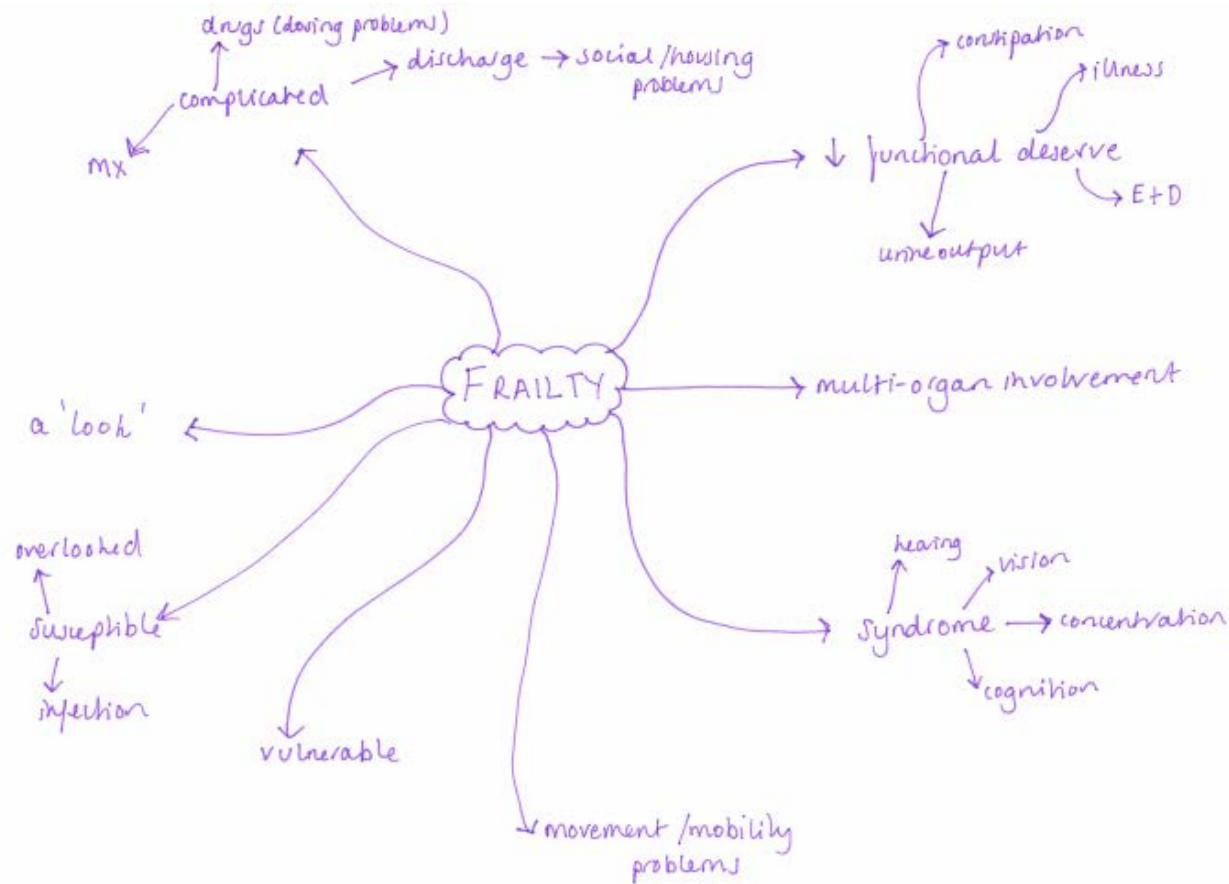
This suggests that even when using a tool, it does not use analytical ClinR but actually quantifies the visual cues used for clinical gestalt through system one ClinR.

This is likely to introduce error in ClinR around frailty as many people without frailty may use a walking aid and many people with frailty may not. There is currently no literature regarding the prevalence of walking aids in patients with frailty nor literature exploring whether the progressive use of walking aids (stick to Zimmer frame for example) corresponds with level on the CFS. Rockwood himself recently wrote “The scale focuses on items that can be readily observed without specialist training, including mobility, balance, use of walking aids, and the abilities to eat, dress, shop, cook, and bank. For this reason, scoring should match the description, and should not be based solely on the pictures that accompany each level”¹⁶. Some evidence suggests that personal bias plays a role in using the CFS, especially with inexperienced raters, explained due to the focus on the images rather than descriptions^{295–297}. Following from this, Theou et al developed a classification tree to improve the CFS reliability when employed by inexperienced raters, which does not have images and does not mention walking aids in the description²⁵. The findings in this sub-theme are contradictory to Theme one, where assessment tools were reported CTs as being useful to direct a patient to the care of geriatricians in handover. This discrepancy may relate to a difference in how the scores are being used; to support a diagnosis or to streamline patient care to a geriatrician.

5.5.4.2.4 Students use clinical gestalt with limited reference to base their ClinR

MSs also recognised frailty visually, through clinical gestalt but the language used reflected doubt and uncertainty. This can be seen through their hesitant expressions such as “I think” “I doubt” “I imagine” but also in their use of figurative language (as discussed in Theme five). Rachael’s visual representation of frailty summarised that she sees frailty as ‘a look’, as per Figure 5.3. This contradicts with the rest of her visual diagram where she wrote “complicated” and highlighted the multidimensional nature of frailty including medical, social and functional elements. Within Rachael’s diagram she wrote that the patient is overlooked which may suggest that MSs have already learnt through the hidden curriculum that patients with frailty to be of low status in the clinical environment.

Figure 5.3. Visual representation of frailty by Rachael, 5th year Medical Student



The individual elements on which students base their 'pattern' of gestalt are more limited than the CTs and also prioritised differently where most prominence is given by MSs to a kyphotic posture, poor mobility and low body mass: *"I kind of have this really kyphotic old lady picture in my head, that's what I picture when I think of frailty"* (Ben, 3rd year Medical Student) and *"I don't know why I always imagine low weight and kind of just like yeah really slim"* (Rachael, 5th year Medical Student). These indicators were used by MSs across all of the year groups, including persons who were in an early stage of medical school, with less clinical exposure: *"If someone looks frail I guess the biggest thing is if they look underweight...that's a huge sign of frailty. Kyphosis as well tends to be a big giveaway"* (Charlotte, 1st year Medical Student). Poor mobility and the use of walking aids is represented in all of the visual representations ranging from walking sticks to Zimmer frames as well as the patient being in a chair or bed as discussed below. These above quotes suggest that a number of the cues MSs used in ClinR were based on lay experiences and colloquial perceptions of frailty gained throughout life or passed on from other HCPs through the hidden curriculum. It has been recognised that a challenge of gestalt in frailty is that "each of us has come to know and understand frailty, beginning early in our lives and we have deeply imprinted in our minds how the frail look and act"²³¹ and evidence from a small study suggests even formal teaching does not significantly change these perceptions of frailty held by MSs¹²⁵.

In contrast to the CTs, MSs strongly used a person's social environment as a cue to help guide whether they had frailty. This included care-providers in the patient's own home: *"Sitting in a chair, they usually take hundreds of medications erm they get them delivered to their house, they usually have a care package somebody comes in usually three times a day sometimes four if they are really bad"* (Charlotte, 1st year Medical Student) as well as in an institution: *"These people often go to care homes because they can't manage at home"* (Katie, 2nd year Medical Student). Other students discussed a vicious cycle between home, emergency services and hospital where a patient cycled between these until they were required to go into institutional care, as per Figure 5.4. It can be seen that the sun is shining outside where the

patient is represented by a sad face with lack of visitors and the television and phone for company. Jenny also drew a box overflowing with medications suggesting that Jenny associates patients with frailty with polypharmacy. Medications also formed part of Charlotte's diagram (Figure 5.5), but otherwise polypharmacy was not discussed by other MSs or CTs, which differs from findings from the national survey as to what is being taught and assessed in UK medical schools. Literature suggests that the relationship between polypharmacy and frailty is bidirectional and that polypharmacy could be a major contributor to the development of frailty²⁹⁸.

Figure 5.4. Visual representation of frailty by Jenny, 3rd year Medical Student

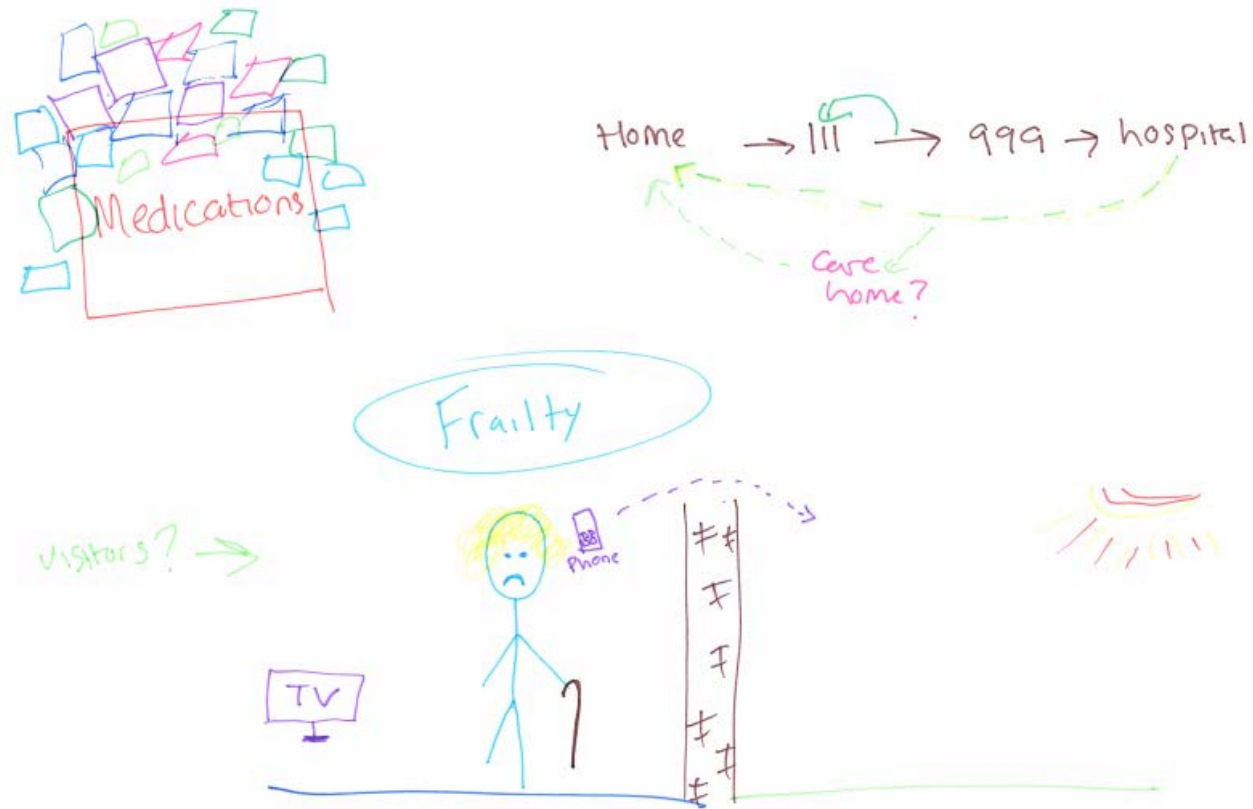
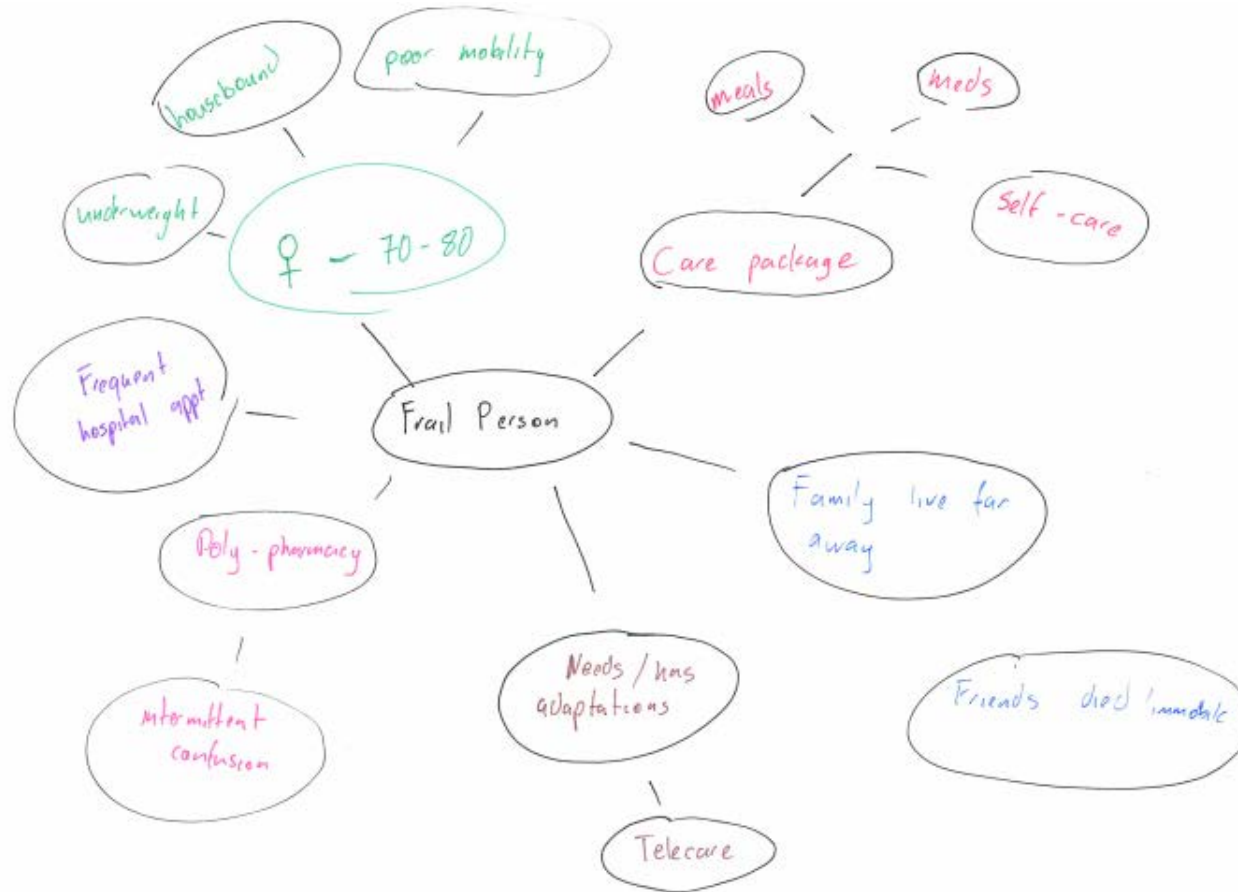


Figure 5.5. Visual representation of frailty by Charlotte, 1st year Medical Student



Charlotte drew a diagram (Figure 5.5) that focuses heavily on social and functional aspects including that the patient is housebound, has poor mobility, requires housing adaptations and a care package and that the patient is isolated with family far away and friends that have died. As a first year medical student she has an insightful view of requirements such as telecare but worked as a HCP in another field prior to becoming a medical student. She felt strongly that medical school so far had not prepared her to see people holistically and was disappointed by this. Charlotte verbally mentioned a chair as one of the first visual cues she related to frailty and multiple MSs similarly described that if a patient was in a bed or a chair it led them to consider frailty: *Yeah I think in my head with frailty I always imagine someone in a bed...I don't know why...yeah interesting*" (Rachael, 5th year Medical Student) and visually as Katie's drawing in Figure 5.6:

Figure 5.6. Visual representation of frailty by Katie, 2nd year Medical Student



Katie's image shows a patient in hospital clothes, sat in a chair with a Zimmer frame nearby. This may link to Theme one (students do not 'see' frailty outside of geriatric

medicine) and earlier in this theme (where CTs saw patients differently depending on the environment), especially if MSs currently have little opportunity for teaching and learning about frailty in the community as per the national survey in Chapter four. By nature of the hospital environment, many patients in hospital that do not have frailty will be in a bed or chair and this associated cue by MSs is therefore likely to result in errors in diagnostic ClinR. Additionally, the reliance on low body mass, kyphotic posture and the requirement of social support as individual and collective cues used to diagnose frailty are likely to be unreliable. All of these are non-specific to frailty as well as prevalent across the population. These markers are likely to cause errors in terms of false negatives (persons with frailty who do not have these features) and false positives (persons without frailty who do have these features).

Students had insight of their reliance on these cues to recognise frailty: *“One of the main connotations of frail to me is... small so I guess that’s somewhat of a barrier if we are going to use the frailty term [medically]. I would rarely say they are frail if they are bigger”* (Jenny, 3rd year Medical Student). Others described being ‘caught out’ by their own clinical gestalt: *“You get gut instincts but then I’ve had on ward rounds when I’ve gone to speak to someone and they go ‘oh hello let me just put on my glasses’ and they are fine, just in their own little world”* (Rachael, 5th year Medical Student). Rachael appears to assume that this person does not have frailty because they have conversed with her in a lucid manner yet despite a recognised link between cognition and frailty,^{288,299} alongside the requirement to assess psychological components as part of the CGA,²⁷¹ the only medical student to discuss a link between cognitive impairment was Charlotte (as per Figure 5.5). The absence of a link between physical and psychological health may reflect that in the UK, currently medical schools do not adequately teach MSs about delirium and dementia^{241,270}.

No MSs in this study described analytical or deliberate reasoning to establish a frailty diagnosis and this may be due to their level of experience, their uncertainty around

frailty but also that they have not been taught to do this, nor witnessed CTs using system two processes in patients with frailty:

“You are taught very much like they have chest pain and that is that. Whereas actually when you go on the ward it is like they have chest pain but they also have this going on ‘Oh and doctor I’ve also noticed this and this’ and it’s almost skill in itself to kind of like hone in on the relevant points...and its difficult. It’s almost important to be able to filter and kind of almost have all the information on a bit of paper and think ‘That’s relevant that’s relevant’ and kind of work out different ways to try and join the dots...almost have an initial like step by step of ‘What is everyone thinking now’ and then get another bit of information and go ‘What is everyone thinking now’” (Rachael, 5th year Medical Student).

Whilst there is often a complete reliance on system one thinking by MSs¹⁴⁰, Rachael describes a desire for HCPs to verbalise their ClinR and that her training had ill prepared her for diagnosing frailty due to both the complexity of frailty, but also a lack of structure to help solve the clinical conundrum analytically. Other MSs described that they learn by assessment but because they are not formally taught about frailty, they would not study the topic for an exam: *“Those things [topics taught in lectures] people really care about learning because we are assessed on it... frailty doesn’t have that”* (Katie, 2nd year Medical Student). The lack of assessments about frailty may reiterate to the students the low status of frailty and through the hidden curriculum suggest it is not important to study. Conversely, it may be that frailty *is* being assessed but that students do not have an awareness of this, either because the patient coming to the exam does not fit their stereotypical idea of frailty (as per Theme three) so they do not recognise frailty or that it is not specifically signposted to them because the term is not used (as per Theme five), for example they do not associate that taking a history about acute delirium is related to frailty (which also fits with a lack of association between frailty and cognitive impairment as described above). Alongside this, Jenny emailed me following the interview to state:

“I was thinking; could you integrate frailty into the OSCE? Perhaps you could just throw in a couple of questions which don't have marks attached but would make students think about frailty (like would you class this patient as frail?) Probably unfair to give a mark if they get it right given how much I struggled with my own definition today but even just the idea of being asked it in an OSCE would make people take note” (Jenny, 3rd year Medical Student).

Jenny described that by formally including frailty in assessments it would ensure MSs considered frailty. She felt this to be important to think about frailty in all patients encountered within an exam, not just those in geriatric medicine stations, to help MSs develop ClinR across a spectrum of clinical conditions and contexts. Whilst in part this may be due to lack of formalised teaching and assessments, the potential reasons for the limited scope of reference in recognising frailty are complex and multifactorial (much like frailty itself) and will continue to be explored throughout the other themes.

5.5.4.3 Summary of theme two

This theme highlights that frailty is recognised by CTs using clinical gestalt, largely through visual cues of older age, low body mass, kyphotic posture, comorbidities, walking aids and ‘inappropriate’ clothing. CTs expressed that their clinical gestalt is subjective depending on their speciality and the environment the patient is seen. Geriatricians were the only CTs to express their insight into the potential unreliability of clinical gestalt. All CTs chose not to use formal frailty screening tools to support their diagnosis in view that tools are reductive, oversimplify frailty and are surplus to requirements. MSs also use clinical gestalt to recognise frailty but have a limited scope of reference on which to base their ClinR as well as a lack of understanding of how to analytically approach the diagnosis of frailty. They consequently appear to use a simplified pattern of visual cues, based on kyphosis, reduced mobility, low body mass index and the requirement of social care.

5.5.5 Theme Three: Frailty is one-way towards death

5.5.5.1 Introduction to theme three

This theme discusses how frailty is perceived as progressive, irreversible and associated with death by both CTs and MSs. It highlights that MSs are less confident about the lack of reversibility and association with death but mirror their CTs, with uncertainty. The association between frailty and death that MSs hold is largely based on euphemisms about frailty, where the term is used by HCPs to infer end of life in clinical environments. This does not provide sufficient 'data' for MSs to base their ClinR on and therefore students have limited scope of reference to understand the prognosis of patients with frailty and their subsequent individual management.

5.5.5.2 Theme three data

5.5.5.2.1 *Frailty is progressive and irreversible*

All CTs in the study perceived frailty as a progressive state of decline: *"By and large they get worse...gradually"* (Owen, Consultant Endocrinologist). Most commonly this gradual decline was vocalised as a deterioration of physical ability, and less frequently in terms of deterioration of cognition. Although some CTs described a gradation of frailty as frailty progresses, this involved the addition of a further adjective to describe a quantity, such as "a bit frail" or "she was really frail" rather than describing a stage across a frailty spectrum, such as in the CFS¹⁵ or Fried score⁶. This may be due to unfamiliarity with frailty models or uncertainty as to their correct use, but is likely to relate to the way that frailty is discussed as an adjective in a binary manner by all participants in this study.

A small number of CTs discussed that following a clear trigger event, there is a sudden and step-wise worsening in the progression of frailty: *"Knock them over with a feather or something and they will be broken and they won't get up from it"* (Colin,

Consultant Cardiologist). Colin used figurative language that broadly relates to common definitions of frailty where the weight signifies reduced physiological reserve and the feather represents a minor event that causes a disproportionate deterioration. This same metaphor of a feather has been also drawn by a student, as can be seen further on in the discussion of this theme. Almost unanimously, where CTs spoke of a trigger event it was in the context of a bereavement of a partner, but occasionally was described in terms of deterioration following an acute illness. This finding is supported by Ambagtsheer et al where GPs viewed patients with frailty as crossing some type of threshold, where a trigger event such as acute illness or a significant life event led to a rapid decline¹²³. Reversibility of frailty was rarely discussed by CTs and only mentioned in the context of a bereavement, where there was a sense that if a patient had been bereaved, the patient could improve their health if they desired:

“Once they are defined as frail it’s usually terminal decline. So unless they have had something happen to them that is recoverable, so I mentioned losing a partner, you might see someone obviously failing, becoming frail and then improving when something else happens. Like they have a new partner, the lights come back on. So there may be a reversible element but I think the usual picture is it is a gradual kind of decline and not particularly reversible” (Andrew, Consultant General Surgeon).

Andrew describes potential improvement in a person following a new partner using figurative language, this is discussed in more depth later in this theme. No CTs discussed improvement or reversibility of frailty status following specific management strategies to improve frailty such as exercise or nutritional supplementation, as per the introduction chapter. This may be because the cues that participants use to recognise frailty, as per Theme two, considers individuals with more advanced frailty. The understanding of frailty as progressive and irreversible by CTs in this study reflects previous research demonstrating a knowledge gap in general clinicians^{128,300}, general practitioners¹²³, and patients’ awareness of the reversibility of frailty^{105,106}.

5.5.5.2.2 *Frailty is synonymous with end of life*

In view that participants saw frailty as a progressive decline, it is perhaps unsurprising that all CTs perceived that frailty is synonymous to patients approaching the end of their life: *“Frailty to me means... approaching death really. You know, it’s a precursor”* (Colin, Consultant Cardiologist). This was discussed from a range of different specialities including geriatricians: *“Understand that frailty of course means end of life... not immediately... people aren’t actively dying but are within the last year or 18 months or so of life”* (Simon, Consultant Geriatrician). The use of language such as “of course” suggests that it is assumed that frailty and death are related rather than an exception. Death was most commonly described by participants to mean within 12 to 18 months, but in view that frailty was described unanimously in a binary nature, no CT verbalised at which point of observation this short timescale started.

The association between frailty and palliative care was commonly described by CTs: *“Frailty doesn’t really figure other than in patients that are heading down the palliative care route”* (Laura, Consultant Gastroenterologist). Laura implies that she so commonly associates frailty with palliative care that it does not feature in her clinical experiences otherwise. This is contradictory to Theme four where she feels uncomfortable completing a Do Not Attempt Resuscitation (DNAR) form for a patient with frailty for fear of disadvantaging a patient. Tom, a consultant in palliative medicine, described that patients with frailty are rarely referred to the palliative medicine team unless they have another condition or imminently dying within hours: *“We don’t get referred those people who are just frail because they are perceived to sort of be just grumbling along or more often than not they may just die in the night erm [...] I think because people still don’t recognise and I generalise but there is a spectrum obviously of consultants not recognising frailty as a terminal illness”* (Tom, Consultant in Palliative Medicine).

Tom discussed the absence of referrals due to a lack of recognition of frailty and lack of understanding that frailty is a terminal illness. This study found the opposite to be true from other CTs, whereby participants commonly believed they readily recognise frailty (as per Theme two) and also strongly associated frailty with death and end of life. It was not the scope of this study to understand the lack of involvement of the palliative medicine team but it may link with the low status of frailty or that CTs find it challenging to estimate remaining life expectancy in those with frailty and understood the decline as gradual, as per Owen at the start of this theme. Timely recognition of the end-of-life phase is recognised to be particularly challenging for patients with frailty, where trajectories of decline are gradual and slow^{47,48}.

5.5.5.2.3 Students associate frailty as progressive and synonymous with death (learnt through euphemisms)

Students described the development and progression of frailty as a negative spiral, where a small event results in deterioration in the patient: *“You almost get the sense that everything is lined up for that person just like dominos”* (Charlotte, 1st year Medical Student). Charlotte again uses figurative language to describe frailty, where knocking over a domino results in the rest of the dominoes falling. Another student used the example of a Jenga tower: *“All the way through your life people take out blocks. That’s fine if you’re 20 and go get a UTI [urinary tract infection] then oh well, whereas if you’re ninety-seven and a bit wobbly and you take one out [Jenga block] you are probably going to have some problems”* (Jenny, 3rd year Medical Student). Similarly, to the figurative language used by CTs earlier in the theme, these quotes describe a small event that causes a significant deterioration. As well as verbal metaphors describing a trigger event and deterioration of a person with frailty it was also drawn by students:

Figure 5.7. Visual representation of frailty by Hannah, 1st year Medical Student

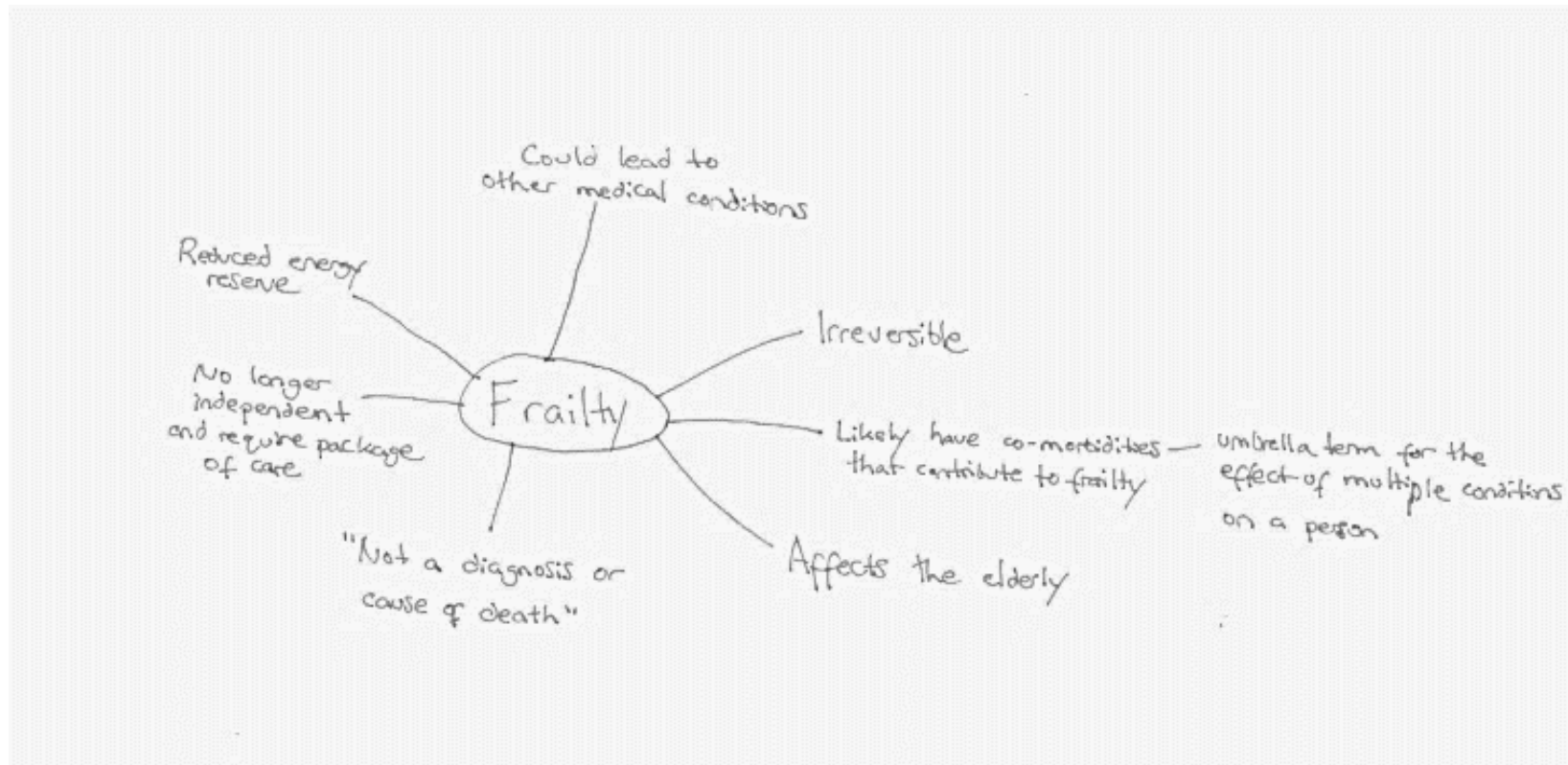


Hannah described that her drawing represents a sense of impending doom for a patient where a small event like a feather causes an acute deterioration and an inability for the patient to cope, similarly to Colin's description above. Although CTs used metaphors during interviews to describe frailty ("*Knock them over with a feather*", "*The lights come back on*") the students all described a similar scenario: a vulnerability where a small event (Dominoes, removal of a Jenga block, a feather) results in an acute and significant deterioration, such as the Jenga tower falling down. It is unclear how the MSs came to associate their respective metaphors with frailty, especially since a more formal use of the term with a definition is rarely explicitly spoken in their presence (as per Theme five). The use of metaphors is understood to aid comprehension when describing an unknown by using a relatable description³⁰¹ and may reflect the MSs' uncertainty. In literature surrounding frailty, the use of figurative language features heavily^{96,118}. However, it has been suggested

by geriatricians that the medical terminology of the word should be used to avoid oversimplification of a scientific term^{99,118}.

MSs likewise perceived frailty as progressive, irreversible and approaching the end of life, but their language reflected less certainty: *“I guess I see it as progressive...erm yeah you don’t really think of someone as being like ‘you’re frail at the minute and then coming back out’ yeah I think a progressive thing as time goes on”* (Rachael, 5th Year Medical Student). Rachael describes the dynamic nature of frailty but does not perceive that improvement can be made, this may be due to the role modelling she has received from CTs about frailty (since they see frailty as progressive) but also may relate to the type of patients Rachael perceives to have frailty: those admitted acutely, under the geriatricians who commonly have advanced frailty. Similarly, to CTs, the MSs repeatedly linked frailty with death, but again this was vocalised with less certainty: *“If someone is frail I imagine... I think...that it’s more likely on an average day that they pass away than another patient who is not classed as frail”* (Joe, 4th year Medical Student). When Joe drew his visual representation of frailty he included that frailty was irreversible but that frailty was not a diagnosis or cause of death as per Figure 5.8. Although these appear to be conflicting, he wrote the latter in speech marks, perhaps to highlight that although he had been told frailty was not a cause of death, he felt uncertain of whether this was correct.

Figure 5.8. Visual representation of frailty by Joe, 4th year Medical Student^c



^c The colour of this diagram has been formatted by the researcher to enhance readability

Students stated that they commonly heard the word frailty used by members of the MDT to infer that a patient is dying:

“I really feel like it [frailty] is a bit more of an end of life type of thing. I think the only time I ever really hear it is if I’m on an elderly care ward and people will say things like ‘you know she has become a bit more frail now’. What they really mean is she won’t get better, to staff in handover I feel like it’s a bit of a euphemism” (Hannah, 1st year Medical Student).

This casualness of using frailty as an adjective to imply weakness or as a euphemism for end of life appeared to create a learned association between frailty and death for the students, through the hidden curriculum: *“You hear ‘Oh they are getting to the time when they are quite weak looking quite frail and something could happen’. It’s almost like a warning shot I feel without directly saying it so”* (Ben, 3rd year Medical Student). Although there is evidence to suggest that people with frailty have a higher mortality rate than those who are ‘pre-frail’ or ‘robust’^{6,7}, the association between frailty and death was solely described by MS based on expressions using the lay meaning of the term to infer death, without rationale to the students of why mortality rates in individuals with frailty might be higher. This leaves MSs with little to base their ClinR on to be able to learn the predicted life expectancy and subsequent management of patients with differing degrees of frailty. Consequently, it may lead to MSs making generalised rules about management plans, as per Theme four.

5.5.5.3 Summary of theme three

This theme demonstrated that CTs and MSs perceive frailty as being irreversible and synonymous with approaching the end of life. The one exception to lack of reversibility described by CTs was if the patient had been bereaved. Frailty is perceived and discussed as a person approaching death, with a lack of discussion of

any formal spectrum of frailty. This infers that everyone that is 'frail' (based on clinical gestalt as per Theme two) is dying. MSs mirror their CTs regarding both lack of reversibility and death, but with uncertainty as can be seen by their choice of language. The casual use of the term frailty amongst HCPs as a euphemism for end of life appears to create a strong learned association for the MSs between frailty and dying, likely through the hidden curriculum.

5.5.6 Theme Four: A frailty status determines (and limits) clinical decisions

5.5.6.1 Introduction to theme four

This theme highlights that frailty is perceived to be a risk-stratifier to future management. It discusses that the stratification of treatment is based on generalised 'blanket' rules that limits treatment for patients and explores how this is communicated to MSs. Lastly the theme highlights how MSs are uncertain how to rationalise decision making in practice due to the actions and teachings of the CT.

5.5.6.2 Theme four data

5.5.6.2.1 Generalised rules guide (disadvantageous) clinical decisions

In this study, CTs described that a frailty status is used to guide further management choices, and usually limits treatment actions for patients. Unanimously, CTs described decisions based on a generalised binary rule of whether the individual was 'frail' or not: *"So we wouldn't offer them radical treatment because we know they wouldn't be able to cope [...] frailty significantly changes their path"* (Yvonne, Consultant Oncologist). Yvonne spoke about the patient being more at risk of adverse outcomes which was echoed by other CTs who described the ethical principle of non-maleficence towards the patient to justify why management is changed based on a frailty status: *"We would investigate in a different way just because we know the complication rates for patients that are frail is higher"* (Laura, Consultant Gastroenterologist). Laura and Yvonne both described how frailty significantly changes the pathways of how a patient is investigated and treated, despite frailty being recognised through clinical gestalt as per Theme two and the uncertainty around what frailty is (Theme five).

CTs also discussed teaching sessions they deliver, and described that if a person has frailty it limits their treatment pathway: *“I don’t know if we teach frailty necessarily as a concept, we do give a lecture on who not to admit to ITU [Intensive Therapy Unit] which I guess kind of covers that”* (Mia, Intensive Care and Acute Medicine). It is unclear whether the lecture that Mia describes is about frailty as a concept, yet her immediate link when questioned about frailty teaching was to discuss the access to intensive care. The components that CTs taught to MSs to guide treatment-limiting decisions were largely based on chronological age and whether the patient is in institutional care:

“I tell them [MSs in an oncology lecture] ‘if they are frail and in a nursing home stop doing pointless investigations’ and we try and stop them over-diagnosing stuff you know what’s the point of putting a poor little old lady with obvious brain metastases who is bedbound through scans and biopsies” (Yvonne, Consultant Oncologist).

Whilst the content of Yvonne’s quote appears to be in the best interest of the patient to avoid harm to the patient, the tone and language used is negative (“pointless”, “poor little old lady”), which may be learnt by MSs through the hidden curriculum. There was a sense from the CTs that if a patient is identified to have frailty, they may be unduly disadvantaged in their access to resources and treatment journey: *“It doesn’t open those doors... I mean there are various things we can refer into if we think someone needs a bit more help at home but [...] that’s nothing to do with the frailty, that doesn’t give them special treatment”* (Elizabeth, General Practitioner) Elizabeth compared frailty to cancer and dementia, where she felt there were more established services in place for patients with these conditions. This was largely because it was felt that frailty was negatively perceived by HCPs and patients, which is discussed in more depth in Theme five.

5.5.6.2.2 *Management decisions consider resources and staff morale*

Participants spoke freely about the importance of appropriately allocating the limited resources in healthcare, suggesting that allocating these to persons with frailty is often inappropriate. This was commonly discussed in terms of escalation to intensive care as well as whether the patient should receive reviews from the Medical Emergency Team (MET). The MET usually includes medical and nursing staff from different specialties, such as intensive care and general medicine, and responds to specific criteria including cardiac arrests, but also to patients with acute physiological deterioration³⁰². It was stated that MET calls for a patient with frailty are an inappropriate use of resources and that doctors on the emergency teams do not attend these calls with the same sense of emergency as with other patients:

“What is the purpose for all these MET calls for all these frail people? You know, things happen in hospital but honestly, really. I know the culture will be if they see MET call to XX [named building comprising geriatric medicine wards] the intensive care registrar, the anaesthetists aren’t going to bomb it down there” (Tom, Consultant in Palliative Medicine).

The concern is that the above quote from Tom discusses a general rule based on an assumption and stereotype of a whole building in the hospital, where there are patients on geriatric medicine wards across the whole spectrum of no frailty, pre-frailty to severe frailty and those terminally ill. There are of course times in medicine where a person’s advanced frailty status and lack of physiological reserve would appropriately mean that in the patient’s best interest their ceiling of treatment would be set at ward-based care, and MET calls may be inappropriate for an individual. His quote does not consider individual cases of patients, where frailty status has been assessed, where a decision has been taken of a ceiling of treatment by their lead team, and discussed in conjunction with the person or made in their best interest with the MDT. Furthermore, the quote describes the rationalisation of treatment based on staff culture and morale, not on patient need.

Other CTs also referenced the importance of staff morale, over patient outcome, when making decisions about undertaking procedures in patients with frailty: *“It’s much better for the morale of the department if people see patients who are going to benefit from something”* (Colin, Consultant Cardiologist). This suggests that Colin believes a patient with frailty will not benefit from a specific intervention, which is similar to Yvonne’s and Tom’s quotes above, yet HCPs should look beyond survival as the only relevant outcome of interventions as people with frailty may favour psycho-social well-being over morbidity and mortality³⁰. Colin suggested that he subsequently should not be undertaking these procedures and went on to discuss about the balance of the cost of procedures versus the futility of undertaking them. Economics was used as a justification for limiting management of patients with frailty by multiple CTs in the study:

“You know at some level you have to throw the health economics into it as well. You are doing seven-hundred-pound biopsy procedures on someone that was very inappropriate [...] now erm the difficulty I have got as a radiologist is no clinician who is taking the responsibility for their patients likes me coming back and saying ‘Are you sure is that really appropriate?’ You know, if they’ve made the decision of yes they are very unlikely to back down and say actually ‘They are dying what was I thinking?’ So I sometimes feel strong-armed into this position that we are intervening more than perhaps we should” (David, Consultant Interventional Radiologist).

David spoke about both the health economics of undertaking procedures yet in his quote talks about that he is still doing the procedures, namely because someone on the team looking after the patient has referred them to him and he does not feel he can say no. He described this due to a shift in medical culture of fearing litigation, of a fear of being seen to be ageist and more demand from patients and relatives. It was suggested by one CT that patients are inappropriately over-investigated by geriatricians and was described that geriatricians feel obliged to over-compensate in their management, although to which purpose is unclear:

“The frailty team over investigate these people and it’s been accepted that that happens. Everyone frail gets a CT of their head and GABS {geriatric assessment blood tests} [...] I have to say my impression is you feel you have to overcompensate for a population who probably just needs back to the good old days a nice hot cup of tea [...] maybe a cuddle and someone to tell them they are alright, and that’s gone you know. What they don’t need is sitting in A and E [Emergency Department] for 24 hours getting investigated the shit out of them and someone jumping on them when their NEWS [National Emergency Warning Score] goes up to nine” (Tom, Consultant in Palliative Medicine).

Tom verbalises his disagreement of the management of patients with frailty by the geriatricians and proffers an alternative of emotional support, such as a drink and reassurance. He also implies that the over investigation of patients with frailty is inappropriate because patients will continue to deteriorate, as can be seen by their observations, suggesting that he associates frailty with terminal decline and end of life as per Theme three. Within the quotes in this theme there is evidently a contributing element of the low status of ageing and frailty where the choice of language may be considered patronising such as *“Poor little old lady”* and *“a nice hot cup of tea [...] maybe a cuddle and someone to tell them they are alright”*. This choice of language reflects infantilisation, in which a person of authority interacts with, and responds to, or treats an elderly person in a child-like manner³⁰³.

5.5.6.2.3 Students are uncertain how to translate clinical decision making into action

MSs had an awareness that frailty was used to base further management plans and that it limited patients’ management. They highlighted that the use of generalised rules, based on a whether a person is considered frail (often by clinical gestalt as per Theme two and discussed in a binary manner) makes it challenging for them to understand the ClinR behind such decision making:

“[Clinicians] might explain the different treatment paths but they might not explain their reasoning behind it... it’s more superficial I suppose. I can’t actually think of an example but I’m sure I’ve been told in different rotations ‘oh this patient is perhaps too old for this type of procedure so we are going to go with this instead’ or... in fact, even in my lecture today which was I think on subarachnoid haemorrhages and it was like ‘if they are over seventy we just go for conservative management, if they are younger we might go for something else’. There is no consideration that the seventy-one-year-old might be really healthy and fit... I don’t know if that’s relevant. The reasoning behind decisions is lacking” (Joe, 4th year Medical Student).

Joe initially found it challenging to think of an example but could recite the general idea of his experiences on the ward, and in formal teaching, where patients are deemed to not be suitable for a certain treatment, based on general rules of chronological age. Other students were aware that the management of a patient is different if they have frailty with regards to escalation of treatment: *“It was decided where the ceiling should be [...] [the doctor] was like ‘yeah I think the surgeons are going to see but probably won’t do anything”* (Jenny, 3rd year Medical Student).

Whilst the research cannot comment on the appropriateness of further intervention in a specific patient, what is striking is the assumption and acceptance from the doctor and Jenny that the patient would not be for any treatment. It is well recognised that a patient who is ‘too frail’ to undergo one intervention may gain significant emotional or functional benefits from another,^{29,304} and MSs must understand that decisions are based on individualised care, dependent on specific circumstances. MSs appeared to be unclear about how to rationalise decision making in practice, when their learning through formal teaching settings and through observation on the wards is based on generalised rules that commonly limit treatment or resources (including time) for patients.

5.5.6.3 Summary of theme four

This theme shows that having frailty limits treatment options for patients. This was justified in terms of modifying treatment to avoid complications or harm to patients but also as a justification to protect limited resources and maintain staff morale. The theme discusses that despite these views, CTs often perform the specific treatment due to discomfort at communicating a limiting decision to patients and relatives. There was a feeling that geriatricians overcompensate in their investigation and management of patients with frailty, although the purpose of this was unclear.

CTs formally teach MSs about risk stratifying management decisions based on generalised rules, such as chronological age and the requirement of institutional care and do not appear to provide the ClinR behind these decisions. Through this, alongside learning in the clinical MSs are aware that frailty limits treatments, especially procedures and resuscitation but do not have sufficient scope of reference to understand the rationale behind these decisions. Consequently, MSs are uncertain how to translate patient-centred decision making into action.

5.5.7 Theme Five: Frailty as a term is contradictory

5.5.7.1 Introduction to theme five

This theme describes the problematic and contradictory nature of the term frailty. This includes how the term is seen to be vague but conversely that there is an assumed understanding of the term between HCPs and relatives. It discusses that CTs use the term to the relatives of their patients and HCPs but not to patients themselves. It then explores how MSs find the term frailty problematic both in clinical and educational settings and believe the term should be avoided, yet conversely desire more formal teaching and patient contact around frailty.

5.5.7.2 Theme five data

5.5.7.2.1 *No-one knows what frailty is*

Although common cues were used to recognise frailty (as per Theme two), frailty was perceived as a term to mean different things to participants, as evidenced through the innumerable descriptions of frailty they provided. Additionally, CTs consistently described uncertainty as to what frailty is:

“We are slightly floundering in ignorance making it up as we go along as to what constitutes frailty and where we draw the boundaries and where we get it right [...] it’s something that we struggle with. We don’t really know what frailty is, we don’t know if we describe it properly, we don’t know if we are making the right decisions” (Colin, Consultant Cardiologist).

Colin describes his uncertainty across the definition, patient identification and management decisions and his choice of language such as “floundering” and “struggle” imply he is uncomfortable with this. This contradicts findings in Theme two, where Colin described recognising frailty immediately in an individual, which

highlights contradictory perceptions of frailty even within individuals. The vagueness of frailty was also described by geriatricians: *“It is such a vague, nebulous thing because we all have got a very clear idea of what we think about frailty but when you try pinning it down it is so difficult”* (William, Consultant Geriatrician). This links with Theme one that although geriatricians are perceived as the experts of frailty they still have uncertainty, especially around definition. The uncertainty of frailty was justified due to a lack of credibility as a recognised medical concept:

“I think you either buy into it [frailty] I think you are either evangelical and you buy into it as a perfect thing or you swear that you don’t understand it and I’m sat in the middle going ‘Well It’s clearly just made up’ like the Bristol stool chart it’s totally made up someone’s you know Mr. Professor Rockwood has gone ‘Yeah cool lads I’ll dine out on this’ (laughs)” (Tom, Consultant in Palliative Medicine).

Whilst there is an attempt at humour in this quote, it also reflects an element of the low status that frailty as a condition receives that it is “just made up”. Tom describes polarised views about frailty and within academic literature there are some who believe frailty is a fad⁹⁸ or an insufficient concept⁹⁹, whilst other call for it to be recognised as a long-term condition^{9,100,101}. This finding is supported by a recent survey of doctors exploring the barriers to identification of frailty in hospitals the respondents described that frailty was not a diagnosis, caused unnecessary clinical labelling and the word should not be used in clinical practice due to lack of definition²⁸.

The definition of frailty was discussed by CTs in this study as a problematic factor in terms of the presence of the lay and medical term: *“It’s vague. I think everyone knows what it is, but no one knows what it is, because it’s got common terminology around it. If you say ‘that patient’s frail’ I think we would all have an understanding [that] it’s a descriptive term”* (Nick, Consultant Vascular Surgeon). Nick articulates that frailty is a descriptive term which is evidenced throughout this thesis where the

term has been used by participants as an adjective to describe individuals or patient groups. The description that individuals 'see' when they hear the term has been described in Theme two and largely relates to a colloquial understanding of frailty such as an older person who is thin, hunched and uses a walking aid.

CTs expressed that frailty has suffered in how it is understood due to the pre-existing colloquial nomenclature: *"There is a sense of almost frustration that this term has come into common use without...the fact that we are having this conversation and you are doing this work is a reflection that the term already exists although [in medicine] it's not necessarily one that you already know"* (Nick, Consultant Vascular Surgeon). Nick describes his frustration of the co-existence of two terms and some CTs attempted to form a distinction between the colloquial and medical understandings of frailty: *"If a patient is frail there is the medical meaning and the lay meaning...frail is a lay word of course"* (Greg, General Practitioner). Despite an awareness of two meanings, CTs did not expand on how the terms differ nor articulate which terms they were referring to during discussions. A number of participants discussed the need to explicitly move the term forwards from an adjective to a medical condition:

"The fact it is a pre-existing word is unfortunate because it can be an adjective...and ideally it would be nice to have a completely new word which can then be a diagnosis but we are stuck with that and we just have to work with it and teach people that frailty is a diagnosis not just an adjective and what it means and what we can do about it. The trouble is it has to be defined...everything has to be... I mean you wouldn't write a paper on diabetes without defining what your population with diabetes was" (Simon, Consultant Geriatrician).

Simon appears to have acknowledged that the two terms will co-exist and that it is the responsibility of HCPs to teach about frailty as a diagnosis. This is contradictory to how Simon uses the term during his interview, as can be seen from other quotes

by him within this thesis where he uses the term 'frail' as an adjective and describes lack of use of the term in clinical practice and when teaching MSs. The difference in his espoused use and actual use is likely to be multifactorial but may reflect the powerful lay construct of frailty that is learnt from a young age, alongside the way the term is used in academic literature, which is expanded on in Chapter six.

5.5.7.2.2 *Everyone knows what frailty is (or so it is assumed)*

CTs described that, although the term frailty is vague and challenging to articulate a definition, it can provide a useful general impression about a person's health-state:

"Immediately if someone says 'oh they are quite frail' you think 'oh I've got to look at this carefully' as opposed to 'Oh they are really good... robust ninety year old'. It's just so different, so it paints a picture very much better than just saying 'his creatinine is this his ejection fraction is that'. That doesn't really tell me anything. But if they say frail, I get it" (Colin, Consultant Cardiologist).

Colin described that he finds the term more useful than investigations and that when the doctors in his team call him about a patient, he guides management plans based on their use of the term. It suggests that when the term is spoken by his colleague he assumes they mean the same thing as he does. This finding is in keeping with a recent study where orthopaedic doctors' assumed a shared understanding of frailty amongst colleagues, but that this was in reference to the lay or colloquial meaning of weakness and fragility¹⁰³. All participants in the study echoed this sentiment and assumed that in conversations with both HCPs and members of the public, there is shared understanding of what is being meant by the term: *"I think most people would understand frail as not a top performance"* (Andrew, Consultant General Surgeon) and *"It immediately suggests a person who needs support"* (KR, Consultant Ophthalmologist). These descriptions of frailty suggest that the term is being used in a sense of the colloquial term of frailty to imply that the patient is weak and fragile.

This is supported by Taylor et al who found clinicians do not see frailty as a clinical term but as a “common usage word”²⁸.

5.5.7.2.3 *The term is used selectively*

All CTs discussed that they would use the term frailty freely to colleagues and relatives of patients with frailty but are reticent in using the term to patients themselves: *“I haven’t got the guts as of yet to use frailty as a diagnosis”* (Paul, General Practitioner). Paul talks about needing to have courage to use the term to a patient which suggests that he is fearful of how the word would be received. This was supported by another CTs who was wary but started to try and use the term more:

“I certainly use it to relatives a lot and I often use it right at the beginning of the conversation [...] I am wary about using the word frail describing patients as frail to their face but as I have got more familiar with doing it with everybody I now do much more often, but I probably need to be a bit more courageous about doing it more often. The trouble with that age group is that to them frailty is just an adjective and doesn’t have terribly nice undertones, even if they have thought about what it means” (Simon, Consultant Geriatrician).

Both Paul and Simon could be considered experts in frailty as a geriatrician and a GP who have regular contact with patients with frailty, yet they both describe a requirement for courage to diagnose and communicate a diagnosis of frailty to a patient. This suggests that they consider frailty as a value judgement. The avoidance of the term to patients may be well-intentioned, but questions whether for the CTs there is an association with negative stigma of how the term would be received, as has been discussed in previous research^{105,106}. In keeping with this, CTs largely described avoidance of the term to protect patients: *“Occasionally I do [use the term to patients] but very rarely. I use it freely to families but I like to protect patients”* (William, Consultant Geriatrician). Many CTs echoed this sentiment, which could be

considered paternalistic to disregard the patient's autonomy of knowing about their condition to protect them from it. It is also unclear why CTs were confident to use the term to relatives and not patients themselves, which goes against it being solely based on fear of how the term would be received by lay individuals. There has been a push in recent years to increase patient engagement in decisions about their own care^{305,306} yet discussions can only be achieved if the patient is aware of a diagnosis and its implications on health.

Some CTs described that their use of the term was based on whether a geriatrician or trainee in geriatric medicine had used it previously in the same context. This was true of using the term verbally to patients: *"I'm interested when you [as a registrar in geriatric medicine] use it and if you as the experts use it maybe I will use it as a valid term."* (David, Consultant Interventional Radiologist) as well as documenting frailty: *"I must say I am very uncomfortable putting frailty as a cause of, let's say when you do a Do Not Resuscitate form. I will add frailty if it has been documented through the involvement of the care of the elderly team"* (Laura, Consultant Gastroenterologist). These quotes suggest that CTs in non-geriatric specialties value (and rely on) geriatricians for role modelling to use the term frailty. This reassurance links in with Theme one that CTs see geriatricians as the experts responsible for those with frailty. It is also contradictory in that CTs themselves do not role model the term verbally or in documentation for MSs, as described below.

Geriatricians in the study also expressed a lack of confidence in explicitly using the term: *"I don't particularly [use the term frailty]. When you are doing your wards rounds and I have third year MSs on it I do allude to the concept"* (Simon, Consultant Geriatrician). The lack of verbalisation to the MSs was justified by geriatricians due to how it would be received by the patient in the vicinity but also due to the abundant nature of frailty in clinical environment:

“I’m very verbose and I try and verbalise everything so they [MSs] can see how my brain is working, so that they can see how I am assessing someone but if then if I am subconsciously making decisions that don’t need verbalising or that I don’t verbalise then they are not seeing that. [...] [Frailty] is so ubiquitous on a ward round, I can’t say ‘this person is frail, this person is frail’” (Isabel, Consultant Geriatrician).

Isabel described that she tries to verbalise her thoughts on the wards for the students to understand her thought process yet does not verbalise frailty. This may result in the students’ lack of awareness that the patient has frailty, a lack of understanding as to base ClinR for further management decisions (see Theme four), but also may suggest that even an expert in frailty is not confident to say the term in the presence of MSs. In keeping with this other CTs explained that they did not use the term to MSs, due to their own uncertainties as to what frailty is as well as preference to talk about single body systems or diseases: *“[I] don’t teach frailty, I don’t particularly I must say, and it’s maybe because we get caught in discussing the specifics of the gastroenterological digestive diseases, specific disease rather than taking the patient as a complete whole” (Laura, Consultant Gastroenterologist).* This may reflect the way Laura was trained, where typically MSs are taught through the learning of body systems or clinical topics^{129,130} but also may reflect that CTs hold an awareness that MSs value knowledge-based learning^{156,176}.

5.5.7.2.4 Students find the term problematic and avoid it (but want to learn more)

MSs even at an early stage of training held an awareness of a lay and medical meaning of the term: *“I feel like before medical school, frail is like ‘that old lady is frail’” (Jenny, 3rd year Medical Student).* This implies that medical school has changed Jenny’s perception of frailty yet Jenny struggled to verbalise what frailty is. Other MSs in the study across years supported this notion as felt uncertain as to how to describe frailty in the medical context, such as whether frailty could be regarded as a diagnosis in medical terms: *“It’s so hard to quantify, there is no medical*

diagnosis for frailty” (Charlotte, 1st year Medical Student) and “*Out of all the topics this is the one I can talk about the least... in terms of as a doctor how to approach it*” (Rachael, 5th Year Medical Student). This suggests that even though MSs hold an awareness of both medical and lay meanings of frailty, they have little to base their understanding of the medical term. Students suggested that most commonly if they do hear the term frailty it is as an adjective not as a diagnosis, nor is it associated with a definition: “*It’s used more just a passing statement you know ‘this person is quite frail’*” (Ben, 3rd year Medical Student). A number of MSs understood the use of frail as an adjective and spoke about wanting to have a more formal understanding of frailty. MSs suggested HCPs should be more cautious in their use of the term:

“I feel like as students honestly even after five weeks on elderly I was like ‘they are frail’ and it wasn’t until someone started talked about physiological reserve that I was like maybe you can’t or shouldn’t just throw it [the term frailty] around. I think it’s quite useful to tell people there is a distinction [between the colloquial term and medical definition]” (Jenny, 3rd year Medical Student).

The tone of Jenny’s quote suggests she feels troubled by the non-specific use of the term in the clinical environment. This was supported by MSs who questioned the ethical position of not using the term to patients: “*If we are talking about it [frailty] as a term in medicine you wouldn’t necessarily shy away from using any other medical term any diagnosis. You wouldn’t not tell a patient another diagnosis so I don’t see why this is different*” (Joe, 4th year Medical Student). Joe felt strongly about being honest with the patient regarding frailty, yet contradictorily also discussed that he would likely only allude to the diagnosis and instead use another term, to avoid discomfort to the patient.

All MSs described discomfort in using the term. They questioned what the patient would understand from the term:

"I just...don't know how much it would mean to people or what information they would get from that; I just feel like.... I suppose by my definition of those [who] would be [considered] frail aren't necessarily what they would think of as [being] frail" (Jenny, 3rd year Medical Student).

Jenny is the only participant in this study to explicitly consider how the patient may understand something different to what the HCP intended. More frequently MSs explained their reluctance to say frailty was due to the associated negative connotations which they felt was insulting, described a degree of loss and lack of hope to patients:

"I don't know...I don't know why I feel really uncomfortable with it...it's almost a bit of an insult. [...] I don't know, it's that taboo use of the word frailty. I suppose almost that balance of almost medical talk and not upsetting the patients and I don't know because I know for example if my mum went into hospital and someone called her frail I would be really offended" (Rachael, 5th year Medical Student).

The words that Rachael uses such as "uncomfortable", "insult", "taboo" and "offended" suggest that she feels the term is strongly negative yet she also sees frailty as a medical word and describes the difficulty balancing the two discourses. The student participants also described reluctance to use the term in the context of their more formal educational environments such as lectures. They expressed that it would be challenging to discuss frailty with a patient: *"We've had symposiums with people talking about their experiences of cancer. I'm not sure if it would work with... frail elderly people as that would require someone saying to them 'you are frail'"* (Charlotte, 1st year Medical Student). This suggests that MSs perceive frailty as highly stigmatising and of low status, since they described it would be worse for patients to be asked to discuss their individual experiences of having frailty as opposed to other negatively perceived condition. Other students echoed this:

“When they bring people with dementia in to talk about that, it seems less stigmatising than talk to about your frailty, that would be really difficult to do. You do stigmatise it... I think nobody wants to be told, or people think people don’t want to be told they are frail. Yeah that’s interesting actually to think about it that way, you just wouldn’t – it’s almost kind of vulgar to label someone frail to their face” (Ben, 3rd year Medical Student).

The above quote also reflects the stigma and negative perceptions of frailty, to the extreme that it is uncouth to label a patient with the term and the justification of the MSs to avoid using the term in teaching was largely to protect patients. However, MSs did also discuss the stigma associated with frailty is so great that the term should be avoided in the nomenclature of teaching sessions to ensure students attend: *“I feel that people would be quite keen to come to something that was labelled a bit more dramatically, or a bit more...I don’t know something that sounds more impressive maybe compared to managing frailty” (Hannah, 1st year Medical Student) and: “I probably wouldn’t call it a frailty symposium I would call it something else [...] I suppose you could make it complexities of elderly care” (Jenny, 3rd year Medical Student).* Jenny offered an alternative description of complexities of elderly care which links with Theme one that frailty is assumed to be the geriatrician’s domain.

Despite the unease of the nomenclature of frailty teaching sessions, MSs were unanimously keen to receive formal teaching about frailty where the term is used and explained to them:

“There isn’t any teaching in it [frailty] and it’s so important that there is teaching on it when the majority of our patients are frail people and the reason they are in hospital is because of things connected to their frailty and that is never taught or mentioned, ever. I mean, we are taught all these hundred different diseases and disease processes and physiology but it’s never like really related as to how it would affect

someone... in hospital or who goes to see their doctor the most" (Katie, Medical Student).

Katie described an awareness that she would be looking after patients with frailty in the future and wanted to learn more about frailty yet there was a mismatch between her training and the reality of her experiences on clinical placements. This was echoed by other students who felt it was imperative to highlight that the discrete conditions they learn about currently are also seen in patients with frailty and that this would be achieved by them hearing the term used, to create associations between frailty and discrete conditions: *"In first and second year we are kind of taught about these conditions, I think it would help if someone did mention 'oh we see this a lot in the frail elderly patient' and 'It's important to be aware of this because this condition ties in with this' maybe integrate things more"* (Charlotte, 1st year Medical Student). Charlotte describes that perhaps her training does not prepare her for the reality of the wards due to not being explicitly taught about frailty, which is similar to descriptions from MSs in Theme two. The desire for more formal use of the term frailty on the wards and in teaching is contradictory in nature to the discomfort that MSs express about the use of the term both clinically and in educational settings.

5.5.7.3 Summary of theme five:

This theme discussed that frailty is problematic in nature. It is regarded by CTs as a vague term to understand, yet also a familiar term, where participants assume a shared understanding when using frailty to communicate with others, commonly to imply the colloquial meaning of frailty. Frailty is also problematic with regard to whom it is used to, where CTs use the term freely to HCPs and relatives but are reluctant to use the word to patients, due to the negative perceptions and fear of how it would be received.

The theme then discusses the implications of the above on MSs who are uncomfortable in using the term both clinically and in educational settings, due to the uncertainty as to what it is, negative perceptions of frailty and fear of how it would be received. Some students expressed a desire for HCPs to be more conscious in their use of the term clinically and in educational settings to include more formal definitions to help aid understanding and distinguish between a medical and colloquial use. Students expressed however that patients should not be involved in frailty teaching sessions, nor should teaching sessions be named using the term frailty due to the low status attached, but should be called by an alternative description.

5.5.8 Limitations

The study was conducted over one region in the South East of England across primary, secondary and tertiary care. The faculty in and across UK medical schools come from a broad range of clinical and professional backgrounds. Factors such as demographics, structural aspects of the programme at their home institution, and personal educational interests will contribute to a nuanced and context- or person-specific insight. This naturally limits the generalisability of the findings across other regions of the UK and internationally. In the medical school related to this study, the curriculum and faculty hold a strong focus in geriatric medicine and primary care and it may be that this educational culture resulted in more favourable perceptions of frailty. Conversely it has been found that when medical students are exposed to patients with frailty their attitudes may transiently worsen⁶. Whilst this limitation has been considered, it was felt that in view that there is no data regarding how frailty is perceived in UGME, a depth of understanding about frailty in UGME would be preferable than breadth across the UK. Additionally, in view of the theoretical stance of the thesis, even if all medical schools were included there would still be new theoretical insights to be gained.

Generalisability is the extent to which the findings of a study can be applied to other settings and considers factors such as the setting of the study, characteristics of participants, the setting of the study and the exposures studied³⁰⁷. Through purposive sampling, care was taken to provide a variety of representation of MSs and CTs but this cannot be generalised to be representative of the views of *all* MSs and CTs. Only doctors who have achieved their CCT were included as CTs. This group were chosen because although doctors of all grades are required to teach, consultants and GPs are expected to lead in the teaching and training of doctors and MSs in their specialty field²⁴⁵. The perceptions of frailty and the way frailty is discussed by doctors in training is an area for further research. Additionally, although the sample includes GPs, medical consultants and surgical consultants, not all clinical specialties were represented. This includes sub-specialties from medicine (for example respiratory) and surgical specialties (for example orthopaedic surgery) as well as psychiatrists and doctors from the Emergency Department.

The participants were self-selected which leads to the potential for selection bias where participants had views and opinions (both positively and negatively) about frailty that they wanted to express. The characteristics of the researcher such as role and level of experience will also have likely influenced the results which is likely to have had some impact on the nature of the story the participants had to tell. Not all participants chose to complete a visual representation of frailty and almost all images were created by MSs. The interview method was flexible to allow for this but it may have an impact on the nature of the story or ease at which frailty could be discussed. Both of these are discussed further in Chapter six in the reflexivity section.

Analysis of the data was grounded in the data, rather than attempting to pursue a notion of being 'representative' by sampling from each contribution. Naturally, some voices speak more loudly than others in these results. These voices may appear

over-represented in the presentation of the analysis, but this is largely due to the resonance and relevance that the data had with the themes identified. A reflexive awareness of this throughout the analytical process fed into a process of continual re-appraisal of the data, themes and supporting quotes, so that voices from all participants could be heard and incorporated into the interpretation and creation of meaning. The researcher's position on the analysis of data is discussed in section 6.3.1.5.

5.5.9 Recommendations

Recommendations from this qualitative study are discussed in combination with recommendations from the national survey in Chapter six.

5.6 Conclusion

This chapter provides the analysis from a qualitative interview study. The themes highlight that frailty is contradictory in nature and emphasise relativism in the participants' perceptions of frailty. Findings explore that frailty is recognised by clinical gestalt with a tendency to rely upon visual assessments for frailty in place of objective measures. It discusses how frailty is perceived as irreversible and linked with death. In keeping with this, frailty is used to risk-stratify decisions, often limiting treatments for patients using generalised rules. Frailty is gladly perceived as the responsibility of geriatricians. CTs felt that frailty as a term is vague, yet when communicating to others assumed a shared understanding, largely to infer the colloquial term of weakness. The term is seen as problematic and CTs are wary to use the term to patients in clinical and educational environments.

The way that CTs perceive and discuss frailty has implications on MSs' perceptions of frailty, most likely learnt through the hidden curriculum. MSs also see frailty as

irreversible and close to death but with less certainty. MSs also use clinical gestalt to recognise frailty, but with limited experience on which to base their ClinR. They have less cues to create their pattern of gestalt and are potentially more prone to cognitive bias. MSs are exposed to generalised blanket rules regarding treatment plans in persons with frailty and are unclear how to rationalise decision making. MSs have a limited scope of reference and appear to only 'see' frailty in geriatric medicine, despite encountering patients with frailty across specialities. They are uncomfortable in using the term and believe their teaching sessions should not be named frailty, rather re-branded. MS described that the term should be avoided when talking with patients both clinically and in educational settings yet conversely desired for the term to be used more formally in their presence. The findings and recommendations of educational strategies, to develop future practice around frailty in UGME will be discussed further in Chapter six, in conjunction with the national survey and scoping review.

6.1 Chapter overview

This chapter focusses on integrating the findings of the scoping review, national survey and qualitative study in relation to published literature to meet the overall aim of the thesis. Through the theories of ClinR and the hidden curriculum, the chapter explores how the way in which frailty is perceived, discussed and approached may influence what is being taught and learnt about frailty in UGME. It discusses the limitations of the thesis and outlines recommendations for future research and practice. The chapter then reflexively considers the position of the researcher on the research as a whole.

6.2 The aim of the thesis

The overall aim of this thesis, was to describe the current landscape of frailty in undergraduate medical education, specifically how frailty is perceived, discussed and approached in the literature, at an institutional level and in the environments that students learn and are taught, and to explore how these may influence what is being taught and learnt about frailty in UGME.

6.3 The current landscape of frailty in undergraduate medical education and how this may influence what is being taught and learnt about frailty

6.3.1 Frailty is discussed as an adjective

This thesis found that the language used to describe or discuss about frailty used the adjective of 'frail' to describe population groups of individuals, often without definition. An adjective is a descriptive word that modifies a noun by giving it a quality or a quantity³⁰⁸. This use of the adjective 'frail' was pervasive across academic literature, the national survey and consistently used throughout the

interviews with CTs and MSs, for example 'frail older people', 'the frail lady'. NHS England have called for a transition in terminology from 'the frail elderly' to 'an older person living with frailty' to frame frailty as a long term condition nationally¹⁰¹. This is supported by the BGS who have written guidance that the language around frailty must reflect the patient first: "Individuals should not be labelled as being frail or not frail but simply that they have frailty"⁹. In late 2020 the CFS was updated with changes to the nomenclature of the categories to move away from the frail adjective, for example 'mildly frail' became 'living with mild frailty'¹⁶, as can be seen in Figure 1.3 (reproduced with permission from Dalhousie University)¹⁵. The findings of this research reinforce that this guidance has had little effect to date on how the term is used. This may be because the use of the adjective is so pervasive in everyday lay language that individuals learn to know how 'the frail' look and act from early in our lives, and HCPs feel more confident to use the term in this manner, even when situated in the context of medicine or medical education²³¹. This thesis adds to current knowledge around frailty and language since the use and understanding of frailty as an adjective has potential implications for how frailty is perceived within the clinical environment and within UGME, as described in the following subsections.

6.3.1.1 Frailty is perceived in a colloquial sense and as binary

It appears that through the use of an adjective to describe 'frail older people', frailty was commonly understood and used in the colloquial sense by HCPs. This could be seen through the interchangeable and supplementary use of the adjective to describe older people, the use of the term as a euphemism to imply end of life, the assumed shared understanding between colleagues to infer weakness or fragility and through the descriptions of frailty that CTs and MSs provided in the interviews, as discussed in section 6.3.1.4. Furthermore, through the use of an adjective, frailty was discussed as a binary or dichotomous state by both CTs and MSs, whereby an individual was frail, or was not. Frailty is not simply a yes or no answer, and this has implications for how frailty is understood, and how frailty is identified and managed in an individual³⁰⁴.

The pervasive use of the adjective frail, alongside the added complexity that frailty as a medical concept is poorly defined and rarely spoken^{85–88}, creates a challenge as to what is understood and meant when the term is used within the context of UGME and healthcare³⁰⁹. In interviews, CTs described how they assume a shared understanding when discussing a ‘frail person’ between colleagues, with no clarification as to what was meant by the term in the individual patient. Literature advises HCPs to be cautious in assuming a shared understanding between colleagues²⁰.

In healthcare in general it is acknowledged that there is a discrepancy as to both the intended meaning of medical terms used by HCPs as well as how patients understand the term^{310–312}, yet the linguistic challenges around frailty are arguably largely due to the existence of both a medical and lay meaning of the same term. This is rare in medicine and other examples of this are descriptive terms such as ‘chronic’ and ‘acute’, where in medical terminology these represent longevity but in lay language the terms serve as markers of quality or severity^{313,314}. In view of the challenges around the terminology of frailty there have been attempts to introduce alternative concepts such as Intrinsic Capacity and Physical Resilience^{90,94,95}, but concerns have been expressed that the introduction of other concepts may complicate an already confusing scenario, and negatively impact on the last 20 years of frailty-related research^{96,97}.

The scoping review found that MSs held stereotypical lay beliefs about frailty such as thin, bed-bound and fragile people which persisted following teaching and which supports the notion that the lay understanding of frailty is a powerful discourse, even when the term frailty is used within the context of a medical environment¹²⁵. MSs held an awareness of this learning need and in the interviews expressed a desire for HCPs to be more conscious or considered in their use of the term to include more

specific meanings and formal definitions to help aid their understanding and distinguish between a medical and colloquial use.

In contradiction to this, CTs and MSs described fear of how the term frail or frailty would be received by patients and commonly avoided frailty-related language in their presence. Diagnoses perceived to be stigmatising are recognised to often be concealed from older patients³¹⁵ and without communicating a diagnosis to a patient, it does not allow for patient-centred decisions to be made⁹. MSs had an awareness that the term was avoided with patients and questioned why the term frailty was withheld, where other conditions were not. The avoidance may reaffirm to the students through the hidden curriculum that persons with frailty should not be told that this term has been applied to them, increasing stigma to the condition and potentially muddying the area regarding paternalism and patient autonomy. The scoping review and survey found that teaching sessions and assessments that were described or mapped to be about frailty were through cases where patients had conditions such as heart failure or delirium, but it is unknown whether frailty specifically was signposted to students. Additionally, in the survey some medical schools described that frailty was a thread throughout the whole course and it seems improbable that frailty is signposted on every teaching or clinical encounter. The lack of verbalisation of the term from institutions may carry a message through the hidden curriculum about the value placed on the topic of frailty within a curriculum¹⁵⁶. The findings of this thesis support that MSs were uncomfortable themselves in using the term both clinically and in educational settings.

Although this study has found that the term continues to be used as an adjective, studies have demonstrated that teaching sessions modelling correct language around older people with frailty, dementia and delirium can lead to a transformative change in the language MSs use^{125,316,317}. Another study found that when the parameters of frailty were discussed using medical terminology the use of positive role modelling and formal language stimulated student engagement¹⁵⁵. Students are

likely to be influenced by the hidden curriculum of observed language use and behaviours among peers and seniors in the clinical setting¹⁵⁴. Therefore, the language used by HCPs when referring to older people is of critical importance since language represents an expression of the beliefs that individuals hold and informs others what is socially acceptable to say within a culture. If the language used around individuals with frailty is deemed to be pejorative it can reinforce negative stereotyping towards the patient^{317–319}.

For MSs to have a more nuanced understanding of frailty they need to hear the term used alongside a definition^{99,222}. It is a recommendation of the researcher that nationally, institutionally and at a local level, individuals should use the term in a considered manner, to lead and evoke change, ideally using the term frailty explicitly in the presence of patients and MSs, with a brief description of what the individual means by its use. This may help guide MSs to consider frailty as a long term condition^{101,269} and avoid an individual being defined based on their disease^{110,111}. This has the additional benefit of clarification of what an individual means when using the term, particularly regarding treatment decisions and prognostication, to ensure individuals do not assume a shared understanding.

6.3.1.2 Frailty is seen a status used to stratify management decisions

The management options of people with frailty were discussed by CTs both in clinical environments and in formalised teaching sessions in a binary sense, using generalised rules, and participants did not provide the ClinR behind decisions. The term was often used to limit treatments, for example deeming a patient unsuitable for intensive care or a procedure. The impact of frailty on decision-making is complex and it has increasingly been recognised that frailty is used (overtly) to stratify management decisions and resources^{16,234}. Generalised rules of management in people with frailty have been described as a worrisome trend^{304,320}. It is important for HCPs to look beyond survival as the only relevant outcome when making decisions

as people with frailty may favour psycho-social well-being over morbidity and mortality³⁰, and this thesis found that MSs do not currently learn this, either formally or informally.

The findings of this study suggest that MSs have learnt that frailty limits treatments, especially procedures and resuscitation, but did not have sufficient scope of reference to understand the ClinR behind these decisions. In practice, MSs must be taught that decisions are based on individualised care, dependent on specific circumstances, and should reflect that a patient who is 'too frail' to undergo one intervention may gain significant emotional or functional benefits from another^{29,304}. To facilitate this, frailty needs to be understood and taught as a continuous and dynamic variable to be able to understand and communicate the risks and benefits of interventions and associated prognosis for an individual^{29,304}. It would likely be beneficial for MSs to encounter patients with frailty across different contexts, clinical specialties and stages of frailty to understand that ClinR around management decisions is dependent on individual circumstances of the patient and intervention required.

6.3.1.3 Frailty is seen as approaching the end of life

The scoping review and LOs from the national survey described teaching frailty in the context of end of life care, advance care planning and palliative care. In the interviews the CTs and MSs perceived frailty as being irreversible and synonymous with approaching the end of life. The association between frailty and death has been found to be held by older people living with frailty^{105,106,112,114} and it is challenging to separate which perceptions are held through a lay understanding of frailty, and which are gained from clinical experiences. This research has found that HCPs commonly use the adjective frail as a euphemism for end of life, which appeared to create a learned association for the MSs between frailty and dying, with little reference base for MSs to base their ClinR of prognosis and further management.

The BGS recommend that severe frailty should be considered an end-of-life state and should trigger a HCP to discuss end of life needs and preferences through a CGA and individualised care plan(329). Recognising death or end of life in any circumstance can be challenging for doctors of all levels of experiences, who have been found to use a mixture of system one and system two ClinR to diagnose that a patient is dying(330). Timely recognition of the end of life phase is recognised to be particularly challenging for patients with frailty, where trajectories of decline are gradual and slow over months to years, punctuated by episodes of acute illness^{47,48}. As a consequence, the end of life is commonly not recognised in people with frailty and the experiences of individuals and their relatives are poor(329). Therefore, MSs must learn to acknowledge an individual's prognosis to develop a plan of appropriate further management and advance care planning, as well as communicate this effectively with the patient and their relatives. To be able to advance the ClinR skills of MSs around recognising end of life, HCPs should accept and convey their uncertainty surrounding these decisions and attempt to verbalise the cues they have used on which to inform these decisions(330).

6.3.1.4 Frailty is something you know when you see

In the interviews, CTs and MSs unanimously described frailty as something they know when they see it, suggesting frailty is identified through intuitive ClinR. This was largely through visual cues of that reflect negative old-age stereotypes in keeping with the colloquial understanding of the term^{106,112,114}.

The use of clinical gestalt or intuition to recognise frailty has been found by other studies, with mixed results. In 2004 a study found that geriatricians show good inter-rater agreement in their global impressions of patients' frailty³²¹. In other studies, evidence for the ability of GPs to recognise frailty effectively through clinical gestalt is

inconclusive^{123,285}. In a study of cardiology registrars and consultants, there was poor agreement based on clinicians' impression of frailty against a reference standard and between clinicians³²². Surgeons traditionally predict perioperative fitness using their clinical intuition and experience, which is commonly referred to as the "eyeball test" and has been found to be subjective and inaccurate^{304,322–325}. The lack of agreement in the identification of frailty through gestalt may be due to the cognitive dissonance present where the medical definition used in research does not equate to what many physicians have in mind when they envision a person with frailty¹⁰⁸.

Pickard argues that clinical gestalt in frailty is beneficial because it intuitively grasps the principle that frailty is both social and biological and is less reductive than formal assessment approaches to frailty detection and management⁹⁰. However, the converse may be true as CTs in the qualitative study described recognising frailty before they had even spoken to the patient and there is concern "an end-of-the-bed frailty assessment in which the patient stays in bed is like a cardiologist not listening to the chest: fated to miss vital and informative clinical signs"³⁰⁴. It is recognised that in complex cases clinical gestalt is not sufficient¹⁴⁸ and gestalt may perform better if used as an additional component to existing scoring systems³²⁶. All CTs chose not to use formal frailty screening tools to support their diagnosis of frailty in view that tools are reductive, oversimplify frailty and are surplus to requirements.

Within ClinR, it is understood that a "mental matching process can lead to an instant recognition and generation of a hypothesis, if sufficient features of the current patient resemble features of a stored illness script"¹⁴⁶. MSs used clinical gestalt to recognise frailty but had (perceived^d) limited experience of frailty which resulted in a limited scope of reference on which to base their ClinR. Consequently, MSs used a

^d It is probable that, due to a dominant perception that patients with frailty are seen in geriatric medicine placements, and through a lack of signposting of frailty-related education, that MSs underestimate the exposure to frailty-related education that they have received.

simplified illness script through a pattern of visual cues, based on kyphosis, reduced mobility, low body mass index and the requirement of care. No MSs described being taught how to recognise frailty and hence these cues are likely based on the MSs' lay perceptions of frailty alongside what they have learnt informally by observing and listening to HCPs in the clinical environment. ClinR is often not explicitly addressed in the early medical school curriculum and MSs observe the process while on clinical placements with little or no understanding of the complex underlying processes³²⁸. This is of significance because in 95% of UK medical schools, learning about frailty was felt to occur opportunistically, simply by the MSs being present in the clinical environment.

ClinR is thought to be learnt through creating differentials of a presentation based on age, gender and main presenting complaint³²⁹. This impact on the recognition of frailty in a number of ways. The presenting complaint of a condition in a patient with frailty will likely not meet a 'typical' illness script, and frailty itself (across a spectrum) does not have a set presentation or illness script, as discussed in Section 1.2.5. In addition to the diagnosis of frailty, ClinR involves decisions of appropriate investigations and management of the patient, which is challenging in an individual with frailty, as discussed in Section 1.2.6, due to lack of evidence-based algorithms, guidelines, increased risk of complications during recovery and challenges around prognostication. Subsequently, frailty does not fit into a discrete intuitive illness script nor is it easy to deduce analytically and this is likely to cause challenges in formulating a diagnosis and in deciding appropriate management strategies for MSs (as discussed in section 6.3.1). System two processing can be learned from education and training³³⁰ and one way suggested to approach this is that MSs should be taught that 'atypical symptoms' are the most typical characteristics of patients with frailty and the underlying causes should be sought through a CGA³³¹, which may provide a base for more systematic or analytical ClinR. Additionally, the context in which a patient is seen has an impact on ClinR³³², and it is a recommendation that patients with frailty should be encountered across different healthcare environments, as discussed in section 6.3.2.

6.3.1.5 Frailty is full of uncertainty

Across all components in this thesis, frailty was perceived as a term to mean different things to individuals, as evidenced through the innumerable descriptions of frailty provided. The national survey found significant variation in the perceptions of what frailty is, how frailty in UGME has been approached and how frailty is mapped to curricula. This was expressed through the descriptions of teaching strategies and content alongside the varied LOs. The challenges of defining frailty is not a new finding^{85–88}, as discussed in Chapter one, but this is the first study to explore how frailty is perceived in UGME. The variation has consequences for the content taught and assessed under the umbrella of frailty and reflects ongoing discussion amongst academics and clinical educators²⁶⁹.

In the interviews, CTs and MSs expressed uncertainty as to what frailty is. This may be in part because of the challenges of conceptualising frailty between the colloquial and medical understandings, yet was also explained by participants to be due to lack of training about frailty. It has been said that medical education does not prepare MSs and HCPs for the challenges and complexity of frailty since clinical experience is delivered through time-specific, discrete placements that provide a snap-shot of illness with an emphasis on the acute decompensation²⁷⁸. The education and training of doctors is of the utmost importance to deliver high quality care to those with frailty as well as to educate MSs about this³³⁴. In the UK there has been development of national guidance, frameworks and training pathways to support HCPs in identifying and managing frailty and the development of patient-centred services across disciplines in primary and secondary care^{9,53–55,175}. In 2020 the BGS launched an online frailty hub for education and training which includes multiple practical resources about frailty and an extensive online e-learning module¹⁸². Despite these, the evidence of the education and training for HCPs is lacking^{189,334}. This is likely to reduce the confidence of CTs to formally teach about frailty and in turn impact on MSs' learning through both formal and hidden curricula.

The uncertainty and vulnerability expressed by CTs highlights that ClinR around frailty is complex, even for an experienced HCP. The survey and scoping review found that many medical schools in the UK use a systems-based approach to learning and taught frailty discretely during placement(s), yet frailty does not fit into one system, and in fact bridges the majority of body systems⁵. Frailty teaching and assessment was most commonly in years four and five. In view that frailty is a multi-system condition and requires complex ClinR it is unclear when the best time is to introduce the concept of frailty and where it best ‘fits’. MSs require some level of knowledge and experience to understand the concept of frailty, and to appreciate how the presentation and recovery journey of that condition in a person with frailty is likely to be atypical. It appears attitudes towards frailty worsen through medical school¹²⁷ with some evidence to suggest attitudes improve following teaching, and a balance needs to be sought between knowledge and attitudes¹²⁶. A recommendation from this thesis is that frailty is introduced in stages throughout medical school, and further research or expert consensus is required as to how best approach this. Perhaps as frailty is so prevalent, medical schools need to shift understanding that actually the ‘atypical’ presentations of frailty are in fact the ‘typical’ presentations MSs will encounter as a doctor. Lastly, the uncertainty felt by CTs around frailty could be used as an educational opportunity for MSs, through creating a culture that acknowledges medical uncertainty^{330,335}. A suggested method of teaching MSs to recognise and manage uncertainty is to have an awareness of the application of the two systems of ClinR in daily practice¹⁴¹.

6.3.2 Frailty is the responsibility of geriatric medicine

The 2018 OfG document includes that MSs should demonstrate working collaboratively with other HCPs and organisations when working with patients with frailty¹³². Overwhelmingly, across the thesis, frailty was perceived as the responsibility of geriatricians. This was evidenced through authorship of frailty-related literature by geriatricians in the scoping review, through the gatekeeper,

respondents and responses of the national survey and through discussions in the qualitative study, as per Theme one: Frailty is (gladly) the responsibility of geriatricians (Section 5.5.3).

This finding is perhaps unsurprising given that in the UK it is commonly accepted that geriatricians have responsibility for a patient in hospital who is older and has complex needs, including interacting medical and psychosocial problems that affect a person's function and independence^{336–338}. Geriatrician liaison services and shared care models have been formalised in recent years to improve patient outcome with best practice tariffs and national audit findings stipulating the involvement of a geriatrician in the patients' peri-operative journey in major trauma, fragility hip fractures and older patients undergoing an emergency laparotomy^{82,339}. However, although there is a national drive for hospitals to provide acute frailty services, it is not clear whether this service specifically needs to involve a geriatrician^{28,340,341} and geriatricians cannot look after every patient with frailty⁵¹. Patients with frailty may present with an acute condition or exacerbation of a pre-existing condition such as a myocardial infarction, malignancy or acute surgical problem, that requires care from the appropriate specialities, without ever meeting a geriatrician³³⁶. Frailty should be viewed as an interdisciplinary issue, across clinical specialities, with a priority to train the entire workforce rather than introducing systems that trigger onward referral to geriatricians²⁸. This is supported by Gwyther et al, who challenged the dominant role of geriatricians in frailty care and recommended that the ownership of frailty should be devolved across all specialities, through training programmes³⁰⁰.

The strong positioning of frailty within geriatric medicine and the hospital environment does not represent the demographics of all patients with frailty^{17,18}. The presentation to secondary care of patients with frailty is largely a reactive response, where patients present acutely in times of crises⁴. There is a global emphasis on reorienting health systems towards integrated care for people with frailty³⁴². It is now required, that GPs should play a central part in frailty identification and

management^{9,26,27,343}. The scoping review found that the community is a potentially rich learning environment to learn about frailty yet the national survey found that GPs deliver teaching on frailty in only 25% of medical schools, 45% of medical schools teach about frailty in the community, and three schools are extending the time allocated in primary care to deliver frailty teaching. This is in keeping with a cross sectional survey of UK medical schools completed in 2020 that revealed that GP teaching provision constituted an average of 9% of the medical curricula and that the majority of medical schools described plans to increase GP teaching over the next 5 years³⁴⁴. The benefits of the community in UGME have long been recognised, which includes making learning more real and relevant, teaching skills in ClinR and exposing MSs to the opportunities and challenges of integrating care across different healthcare settings^{345–348}. Despite this, there are a number of sociocultural factors which hinder the expansion of UGME in primary care, including cultural divides, medical school leadership, capacity and funding³⁴⁹.

Within the LOs provided from the national survey, the roles of the MDT featured most commonly with 80% of schools describing combinations of MDT members as faculty, with a minimum of three disciplines (for example geriatrician, occupational therapist, physiotherapist). There was a noticeable absence of discussion regarding the MDT from the interview participants which, again, through the hidden curriculum may diminish the perceived value of allied HCPs. There is mixed evidence regarding how MSs perceive non-physician faculty members with some suggesting MSs have a poor perception of their academic ability, status in society and professional competence³⁵⁰, where another study reported that MSs acknowledged nurses' expertise, knowledge, and resourcefulness³⁵¹. Studies exploring the roles of non-physician HCPs as members of faculty in the community have found that they were only valued as teachers after learners understood their educator role through increased time and exposure³⁵². The national survey found that the proportion of schools framing IPE around frailty was low at 20%. This finding was supported by the scoping review that highlighted a requirement for more IPE. IPE has been shown to be effective in positively changing patient outcomes^{273–275} and is advocated in

OfG¹³². Without IPE, graduates are at risk of entering their chosen profession with limited understanding of how other professions can contribute to patient care²⁷⁶, which is crucial in patients with frailty. MSs and doctors from all specialties work alongside colleagues from within the MDT and the management of frailty requires multiple members of the MDT⁹ therefore MSs should be taught by and with HCPs in an integrated fashion.

In view of the perceived dominant role of the geriatrician, MSs have a limited scope of reference to recognise frailty; they only 'saw' frailty and used the term in the context of geriatric medicine placements. This is perhaps unsurprising since even experienced CTs expressed that their clinical gestalt is subjective depending on their speciality, experience and the environment in which the patient is seen. Through geriatric placements, MSs learned an association that patients with frailty were in hospital, in a bed or chair as cues to base their ClinR. This is likely to have been learnt through the hidden curriculum through the language and actions of CTs as well as from institutions, who through placing frailty (often discretely) in geriatric modules, teach that frailty is associated with geriatric placements. Context specificity is a notion in ClinR where a HCP can see two patients with the same presentation and have the same diagnosis but arrives at different diagnoses in different contexts³³². Durning et al found that the environment in which a patient is seen in plays a key role in the ClinR process³³². MSs must be aware that many patients they will encounter on non-geriatric placements may also have frailty, and appreciate that the same principles of presentation and management apply. Therefore, it is recommended that educational approaches that bridge the divide between community and hospital environments are needed to teach holistically about patients with frailty. This may open up the scope of reference for MSs to see people with frailty in different contexts (both physically in terms of environments as well as across the spectrum of frailty). Signposting of frailty throughout specialties, conditions and different clinical environments should be undertaken to provide MSs with a more nuanced understating of frailty as a spectrum and not just a presentation in times of crisis within geriatric medicine.

In the interviews, two MSs had drawn a diagram of the last patient they had seen. These patients were seen on non-geriatric placements (they had seen them in primary care and renal clinic) and the MSs did not initially consider these patients had frailty. Through verbal reflection alongside a visual prompt for discussion, the MSs had later come to their own conclusion that the patient had frailty, without prompt from the researcher. Schön defined reflective practice whereby professionals critically consider their own tacit knowledge, which allows for a new perspective on an individual's pattern of thinking to learn from experiences²⁸⁴. Building on this, Mamede and colleagues developed the method of structured reflection to improve students' ClinR through actively comparing a patient's presentation with known illness scripts and noticing similarities and discrepancies³⁵³. Deliberate reflection, or reflection on action, is recommended as a tool for learning ClinR, which has been found to be particularly beneficial in conditions that show overlap of presentation or where presentations of a single condition manifest in quite different ways, such as frailty^{353,354}. This may be an effective way to enhance ClinR around patients with frailty and further research surrounding frailty and ClinR is suggested.

6.3.3 Frailty is misaligned between education and the reality of healthcare, and between educational strategies used

6.3.3.1 Misalignment within undergraduate medical education

The national survey found misalignment between what MSs are taught and assessed about frailty and what medical schools expect MSs to learn about frailty. This misalignment was found to be true of the content of teaching and assessments, and the learning domains taught and assessed. The model of constructive alignment states that for effective learning the intended LOs of any curriculum must be aligned with both the teaching and assessment strategies designed to deliver that curriculum^{187,188}. In terms of learning domains, the survey found that knowledge about frailty was the learning domain most commonly taught, with deficiencies in

education relation to behaviours and skills. This finding mirrors previous surveys describing UK undergraduate teaching on delirium and dementia, which identified failure to address student attitudes^{241,270}.

Literature suggests that the evidence-based medicine movement has reinforced the supremacy of scientific fact, and consequently MSs have learnt that cognitive knowledge should be prioritised, often at the expense of other key aspects of medicine^{156,176}. Educators cannot solely rely on interventions that target knowledge, even if they prove to have impact, to advance the ability of students to care for people with frailty³¹⁷. The scoping review found that the attitudes about frailty held by students appear to be dynamic and demonstrated that attitudes towards frailty improved following formalised teaching. In view of this, alongside the negative perceptions of frailty, consideration must be given to educational strategies that teach and assess about behaviour, values and skills to train MSs to provide holistic care to people with frailty and consider when the best time of medical training is to introduce these. It is apparent that education that attends to the biological, psychological and social components of frailty would likely better equip MSs to consider the holistic needs of patients¹⁵⁶. Brown suggests that we must remedy the knowledge-dominant messages students receive to show the importance of understanding the patient as a whole, which is likely to be achieved through increased authentic patient contact¹⁵⁶, as discussed later in this section.

The assessments in use to assess MSs about frailty most commonly were OSCEs and SBA questions but also included reflective writing and the use of student logbooks. In view of the challenges of defining frailty as per the introduction chapter, the use of SBAs is of interest, since it could be considered challenging to create frailty-related questions that have a clear single best answer and further research is required to understand how SBA questions can best be written and their value of assessing knowledge about frailty. OSCEs typically assess skills and behaviours,

which highlights a lack of constructive alignment to both the topic content and the dominant knowledge-based learning domain being taught^{187,355}.

The assessment examples provided from UK medical schools in the survey did not reflect the LOs provided, nor the diversity of the teaching that had been described. For example, all medical schools taught the definition and diagnosis of frailty and many taught about roles of the MDT and CGA, yet none described assessing MSs on these topics. The clinical assessment examples provided by UK medical schools described OSCE scenarios that included a history or communication station involving a frailty syndrome (fall, episode of delirium). In the examples provided, the station included a 'frail patient' but frailty was not the focus of the station, nor defined, which links into a lack of use of the term as per section 6.3.1.1. The teaching and assessment methods employed by medical schools around frailty in UGME must engage MSs in educational strategies that represent curriculum objectives.

In 2020 A Collaborative Interprofessional Capability Framework for Prevention and Management of Frailty was developed by the European Joint Action ADVANTAGE group and the European Geriatric Medicine Society³⁵⁶. This is aimed at postgraduates from multi-professional backgrounds and, following a Delphi process, a framework consisting of 25 items across four domains of capabilities was agreed. Content includes knowledge-based capabilities such as the understanding about frailty definitions, models, prevalence, reversibility, screening and assessment tools, skills for screening and assessment as well as management procedures for every profession involved³⁵⁶. The majority of items focused on skills and behaviours including understanding the roles of, and working within the MDT, communication skills to patients with frailty and individualised care planning³⁵⁶. For undergraduates, there is no such framework currently as to what should be learnt about frailty and it is a recommendation that such a framework for UGME is considered, to provide further guidance for medical schools.

6.3.3.2 Misalignment to the reality of healthcare

The scoping review found a group of papers that discussed a need to change undergraduate curricula to bridge a mismatch between the medical education currently provided to MSs and the demographic trends of the increasingly ageing population^{176,220,222,225}. Oakley et al²²⁰ highlighted the misalignment between the proportion of clinical workload made up by the diagnosis and management of older people with frailty and the amount of undergraduate teaching devoted to it. In the interviews, MSs described an awareness of a mismatch between the training they receive and the reality of their experiences on clinical placements which left them unprepared for the reality of patients they encounter. MSs felt it was imperative to learn more about frailty to create learned associations between frailty and discrete conditions.

The involvement of patients with frailty in formal teaching was described in the scoping review as a significant challenge to UGME, as per Section 2.5.3.2^{176,220,222}. In the survey, only one medical school formally involved patients with frailty in the education of MSs, other described that learning was opportunistic through exposure to patients in the clinical environment. In the survey, the challenges of involving patients with frailty in assessments were highlighted in terms of the ability of the patient to 'perform' as well concerns regarding the appropriateness of teaching students to undertake complex assessments in short timed examinations. Since this study found that CTs do not commonly use the term in the presence of MSs, that teaching is opportunistic through exposure on the wards and that patients are not formally involved in teaching this is likely to limit the ability for MSs to learn about ClinR in patients with frailty. The avoidance of actively involving patients with frailty in educational strategies may also reinforce the idea of lack of value or importance of frailty through the hidden curriculum.

It is recognised that patient-educators have a significant role in supporting students' learning¹⁶⁶ and that the inclusion of older patient educators improves MSs' confidence in their advanced communication skills³⁵⁷. The benefits of including older people in teaching as well as in the development and evaluation of modules are wide ranging³⁵⁸ and beneficial to students, academic staff, and older patient educators³⁵⁷. Where interaction between MSs and older people does occur, this often focuses on people with frailty, and those living in institutional care, which potentially gives MSs a biased view of older people and it may be that including a spectrum of patients with frailty in educational strategies is beneficial to MSs' perceptions of frailty³⁵⁸. The scoping review found that "authors of the cases believe that including frail elderly patients would make cases too complex to meet learning objectives"²²⁵ yet the theory behind ClinR suggests that case examples should be selected for their reflection of multiple aspects of ClinR¹⁴³. Presenting MSs with simplified versions of complex real-world problems may be unhelpful and there is a call for exposure to complexity and uncertainty within history-taking from an early stage³⁵⁹. This was supported by the scoping review where MSs described unpreparedness when communicating to and undertaking skills in patients with frailty, despite confidence in more simplified simulated environments^{215,221}. Learning about ClinR is best achieved through deliberate and repeated exposure to real cases and the value of the educational experience is augmented by the presence of an expert¹⁴³. Other recommended approaches to teaching ClinR include to maximize patient encounters and to listen to clinical teachers reasoning out loud¹⁴⁶. It is a recommendation that patients with varying degrees of frailty could be involved as teachers in formal sessions and through 'real life' encounters in primary care and bedside teaching to enable MSs to encounter patients across these contexts³⁶⁰. Within patient encounters, MSs should be guided by CTs to embrace and systematically work through complex clinical situations³¹⁷.

Communicating with patients with frailty requires adaptations to the typical communication skills that MSs are taught since consultations with individuals with frailty and their carers often require more time, and the requirement to deviate from a

set order of questioning³⁵⁹. It is recommended that this should be highlighted to MSs to avoid students becoming demoralized that they are progressing slowly and to legitimise the longer duration required, which should also be reflected in assessments³⁵⁹. The negative construct of the ‘poor historian’^e may be reinforced by the nature of assessments during undergraduate and postgraduate training, where “good historians” are often selected to participate. MSs may learn through the hidden curriculum to seek patients more representative of those encountered within time constrained clinical exams³⁵⁹.

6.4 Recommendations from the thesis

The following recommendations have been produced from the combined findings from the thesis. Whilst there is an attempt at distinction between recommendations, there are areas of overlap. Alongside the recommendations are suggestions of teaching and assessment strategies to best meet the recommendations, which is summarised in Table 6.1.

^e Typically, this refers to a patient with frailty or a patient with cognitive impairment that cannot provide a concise history and is a derogatory term that is widely used in healthcare.

Table 6.1: A summary of recommendations and examples of how frailty could be approached in undergraduate medical education

Finding	Recommendation	Example
The language of frailty directly impacts on how it is perceived and understood	Frailty as a term should be used in the presence of patients, medical students and other HCPs. It should be used in a considered manner with an accompanying brief, yet formal, definition. It should not be used as an adjective.	“This patient is living with severe frailty. What I mean by that is that they are more unlikely to become disproportionality unwell due to a minor event such as infection or constipation. This is important to know since it will likely affect how they present and their treatment/recovery journey”
	Teaching sessions on frailty should be named as such and assessments about frailty should be signposted.	“Cardiology in patients with frailty” “The concepts of frailty” “Clinical reasoning and how it differs in patients with frailty” “Falls in patients with frailty”
	Sessions on the language of frailty should be provided by medical schools	This might include a small group session to explore the challenges of frailty (including a lack of universal definition, how patients negatively perceive frailty

		and how HCPs perceive frailty). It may include visual methods and should facilitate reflection of the negative language around frailty that medical students will likely encounter.
There is extensive variation as to how frailty is perceive and approached in UGME	Frailty should not be <i>assumed</i> as a common thread or something that is learnt about opportunistically throughout medical school.	It should not be enough that medical students are exposed to frailty though the patients they encounter during medical school or by completing a CFS on admission. Specific teaching sessions on frailty and assessments should be undertaken.
	A shift is required away from the dominant knowledge based learning to focus on skills, attitude and behaviours around frailty.	This could include the language of frailty, advance care planning in patients with frailty, history taking in patients with frailty. Assessments such as WPBAs allow professional behaviour, knowledge and skills to be assessed.
	Educational strategies should be reviewed to ensure constructive alignment	Learning outcome: To understand the main concepts of frailty and screening tools in use Teaching session: Lecture on concepts of frailty including Rockwood, Fried. Small group sessions

		<p>discussing the pros and cons of common screening tools and practicing to use them.</p> <p>Assessment: Reflective essay on the concepts of frailty and teaching tools in use in comparison to the reality of the student's experience during their current placement.</p>
	<p>There should be careful consideration as to how frailty is mapped in curricula</p>	<p>There is a risk that medical schools can map frailty without teaching or assessing it. Not all conditions that involve older people should be mapped as frailty.</p>
	<p>Consensus should be reached as to what should be included as core frailty-based learning as well as further research as to which educational strategies develop clinical reasoning and enhance knowledge, skills and behaviours.</p>	<p>This might include societies across specialties, including primary care and geriatric medicine as well as the GMC and MSC.</p> <p>Collaborative research between UK medical schools should be a priority to evaluate the educational strategies in use.</p>

There is misalignment between medical education and the reality of modern healthcare	Medical students should have regular contact with patients with frailty. Patients with different stages of frailty should be involved with the planning and delivery of education, across clinical specialties.	In each rotation, patients with frailty should be signposted so that students can understand clinical reasoning across specialties. This should be across clinical environments and in formal teaching sessions.
	Educational strategies should reflect the reality and complexity of healthcare.	For example, through WPBA, OSLEERS or reflective work to allow time for a comprehensive assessment and to allow for history taking in a more time-appropriate manner. If simulation is used, the simulated patient should reflect the patient group they are simulating and adequate time should be allowed for this.
	There should be careful consideration as to how frailty assessments feature in the MLA	This should be through expert consensus between the MSC and clinical experts in frailty.
	Frailty does not fit into one discrete system or module and should be introduced in stages throughout medical school	This might include: Year 2: The concepts and prevalence of frailty

		<p>Year 3: How patients with frailty typically present, roles of the MDT, screening tools</p> <p>Year 4: The language of frailty</p> <p>Year 5: How frailty impacts individual clinical decision making and clinical reasoning across specialties</p> <p>This could be approached through longitudinal clerkships.</p> <p><i>Further research is required to understand the best time of medical school to introduce the concept of frailty</i></p>
Frailty is seen as the responsibility of geriatricians/	Educational strategies should be collaborative through IPE and the inclusion of allied HCPs as teachers	This might be within longitudinal clerkship or combined small group sessions focussing on a case

<p>placements in geriatric medicine, which limits medical students' scope of reference for clinical reasoning</p>	<p>Frailty-related teaching sessions and assessments should occur across different environments, clinical specialties and stages of frailty and should be mapped accordingly. The community has been found to be a particularly rich environment for learning about and with patients with frailty</p>	<p>For example how frailty impacts people in primary care, frailty in patients undergoing surgery, frailty in patients with diabetes</p>
<p>Clinical reasoning around the identification of, prognostication of, and management of, individuals with frailty is challenging, and rarely verbalised. This includes</p>	<p>HCPs should convey their uncertainty surrounding the identification, prognosis and management. HCPs should attempt to verbalise the cues they have used in which to inform these decisions. Management plans should not be discussed as generalised rules. Frailty should not be used as an alternative term to imply end of life without further detail.</p>	<p>During a ward round or clinic giving a brief overview as to why the management decision was made "I think this patient has severe frailty in view of their requirement of assistance for all ADLs and their advanced cognitive impairment. I do not think it is appropriate that they have this operation since I don't think they will survive it. The focus of the team will be on discussing with themselves and their family about how we can best manage their symptoms and advance care planning.</p>

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6.4.1 Nationally, institutionally and within the local clinical and educational environments

Language was an unexpected dominant finding of this thesis. It is a recommendation of the researcher that nationally, institutionally and within local clinical and educational environments, the term frailty should be used in a considered manner, to lead and evoke change. This ideally involves using the term frailty explicitly in literature and in the presence of patients and MSs, with a brief description of what the individual means by its use. Frailty should be discussed as part of a spectrum with emphasis that it is dynamic, for example by using the CFS the discussion might describe that a person has moderate frailty which means they need help with all outside activities, following interventions with the physiotherapist and occupational therapist and once medically we treat their leg ulcer they may improve to mild frailty. It is possible that MSs will encounter negative language within the clinical environment and facilitated discussion between CTs and MSs surrounding the use of language in these environments should be encouraged, to facilitate reflection in action and on action²⁸⁴. Frailty should not be assumed as a common thread throughout UGME that can be learnt through osmosis, instead it should be signposted within teaching sessions, through naming teaching sessions as such and within the clinical environment. Within the clinical environment, CTs should signpost frailty across different clinical specialties, clinical environments and clinical conditions to provide MSs with a more nuanced understanding of frailty.

Patients with different stages of frailty should be involved in the planning and delivery of education. MSs should have regular encounters with patients with frailty in clinical, teaching and assessment. HCP should have an awareness of their role as to what MSs learn through the hidden curriculum in patient interactions. It would be beneficial for MSs to encounter patients with frailty across different contexts, clinical specialties and stages of frailty to understand that ClinR around presentation, identification and management is dependent on individual circumstances and shift away from the dominant association between frailty and inpatient geriatric medicine.

The community environment especially appears to be a rich area for frailty-related education. Teaching about frailty should be collaborative through IPE and the use of allied HCPs in teaching. Frailty should be introduced in stages throughout medical school, which requires further research or expert consensus as to how best approach this and what to introduce about frailty at each stage (also taking into consideration that attitudes of MSs around frailty are dynamic). A potential requirement for adaptations in communication skills, history-taking skills and examination skills should be highlighted to MSs to legitimise the longer duration required and the potential requirement to adapt the structure of the consultation, which should also be reflected in assessments.

Within patient encounters, MSs should be guided by CTs to embrace and systematically work through complex clinical situations. System two processing can be learned from education and training and one way suggested to approach this is that MSs should be taught that 'atypical symptoms' are the most typical characteristics of patients with frailty and the underlying causes should be sought through a CGA. To be able to advance the ClinR skills of MSs around identification, prognostication and management decisions, HCPs should accept and convey their uncertainty surrounding identification of frailty, prognosis and management and attempt to verbalise the cues they have used on which to inform these decisions. A suggested method of teaching MSs to recognise and manage uncertainty is through reflection on action.

The model of constructive alignment states that for effective learning the intended LOs of any curriculum must be aligned with both the teaching and assessment strategies designed to deliver that curriculum. UK Medical schools should review their educational alignment between LOs, teaching content and assessments related to frailty. To avoid a mismatch between training and reality, assessments should not contradict the reality of how HCPs will be expected to work (for example taking a history in a patient with frailty is not realistic in seven to ten minutes). The MLA is a

national assessment, based on the blueprint of OfG and is discussed further in Chapter one¹³². The development of the MLA in the UK should be seen as an exciting opportunity in UGME, since all UK graduates will have, in theory, been assessed about frailty. There should be careful consideration from experts in frailty and medical education as to how frailty assessments feature within the national MLA and how assessments can meaningfully assess knowledge, skills and behaviours.

6.4.1.1 Suggested educational approaches to teaching frailty

One way of educationally approaching the above teaching-related recommendations may be to provide opportunities for longitudinal follow up and encounters with people with frailty across the community and hospital environment²³⁵. Traditionally, undergraduate education has been delivered and assessed through a sequence of acute placements and lecture-based learning with a dominant focus on learning about knowledge^{156,278}. The transient nature of these encounters may limit MSs' understanding of how to best care for individuals in the twenty first century²⁷⁸ and it is said that the current practice in UGME promotes a largely reductionist approach to problem solving that does not represent the complex reality of patient care³⁶¹.

Longitudinal integrated clerkships (LICs) describe an education strategy whereby MSs participate in the care of patients over time and meet the majority of the year's core clinical competencies, across multiple disciplines simultaneously through the experience³⁶². LICs have been described as the answer to the many challenges that healthcare and UGME face in the twenty first century, through a realistic and sustainable alternative to discrete rotational models, and have gained in popularity over the last decade, although they remain relatively novel in the UK³⁶³. Examples in the UK currently range from visiting a patient with dementia and their relatives over a longitudinal time period³⁶⁴ through to being placed in primary care and following a patient through to secondary care in times of crises³⁶³. In 2016, Worley et al undertook an international survey of the LICs in use and found wide variation in

student numbers, healthcare environments and duration of the LICs³⁶⁵. The authors subsequently produced a system for the classification of LICs and described three distinct typological programme clusters: Comprehensive LICs (full duration of academic year, all disciplines covered); Blended LICs (50-89% of academic year, most disciplines covered), and LIC-like Amalgamative Clerkships (less than 20% of academic year, less than 50% of disciplines covered, treated as a rotation in the course)³⁶⁵.

All of the described types of LICs would open up the scope of reference for students to 'see' frailty in different contexts, away from geriatric medicine placements with opportunity to understand the roles of the wider MDT. LICs may also have the additional benefit that MSs may better understand frailty as a spectrum that is dynamic in nature, through seeing patients at different stages as well as with improvement following acute illness. It has been suggested that by seeing individuals that have recovered from an acute illness and returned to live in the community may help to reframe unhelpful perceptions of older people with frailty³¹⁷. Although condition-specific longitudinal educational models are less common, evaluation of a large-scale longitudinal dementia education programme increased student knowledge, attitudes and practice³⁶⁴. Additionally, relational learning between students and patients and their relatives over time has been identified and the potential transferability of this educational approach to other long-term conditions such as frailty is demonstrated³⁶⁴. Through the findings and theory in this thesis this educational strategy has multiple benefits of meeting the recommendations from this thesis, as summarised in Figure 6.2. In the survey, one medical school provided an example of teaching about frailty via a longitudinal placement where MSs undertake a three-part reflective written piece on the meaning of frailty from the perspectives of the patient, MDT and student, bringing in a critical evaluation of their management plan and the literature around frailty. Further research is required to understand the benefit of LICs as a strategy of learning about frailty in UGME.

6.4.1.2 Suggested educational approaches to teach or assess about frailty

Reflection is a process whereby future actions of an individual are informed through a greater understanding of the individual and an experience³⁶⁶. There are a variety of reflective educational approaches in UGME, which include teaching and assessment^{366,367}. Commonly used reflective approaches include text based reflective portfolios, reflective essays, art based reflection and guided oral reflection between a facilitator and student^{366,367}. Oral reflection has been found to be most useful within an interaction between a student and facilitator to choose an experience which triggered questions, such as a situation where students did not have the necessary knowledge or skills, or a complex, or clinically uncertain situation²⁸⁴.

Several scholars have conceptualized the theoretical underpinnings of reflection by proposing different explanatory models of learning³⁶⁸. Schön is the first to link reflection to professional practice, whereby reflection is a process that makes the hidden theoretical knowledge an individual holds more explicit and transforms it into practical knowledge²⁸⁴. However, reflection has a wider impact on lifelong learning than the acquisition of new knowledge and skills, such as recognition of the underlying personal values and beliefs of an individual³⁶⁹. Schön describes: reflection in action and reflection on action, the latter of which involves retrospectively considering an experience and building on it, often through the inclusion of supportive literature^{284,368}. In view of this, reflection is typically thought of as occurring during or after an experience, but reflection before an experience has the advantage of approaching a scenario with a particular learning goal or perception that can be challenged³⁶⁶.

An unexpected finding of this thesis is that through discussion about frailty with the inclusion of a visual aid, it triggered hidden theoretical knowledge to become more

explicit and this is an area that warrants further exploration as a teaching tool. Literature suggests that MSs dislike the notion of assessment of their reflective activities, due to concerns over their privacy and the perceived low value of reflection³⁶⁹. Evidence regarding the reliability and validity of reflective writing as a meaningful assessment strategy is conflicting^{368,370}. A potential method for countering negative perceptions of reflections is by providing reflexive LOs that are synergistic with those in other parts of the course, which signals an expectation that the goal of the reflective exercise is meaningful learning and can improve practice³⁶⁹.

6.4.1.3 Suggested educational approaches to assess about frailty

OSCEs are generally considered the main assessment of undergraduate clinical skills because of their reliability, consistency and objectivity yet encourage MSs to prepare strategically for them³⁷¹. Khan suggests that the pursuit of consistency and reliability in assessments sacrifices validity and variability³⁷¹, and adds that OSCEs fail to prepare MSs for the complex nuances that make medicine an art³⁷¹. Khan argues that a paradigm shift in assessment methods is required, whereby, alongside OSCEs, workplace based assessments (WPBAs) should be considered as key undergraduate clinical assessment³⁷¹. WPBA may shift the learning focus of MSs from the current dominant knowledge domain around frailty and allow for cases that reflect the reality of the clinical environment³⁷¹. WPBAs allow professional behaviour, knowledge and skills to be assessed, as well as the ability of students to adapt and vary their practice depending on the context of the scenario, which is key to the reality of practicing medicine^{371,372}. Using WPBAs also enforces a message through the hidden curriculum that the aim of learning clinical skills is for real life practice with real patients, rather than for an exam³⁷¹. The inclusion of summative WPBAs may help MSs consider how they would conduct a respiratory exam on the patient with frailty described in the prologue. The downsides of WPBAs include logistical complexity and inter-examiner variability but this form of assessment may help increase inclusion of patients with frailty in assessments, since WPBAs can be done

in the clinical environment. In postgraduate education WPBAs are used extensively in GP training³⁷¹.

An alternative assessment to assess knowledge, skills and behaviour around frailty could be the OSLER; a form of clinical assessment which requires MSs to perform a history and examination of a patient (either real or simulated), then to present a summary of their findings to examiners who ask them questions about the case. Similarly to the WPBAs, the main strength of the long case is its professional authenticity and its weakness being unreliability³⁷³.

In addition to individual medical school assessments, the GMC have developed the MLA, which will be embedded within UK medical schools' final examinations¹⁷¹. This is a compulsory exam commencing in 2024 that UK MSs are required to pass before being allowed to join the medical register¹⁷¹. The MLA is a two-part assessment made up of a clinical and professional skills assessment and an applied knowledge test, and has a content map based on the outcomes of OfG¹⁷¹. The skills assessment is a practical assessment, of which medical schools may call by another name such as OSCE or OSLER and it is still awaited for the requirements to be published that this skills exam must meet¹⁷¹. The findings of this thesis support that assessments should signpost to frailty, match to LOs and teaching sessions and reflect reality, and the planning and piloting of this assessment is an exciting opportunity for UGME to shape the clinical and professional skills around frailty of the doctors of the future. It should be a priority of educationalists and frailty experts to ensure that frailty features in the MLA in a visible and meaningful way for the future doctors across specialties who will be looking after patients with frailty and their relatives.

6.4.2 Guidance, expert consensus and future research areas

It is recommended that expert consensus from medical educators and those with experience of frailty should be reached regarding the core areas to include in UGME around the topic of frailty. This would aid planning and delivery of teaching and assessments and assist medical schools in mapping frailty to their curriculum. The consensus could follow a similar postgraduate consensus created across the EU³⁵⁶, or could follow the structure of an undergraduate curriculum that spans across clinical specialties. It would be a recommendation from the findings of this thesis that the GMC participate in the consensus to clarify what *they* meant by the term frailty in their OfG guidance¹³².

Further research is required to understand when is the best time of training to introduce the concept of frailty and whether frailty can be effectively taught as a longitudinal thread throughout a course. Further research is required to understand the dynamic nature of student attitudes towards frailty and understand if and how UGME can best challenge these negatively held views. In view of the variation in frailty-related educational strategies, it would be prudent to further explore which strategies develop ClinR and enhance student learning (including knowledge, skills and behaviours) around the concept of frailty. Owing to the presence of frailty-related LOs in the European¹⁸⁶ and Australian²²⁶ undergraduate curriculum, replicating the national survey internationally would provide a broader picture and share areas of good practice. Medical schools should work together to share both good examples and hurdles of frailty-related teaching and assessment strategies, and case study examples of how frailty can be incorporated though a variety of curricula should be considered. Further understanding around which assessments are being used and the specific challenges of frailty within assessment is required. Information on the value and effectiveness of different assessment types about frailty, as well as associated challenges should be explored and the results shared amongst educators. The challenges of involving patients in teaching and assessment should be explored further, through discussion with people with frailty, MSs and academic

faculty. This should include the benefits to learning, associated challenges and ways these have been overcome. Further research is required to understand how people with frailty perceive the term when used in an educational context, including bedside teaching and small and large group sessions.

6.5 Limitations of overall study

Limitations relating to each study have been outlined throughout the thesis, and should be considered when interpreting individual study findings. The largest limitation of the thesis as a whole is also part of the rationale for the thesis: that frailty is perceived differently by individuals. To try and minimise this the thesis included exploration of the perceptions of frailty in the educational context in literature, at institutional level and at an individual level across a purposive sample of teachers and learners. Despite the limitations of the work carried out as part of this thesis, this body of work is a first step in understanding frailty in the context of UGME.

The thesis focusses on frailty in undergraduate medical education. Medical education is a lifelong continuum and it is likely that there are areas that are transferable between undergraduate and postgraduate learning. The literature regarding frailty in postgraduate education, across HCPs, had been reviewed and included within the thesis, as per section 6.3.1.5 to situate frailty in UGME within the bigger picture. Whilst this thesis largely focuses on UGME in the UK, literature from across the globe has been included.

Lastly, no patients or members of the public were included in this research. As outlined in Section 1.2.8.3.1 there is extensive literature regarding how older people with and without frailty perceive frailty. It was not felt to be possible within the limited scope of thesis to be able to add to this understanding of how frailty and the term is perceived by patients. Following the results of the thesis as to the challenges of

involving patients in teaching and assessment strategies further research should explore with people with frailty their views on being involved in UGME both formally and through bedside teaching.

6.6 Reflexivity

The research process is subject to a variety of influences which impact upon the findings and a reflexive stance is required to identify and understand what these influences are³⁷⁴. The process of reflexivity can be defined as “systematically developing insight into your work as a researcher to guide your future actions”³⁷⁵. During research, the method, data collection and data analysis carry “the epistemological, ontological and theoretical assumptions of the researchers who developed them”³⁷⁶ and may later be infused with the assumptions of other researchers who read them. Reflexivity involves understanding how the process of doing research shapes its outcomes³⁷⁴ and is used as a tool for evaluating the role of the researcher to minimise bias³⁷⁷. As the researcher, I reflected through a research journal as well as through the medium of collage, examples of which are presented at the start of each chapter. The use of collage as a method of reflexivity was discussed in Section 1.8.

The research diary was a paper notebook and a dated entry was made as soon as possible after an interaction, based on guidance from Sara et al³⁷⁴. This could be, for example, after conducting an interview, a supervisor meeting, an informal conversation with colleagues or attendance at workshop. Reflections on the interview experience typically included comments on: how I felt the interview had gone; what the dominant topics were; any contradictions I noted, along with ideas about the methodological or theoretical implications these may have. Dated examples of excerpts are included within this section.

Additionally, I was lucky to have a peer support group, who consisted of doctoral students with clinical backgrounds from a range of specialties. We shared a physical space and held weekly meetings to discuss our research, whilst maintaining anonymity of participants. Some of the comments within the qualitative study are polarised, for example from Tom where he questions the purpose of emergency calls for patients with frailty (5.5.6.2.2) and suggests patients with frailty in hospital require a cup of tea and a cuddle (5.5.6.2.2). I had insight that my role as a geriatrician with an interest in frailty leads me to feel defensive of patients with frailty. I welcomed these differing views and to ensure that I had not interpreted them in a more negative stance than they were intended, I discussed some of the quotes with the peer support group and then documented their responses and my feelings in my research diary. This helped me reflect on the impact of my own bias and provide perspective in interpreting these.

6.6.1 My characteristics

When conducting qualitative research, it is important to consider any impact my characteristics may have had on the design of the project, the data collection and on the interpretation of the findings^{376,377}. It is well recognised that complex relationships can exist between power distribution of the researcher and participants^{379,380}. In interviews the researcher typically holds a position of power¹⁹² yet my experiences and characteristics add additional layers of complexity of power dynamics. This includes my younger age and female gender³⁷⁸ but also includes my clinical and academic experiences.

My clinical role is that of a trainee in geriatric medicine with an interest in medical education and my academic role involves teaching and assessing students at the medical school as well as being the researcher of this project. For example, MSs

may have been intimidated to discuss with a senior and someone who teaches and has a responsibility for their assessments and consultants may have felt conscious to show their knowledge of frailty to a more junior trainee in geriatric medicine³⁷⁹. Additionally, a small number of participants were acquainted with me in a professional capacity and this may have impacted the power dynamic of the interviews. There is the potential that how the participants perceived my characteristics may have had an impact on how participants engaged with the survey and interview, and how willing they were to openly share their experiences¹⁹². I was sensitive to my complex position of power throughout and specifically chose the conversational interview method²⁶⁰ and the use of visual methods to try and navigate this, alongside regular reflections:

“I do feel that the conversational interview method and visual methods are helping with relationships between the participant and myself to the point that I have found in many interviews now the participants are asking me questions and we were having 2 way conversations. The interviews with Greg and Paul particularly felt really natural and we covered all sorts of topics that I wasn’t expecting, for example Greg asked me about what I think the GMC mean by frailty. Today with William I noted how many questions he asked me, even though he is a senior geriatrician. I was more conscious though about how I answered as I didn’t want to lead the conversation too much” Research diary excerpt, 3rd May 2019.

Visual methods have been found to displace the hierarchy of the voice of the researcher but may not completely eradicate existing power relations in the field³⁸¹. The option of creating a visual representation was overwhelmingly favoured by MSs and avoided by CTs. The first few clinicians declined to participate in visual research and after this, I lost confidence in asking them. Although not specific to visual methods, Braun and Clarke recognise that there is a potential to feel vulnerable and for the researcher to lose control of an interview¹⁹². This is likely to be part of the power dynamics described above but also considers my ethical responsibility to

avoid distress to the participant (as described in Section 3.4.6) and to maintain a responsive relationship with the participant as per Rubin and Rubin methodology²⁶⁰:

“So far no clinical teachers have participated in visual work. This is likely due to elements of hierarchy where perhaps MSs felt obliged as I am perceived a more senior position both as the researcher-participant relationship, expert in frailty and their teacher. It also may be because consultant felt embarrassment in their drawing ability or having their knowledge of frailty written in ‘black and white’. I think mostly though it is because of me. I felt embarrassed to push it on them” Research diary excerpt, 8th June 2019.

Although disappointing to me, I do not believe that this limited the verbal data received from the CTs as they had more experience than MSs of patients with frailty and were able to discuss images in their mind of patients. I allowed for this in the opening statement of the interviews (as per topic guide in Appendix E) with: “Could you talk me through the image that you made? Or Can you describe to me a case of looking after a patient with frailty?”.

6.6.2 My interests and experiences

Within geriatric medicine I have long been interested in the use of language both in the sense of the negative language we often hear to describe patients (“Aggressive” “Refused treatment” “Failed OT” “Bed blocker”) but also how language can change as learners cross a threshold of understanding, and I have published work before on this ^{316,382}. Despite this, the finding that language features so heavily within this thesis was an unexpected finding for me and not something I had considered at the start of the M.D.:

“I must say, I find the language of frailty challenging. A number of participants now have discussed that they don’t use the term and it got me thinking about my own practice. I don’t think I say frail or frailty to patients but I’ve never noticed that I avoid

it before. I read “frail older person” daily in journals but I don’t often think what is meant by frail. Since I’ve become aware of that I feel really bothered by it. If prominent journals use the term as an adjective and don’t define a population or the term, what hope is there for the rest of us? Are they describing older people, or persons with frailty, or both. I think it devalues the medical efforts so far for frailty but more than that, devalues the patient. I would never say a diabetic patient or an HIV patient because it sounds like the disease defines them. I really notice this every time someone says ‘Frail X’ and I must remain aware that is my personal choice and others probably don’t feel as strongly as me” Research diary excerpt, 27th July 2019.

As my role as researcher I was involved in all aspects of study design and implementation, alongside supervisors. Although I had experience working on qualitative projects, I had not previously conducted qualitative research to this depth. There was therefore the potential that my lack of experience had an impact on the way data were collected and analysed. In order to minimise this effect, I reflected on each interview and attended modules on qualitative research methods, philosophy sessions and joined groups and workshops exploring other methods such as grounded theory, realist reviews and creative research methods in order to develop my skills. The knowledge and values that I picked up from these groups will undoubtedly have had an impact on who I am as a researcher and what I ‘saw’ during data analysis and how I presented these results. For example, the data analysis was an iterative process but as I learnt about philosophers (such as Michel Foucault who describes medical regard³⁸³ and Ludwig Wittgenstein who describes a private language argument³⁸⁴) I began to notice how we struggle to ‘see’ frailty and its subjective nature and how the meaning of a word is based on its use:

“I’ve been thinking a lot about medical regard since I attended a workshop about Foucault. Is frailty challenging because we can’t ‘objectify’ the social elements and vague symptoms in the same way as a lump or jaundice? Perhaps we are trained not to see frailty because it is too close to home of making a patient into a person. During Nick’s interview this week he felt strongly that different specialties are trained

to see patients and conditions differently and I realised how many other people had mentioned something specific about their specialty. I find it fascinating that somehow as specialists we all see a particular element of the patient. When and how do MSs learn this? And why/can I as a geriatrician see 'frailty'?" Research diary excerpt, 15th May 2019.

I expected both of these to feature as themes (frailty is in the eye of the beholder, the meaning of the word is based on its use) but as I continued to analyse the data, though still present, they did not feature as strongly as I had initially suspected.

6.7 Conclusion

The use of language around frailty and the context in which frailty is encountered within UGME appear to be key as to what is learnt about frailty. Through the use of the adjective frailty leads to a binary and colloquial understanding of frailty which has implications on the recognition of frailty, understanding of frailty, the management of frailty and predicting death. The negative perceptions of the term and of frailty itself results in the avoidance of the term across clinical and educational environments which brings challenges for MSs to learn about frailty. Frailty is dominantly seen as the responsibility of geriatric medicine which has implications for MSs to see frailty outside of these environments. Despite relativism and uncertainty as to what frailty is, there are some areas of consensus largely focusing on learning through a knowledge domain, with a lack of constructive alignment as to what is intended to be taught and what is taught and assessed.

In view of the above, MSs have a limited scope of reference on which to base their ClinR of frailty and they learn how frailty is perceived and discussed based on lay understandings and through the hidden curriculum. This thesis has found that it would be theoretically beneficial to: enhance ClinR through reflection on action; involve patients with frailty in the planning and delivery of UGME; ensure educational strategies reflect the reality and complexity of healthcare; use the term in a considered nature with definitions and avoidance of assumed understanding; explicitly discuss and signpost to frailty in clinical and educational environments (both in formal and informal teaching); and open up the context in which a patient with frailty is seen (across the community and other hospital specialties). Educational strategies have been proposed to best meet these recommendations and areas for further research have been suggested. Expert consensus should be reached regarding the core areas to include in UGME around the topic of frailty, which should be shared in the form of a consensus framework or a frailty curriculum and disseminated to medical schools to aid planning, delivery, assessment and mapping of frailty related education for medical undergraduates.

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Appendices

Appendix A. Search strategy for scoping review

Database	Search Terms
Ovid (EMBASE, MEDLINE)	Medic* adj3 (student* or education or school or undergrad*) or (MeSH Medical student or medical education or medical school) AND Frail* or (MeSH Frail Elderly or Frailty)
EBSCOhost (AMED, BEI, CINAHLplus, ERIC, PsycInfo)	(Medical students or undergraduate or medical education or medical school) AND (Frail or Frailty or Frailty elderly)

Appendix B. Data extraction form for scoping review

Details of evidence source

Title

Citation details (First author, year, journal)

Department of first author and last author

Country

Paper type

Aim/objective of paper

Outcome of paper

Is a definition of frailty included? (document examples)

How is the term used? (document examples)

Participant details:

Total numbers

year groups

Are other professionals or postgraduates included?

If 'educational strategy' used:

Describe any frailty-related teaching or assessment methods used in study

In which context was the intervention given e.g. primary care, across curriculum?

Evaluation method

Describe the effect of intended outcomes e.g. student values, attitudes, knowledge and how this was ascertained

If curriculum:

Document learning outcomes that include frail/frailty

Appendix C. Further details of articles included in scoping review

Title	Year of publication	Medical student year group	First author name and role	Country of lead author	Type of publication
Understanding of Comprehensive Geriatric Assessment Among Fifth Year Medical Students	2020	5th	D Perera, Trainee doctor	UK	Conference abstract
Fifth year medical students' perceptions of the importance of frailty and competence in assessing, diagnosing and managing frailty before and after a geriatric medicine course.	2020	5th	Arakawa Martins, Geriatrician	Australia	Journal paper
An exploration of medical student attitudes towards older persons and frailty during undergraduate training	2020	Whole cohort	F McCarthy, Medical student	UK	Journal paper

Jointly discussing care plans for real-life patients: The potential of a student-led interprofessional team meeting in undergraduate health professions education	2019	unknown	M van Lierop, Famiy medicine	The Netherlands	Journal paper
Geriatric medicine simulation for medical students	2018	4th	N Linscott, Trainee doctor	UK	Conference abstract
Early learners as health coaches for older adults preparing for surgery	2017	1st	J Kaplan, Colorectal surgeon	USA	Journal paper
Medical student attitudes and concepts of frailty and delirium	2017	4th	D Nimmons, Trainee doctor	UK	Journal paper
Development of a simulated interprofessional geriatric surgery curriculum: Challenges and opportunities	2016	Unknown	T Nguyen, Unknown	USA	Conference abstract

Attitudinal change toward home care among medical students participating in community medicine clerkship	2016	Unknown	Yamanaka, Professor in Home Care Medicine	Japan	Conference abstract
Preparing to meet the needs of an ageing population - A challenge to medical educators globally	2014	-	E Tullo, Geriatrician	UK	Journal paper
Equipping tomorrow's doctors for the patients of today	2014	-	R Oakley, Trainee doctor	UK	Journal paper
Using the Jigsaw cooperative learning method to teach medical students about long-term and postacute care	2014	'Early in clinical training'	G Buhr, Geriatrician	USA	Journal paper
Undergraduate teaching in geriatric medicine: mapping the British Geriatrics Society undergraduate	2014	-	C Forrester Paton, Trainee doctor	UK	Journal paper

curriculum to Tomorrow's Doctors 2009.					
European undergraduate curriculum in geriatric medicine developed using an international modified Delphi technique	2014	-	T Masud, Geriatrician	UK	Journal paper
Why and how should we teach geriatric medicine?	2012	-	R Parikh, Geriatrician	UK	Journal paper
Situated learning enhances authenticity of learning experience of geriatric assessment skills among junior medical students	2012	2nd	S Lim, Unknown	Singapore	Conference abstract
The geriatric medical home learning laboratory	2011	2nd, 3rd	K Dolkart, Unknown	USA	Conference abstract
Palliative care for the elderly - developing a curriculum for	2010	-	J Just, Medicine	Germany	Journal paper

nursing and medical students					
The under-representation of elderly patients in a problem-based medical school curriculum	2007	-	J Gordon, Geriatrician	Canada	Letter to the Editor
Australian society for geriatric medicine: Position statement no. 4 education and training in geriatric medicine for medical students - revised 2006	2006	-	V Naganathan, Geriatrician	Australia	Journal paper
Mi Casa o Su Casa? Assessing Function and Values in the Home	2005	2nd	A Medina-Walpole, Geriatrician	USA	Journal paper

Appendix D. Final questions from national survey

Welcome to the first national survey of how frailty is represented within undergraduate medical education.

Medical students encounter patients living with frailty across a broad range of specialties throughout their course. Frailty is a distinct health state related to the ageing process in which multiple body systems gradually lose their in-built reserves. Whilst undoubtedly there will be an overlap with elderly medicine curricula, we are specifically interested in the teaching and assessment of frailty (including but not limited to the definition, prevention, identification, use of assessment scales and management). The survey aims to understand how frailty is represented currently in UK medical schools and use the results to guide the development of an undergraduate frailty curriculum across clinical specialties.

The survey aims to concentrate on formal, timetabled teaching that is delivered to all undergraduates at your medical school. Please do not include teaching that is offered to only a small number of students. A free text box is provided at the end of each question to allow for clarification and for you to expand on your answers, for example providing titles and content of teaching sessions or assessment methods where possible or highlighting if you are uncertain of an answer. You can exit and come back to the survey at anytime and your data will automatically save.

All data will be handled confidentially and your personal details, and that of your institution, will be anonymised. All efforts will be sought to ensure that your institution will not be identifiable in any publication or correspondence. We aim to provide a summary report including individualised anonymised data comparing what is taught and assessed amongst other medical schools and recommendations for the future.

This study has been endorsed by the British Geriatrics Society (BGS) Education and Training Committee (ETC) and approved by the Brighton and Sussex Medical School (BSMS) ethics committee. If you have any questions, or you wish to withdraw from the research at any time, please do so by emailing Rebecca Winter on r.winter2@bsms.ac.uk.

Many thanks for your help.

Which medical school are you responding on behalf of?

1a. Please describe your role within the institution

Does your undergraduate medical degree include specific teaching sessions on frailty?

- Yes
- No
- Unsure

2a. Which areas of frailty are taught at your institution? *(Tick all that apply)*

- Definition of frailty
- Diagnosis of frailty
- Frailty screening and assessment tools
- Management of frailty (including Comprehensive Geriatric Assessment)
- Other

- Prevention of frailty
- Role of the multidisciplinary team in frailty
- x Unsure
- Please click here to expand further on your response

2b. Please supply the learning outcomes for these sessions

2c. Which year groups receive teaching on frailty? *(Tick all that apply)*

- Year 1
- Year 2
- Year 3
- Year 4
- Year 5
- Please click here to expand further on your response

2d. Which modules or rotations at your institution include teaching on frailty? *(For example, elderly medicine rotation, surgical rotation)*

2e. Which methods are used to deliver these sessions? *(Tick all that apply)*

- Case study
- Community/ home visits
- Computer-aided learning
- Lecture
- Other
- Seminar
- Small group teaching
- Ward round
- Written assignment

Please click here to expand further on your response

2f. Which faculty members contribute to the delivery of frailty teaching sessions? *(Tick all that apply)*

Dietician

General Practitioner

Geriatrician

Health Care Assistant

Hospital Doctor, not including Geriatrician

Nurse

Occupational Therapist

Other

Physiotherapist

Social Worker

Please click here to expand further on your response

2g. Are any sessions taught with students from other allied health care professions? *(For example nursing, physiotherapy, or pharmacy students)*

- Yes
- No
- Unsure
- Please click here to expand further on your response

2h. How much time throughout your course is allocated to frailty teaching?

Page Break

Does your institution assess students on frailty?

- Yes
- No
- Unsure

Please click here to expand further on your response

3a. Which methods does your institution use to undertake these assessments? *(Tick all that apply)*

Case Discussion

Essay

Objective Structured Clinical Exam (OSCE)

Reflective Portfolio

Short Answer Question (SAQ) Exam

Single Best Answer (SBA) Exam

Other

Viva

Please click here to expand further on your response

3b. When does your institution undertake these assessments? *(Tick all that apply)*

Year 1

Year 2

Year 3

Year 4

Year 5

Please click here to expand further on your response

Page Break

Is your institution planning to change, or has changed, their curriculum based on the 2018 GMC Outcomes for graduates guidance regarding frailty?

General Medical Council. Outcomes for graduates [Internet]. 2018. Available from:
https://www.gmc-uk.org/-/media/documents/dc11326-outcomes-for-graduates-2018_pdf-75040796.pdf

Yes

No

Unsure

Please click here to expand further on your response

Page Break

Would your institution like an individualised copy of the survey results comparing the performance at your medical school with anonymised data from others?

- Yes
- No
- If you have answered yes, please provide your email address here

5a. Would you be happy to be contacted to discuss your answers further by telephone, if required?

- Yes
- No

Appendix E. Interview topic guide

Opening	<p>Thank you for coming today</p> <p>Research goal...</p> <p>I am really interested in hearing about your thoughts and experiences...own words...may feel like conversation not interview.....Not about testing knowledge....</p> <p>I will start the recorder now and may write down some notes as we go along...</p>
Demographics	<p>Could we start by you telling me about yourself</p>
How is frailty perceived and discussed?	<p>Could you talk me through the image that you made? Or Can you describe to me a memorable case of looking after a patient with frailty?</p> <p>What does frailty mean to you?</p> <p>Tell me about your thoughts on the term</p>
Teaching/ learning?	<p><i>Can tell me about a time you have taught about, or used, a patient who has frailty in your teaching?</i></p>
Closing	<p>I think that that is everything I had to ask you to talk about, have you got anything else you would like to add that is important to you or that I didn't follow up on?</p> <p>From here, I will transcribe the interview and send it to you within the next 2 weeks. You are able to withdraw from the study at any point until the final report is written, which I estimate will be by October 2019. I will email you with the anonymised final report. Thank you.</p>

Appendix F. Transcription key

Transcription documentation	Explanation
...	Represents a pause in speech by the participant
[...]	Represents a break in transcript, inserted post-interview by the researcher
[word]	Represents addition or clarification of a word, inserted post-interview by the researcher
XX	Represents the removal of identifiable information, inserted post-interview by the researcher

Appendix G. Patient Information Sheet for interview participation



Dear Participant

Title: *Frailty within undergraduate medical education: How may the perceptions of medical students and clinical teachers impact on what is taught and learnt about frailty?*

We would like to invite you to take part in our research study. Before you decide we would like you to understand why the research is being done and what it would involve for you if you took part. One of our team will go through the information with you and answer any questions you may have. We suggest this should take about 10 minutes.

Talk to others about the study if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

1. What is the purpose of the study?

The term 'frailty' features heavily in research and clinical practice but there is no universally accepted definition of frailty and minimal evidence on how to best teach about frailty.

The 2018 General Medical Council (GMC) outcomes for doctors is the first edition where frailty is specifically discussed by the GMC and highlights the need for newly qualified doctors to recognise the complexity of patients with frailty, demonstrate working collaboratively with other Health Care Professionals and learn to develop confidence in managing patients with frailty. Medical school have until 2020 to make sure their curriculum meets the new outcomes.

We aim to explore how frailty is perceived within undergraduate medical education, and how these perceptions may impact on what is taught and what is learnt about frailty.

The aim is for the results to guide the development of a novel and sustainable frailty curriculum for medical undergraduates, taught across clinical specialities.

2. Who is organising and funding the research?

The research is funded by Brighton and Sussex Medical School (BSMS) and is part of a Medical Doctorate (MD) exploring the concept of frailty within medical education.

Title: Frailty within undergraduate medical education: How may the perceptions of medical students and clinical teachers impact on what is taught and learnt about frailty?
Version number: 1
Date: 05/11/2018

3. Why have I been invited?

All medical students at BSMS, consultant clinicians and general practitioners involved in teaching BSMS medical students have been invited to participate.

Participants have been chosen to capture variations amongst students and teachers and to reflect broader experiences across medical students and clinical teachers.

4. Do I have to take part?

No. It is up to you to decide whether or not you wish to join the study. We will describe the study and go through this information sheet. If you agree to take part, we will ask you to sign a consent form.

5. What will I have to do if I take part?

You would be invited to attend an interview with the primary researcher (Rebecca Winter) to talk about your experiences of frailty.

You would be asked before the interview to create a visual representation of how you see frailty/ what comes to mind when you think of frailty and this would be discussed during the interview. This could include, for example, a drawing, comic, poem or MindMap. Further information and guidance will be provided before the interview.

The interview should take no more than 45 minutes to complete, at a place and time convenient to you. The interview would be recorded and the data would be transcribed. All transcribed data will be anonymised and participants will be given a pseudonym. A copy of the transcript will be sent to you for you to review, prior to any analysis of the data. The audiofile will be stored on a BSMS computer deleted once you have reviewed, and reviewed the transcript.

6. What are the possible benefits of taking part?

The aim of the research is to help develop a new frailty curriculum for BSMS, and more widely in UK medical schools. Although this may not directly benefit all research participants, the hope is to develop a meaningful and sustainable curriculum in frailty, spanning longitudinally across all specialities, in accordance with the GMC outcomes. The participants' perceptions and views will be used to shape this.

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Version number: 1

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7. Are there any possible disadvantages or risks of taking part?

If you decide not to take part, or to withdraw from the study at any point, your teaching and learning opportunities at BSMS and BSUH will not be affected in any way.

By taking part, it would involve the use of your time. The interview is likely to last around 45 minutes but can be arranged at a time and BSMS or clinical location to suit you.

In the interviews, there is the likelihood of discussing your attitudes towards and personal experiences of care of the older patient living with frailty. If patient safety were thought to be compromised or unethical practice were discussed, the researcher may be required to break confidentiality. This would be discussed with the participant in the first instance, and if the situation was not resolved, may be required to involve the principal supervisor (JW) for further action.

8. What about confidentiality?

All the information about your having taken part in this study and all information collected during the course of the research will be kept strictly confidential. Any information about you will have your name removed so you cannot be recognised from it. Participants will be identified using a pseudonym in the written report. All data will be stored securely.

9. What will happen if I don't want to carry on with the study?

You are free to withdraw at any time and without giving a reason. You can do this by emailing any member of the research team, listed below. If you decide to withdraw or not join the study, this will not affect the clinical, teaching and learning experiences you receive. We will also be happy to discuss with you what will happen to any data that has been collected up to the point of your withdrawal from the study.

10. What if there is a problem?

If you have any concerns about any aspect of this study or complaints about the way you have been treated during the study or possible harm you might suffer, you should ask to speak with the researchers who will do their best to answer your questions. The researchers contact details are provided at the end of this sheet. However, it is not expected that any problems will occur.

Title: Frailty within undergraduate medical education: How may the perceptions of medical students and clinical teachers impact on what is taught and learnt about frailty?
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11. What will happen to the results of the research study?

The results of the study will be written and up and published in a scientific journal. There may be direct quotes from you used in the final report, but this will be under your assigned pseudonym and you will be non-identifiable. The results will form part of a Medical Doctorate Degree exploring frailty within medical education and used to guide an undergraduate frailty curriculum.

12. Who has approved this study?

This study has received ethical approval from *the Brighton and Sussex Medical School Research Governance and Ethics Committee (BSMS RGEC)*

Thank you for taking the time to read this information sheet.

Contact Details:

If you wish to contact any members of the research team, please find their emails below. Their nominated research links to BSUH, primary care and BSMS are documented respectively.

- Primary Researcher:
 - Dr Rebecca Winter, email r.winter2@bsms.ac.uk
 - Principal project supervisor and nominated BSMS staff link:
 - Professor Juliet Wright, email j.wright@bsuh.nhs.uk
 - Project Supervisor and nominated BSUH staff link:
 - Dr Muna Al-Jawad, muna.aljawad@bsuh.nhs.uk
 - Project Supervisor and nominated Primary Care link:
 - Professor Harm Van Marwijk, H.VanMarwijk@bsms.ac.uk
 - Project Supervisors and nominated BSMS student link:
 - Dr Tom Levett: Tom.levett@bsuh.nhs.uk
 - Dr Duncan Shrewsbury: D.shrewsbury@bsms.ac.uk
-

Appendix H. Consent form for interview participants



CONSENT FORM

Title of Project: Frailty within undergraduate medical education: how may the perceptions of medical students and clinical teachers impact on what is taught and learnt about frailty.

Name of Researchers: Dr Rebecca Winter (Supervised by Prof J Wright, Prof H Van Marwijk, Dr T Levett, Dr D Shrewsbury, Dr M Al-Jawad)

Please
initial
box

I confirm that I have read and understood the information sheet: "Frailty within undergraduate medical education: How perceptions of medical students and clinical teachers impact on what is taught and learnt about frailty", dated 5/11/18.

I have had the chance to ask questions about the study and am satisfied with the answers I have been given.

I understand that my participation in this study is voluntary, that I am free to stop at any time, and I do not have to give a reason for doing so. I understand that if I ask to stop the study, my legal rights and the clinical and educational experiences I receive at BSMS will not be affected in any way.

I understand that sections of the data collected during the study may be looked at by the wider research team as part of the research. I give permission for my data to be used for this purpose.

I understand that my interview will be audio-recorded and transcribed.

I give permission for any visual representation that I create to be photographed or scanned. I understand it will be anonymised and may be shared for research and teaching purposes, including in printed publications and teaching presentations.

I understand that the researcher may be required to break confidentiality in the event of hearing anything that could indicate a risk of harm to an individual.

I agree to take part in the above study.

Name of Participant

Date

Signature

I have explained the information in this document and encouraged the participant to ask questions and provided adequate time to answer them.

Name of Researcher

Date

Signature

CONSENT FORM

VERSION NUMBER 01

DATE 05/11/2018

Appendix I. Certificate of ethical approval for qualitative interviews

Certificate of Approval	
Reference Number	ER/BSMS9638/2
Title Of Project	Frailty within undergraduate medical education: how may the perceptions of medical students and clinical teachers impact on what is taught and learnt about frailty.
Principal Investigator (PI):	Rebecca Winter
Student	Rebecca Winter
Collaborators	Prof Harm Van Marwijk Prof Juliet Wright Dr Duncan Shrewsbury Dr Muna Al-Jawad Dr Tom Levett
Date Of Approval	07-Dec-2018
Approval Expiry Date	22-Dec-2019
RGEC Chair	Caroline Brooks
Name of Authorised Signatory	Professor Kevin Davies
Date	07-Dec-2018
<p>The Brighton and Sussex Medical School Research Governance and Ethics Committee (RGEC) has assessed your application and granted Ethical and Research Governance Approval to proceed with the above named project.</p> <p>Approval is granted on the following basis:</p> <p>The Sub-Panel recommended adding "and more widely in UK medical schools" in the penultimate paragraph of the recruitment email following: "to guide the development of a new frailty curriculum at BSMS".</p> <p>Duration of Approval</p> <p>Approval covers the period stated above. Research must commence within 12 months of the certificate start date; any delay beyond 12 months and this certificate of approval will lapse necessitating renewed review of the project.</p> <p>Project Amendments</p> <p>Any substantial changes or minor amendments to the project following issue of the certificate of approval should be submitted to the Research Governance and Ethics Committee for review and authorisation prior to implementation. Please submit your application for an amendment to the Committee (via rgec@bsms.ac.uk) using the Request for an Amendment Form.</p> <p>Reporting Adverse and Unexpected Events</p> <p>Any incidents occurring during the project's lifespan presenting ethical and safety implications must be reported immediately to the Chair of the Research Governance and Ethics Committee. In the event of an adverse (undesirable and unintended) and unexpected event occurring during the project, research must be stopped immediately and events reported to the Chair of the Research Governance and Ethics Committee within 24 hours of its occurrence.</p> <p>Monitoring</p> <p>The Medical School has a duty to ensure all its research is conducted in accordance with the University of Sussex's Code of Practice for Research and Research Governance and Ethical Review Framework. In order to ensure compliance auditing may be undertaken annually and /or periodic monitoring of a percentage of approved research studies. If your project is selected you will be given 4 weeks' notice to prepare all study documentation for inspection.</p> <p>Notification of End of Study</p> <p>Please notify the Research Governance and Ethics Committee once the study has completed. It is also your responsibility to inform the Committee in the event of early termination of the project or if the work is not completed.</p>	

Appendix J. Certificate of ethical approval for national survey



BSMS Research Governance Ethics Committee

Certificate of Approval	
Reference Number	ER/BSMS9638/1
Title Of Project	What is currently being taught about frailty, and how is frailty assessed within UK medical schools: a national survey
Principal Investigator (PI):	Rebecca Winter
Student	Rebecca Winter
Collaborators	Professor Juliet Wright Professor Harm Van Marwijk Dr Tom Levett Dr Muna Al-Jawad Dr Duncan Shrewsbury
Date Of Approval	07-Dec-2018
Approval Expiry Date	31-Oct-2019
RGEC Chair	Caroline Brooks
Name of Authorised Signatory	Professor Kevin Davies
Date	07-Dec-2018

The Brighton and Sussex Medical School Research Governance and Ethics Committee (RGEC) has assessed your application and granted Ethical and Research Governance Approval to proceed with the above named project.

Approval is granted on the following basis:

The Sub-Panel advised that when seeking Gatekeeper Approval it was advisable to address the introductory letter to the Director of Undergraduate Teaching and Learning rather than the Dean of the medical school.

The Sub-Panel also wished to advise that implied consent is no longer acceptable following the introduction of the General Data Protection Act. For consent to be valid, it must be given with a clear affirmative action that indicates deliberately opting-in, for example by clicking on an 'I consent' button.

Duration of Approval

Approval covers the period stated above. Research must commence within 12 months of the certificate start date; any delay beyond 12 months and this certificate of approval will lapse necessitating renewed review of the project.

Project Amendments

Any substantial changes or minor amendments to the project following issue of the certificate of approval should be submitted to the Research Governance and Ethics Committee for review and authorisation prior to implementation. Please submit your application for an amendment to the Committee (via rgec@bsms.ac.uk) using the Request for an Amendment Form.

Reporting Adverse and Unexpected Events

Any incidents occurring during the project's lifespan presenting ethical and safety implications must be reported immediately to the Chair of the Research Governance and Ethics Committee. In the event of an adverse (undesirable and unintended) and unexpected event occurring during the project, research must be stopped immediately and events reported to the Chair of the Research Governance and Ethics Committee within 24 hours of its occurrence.

Monitoring

The Medical School has a duty to ensure all its research is conducted in accordance with the University of Sussex's Code of Practice for Research and Research Governance and Ethical Review Framework. In order to ensure compliance auditing may be undertaken annually and /or periodic monitoring of a percentage of approved research studies. If your project is selected you will be given 4 weeks' notice to prepare all study documentation for inspection.

Appendix K. Front page of publication of national survey

European Geriatric Medicine
<https://doi.org/10.1007/s41999-021-00465-9>

RESEARCH PAPER



What is meant by “frailty” in undergraduate medical education? A national survey of UK medical schools

Rebecca Winter¹ · Muna Al-Jawad¹ · Juliet Wright¹ · Duncan Shrewsbury² · Harm Van Marwijk² · Helen Johnson³ · Tom Levett⁴

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Key summary points

Aim UK medical schools are required to teach about frailty but the term is open to interpretation. This national survey aims to understand how frailty has been perceived and approached by schools.

Findings Frailty is perceived and approached in a broad variety of ways ranging from a long term condition to geriatric medicine in its entirety. A range of educational approaches have been used to teach and assess, with little constructive alignment to match learning outcomes. Teaching is most commonly opportunistic, by a student observing geriatric ward rounds.

Message Frailty is open to individual interpretation. Expert consensus should be reached regarding the core areas to include in UGME around the topic of frailty. It would be prudent to explore which frailty-related educational strategies enhance student knowledge, attitudes and values towards frailty.

Abstract

Purpose All UK medical schools are required to include frailty in their curriculum. The term is open to interpretation and associated with negative perceptions. Understanding and recognising frailty is a prerequisite for consideration of frailty in the treatment decision-making process across clinical specialities. The aim of this survey was to describe how frailty has been interpreted and approached in UK undergraduate medical education and provide examples of educational strategies employed.

Methods All UK medical schools were invited to complete an electronic survey. Schools described educational strategies used to teach and assess frailty and provided frailty-related learning outcomes. Learning Outcomes were grouped into categories and mapped to the domains of Outcomes for Graduates (knowledge, skills and values).

Results 25/34 Medical schools (74%) participated. The interpretation of what frailty is vary widely and the diversity of teaching strategies reflect this. The most common Learning outcomes included as “Frailty” are about the concept of frailty, Comprehensive Geriatric Assessments and Roles of the MDT. Frailty teaching is predominantly opportunistic and occurred within geriatric medicine rotations in all medical schools. Assessments focus on frailty syndromes such as falls and delirium.

Conclusion There is variation regarding how frailty has been interpreted and approached by medical schools. Frailty is represented in an array of teaching and assessment methods, with a lack of constructive alignment to related learning outcomes.