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The graduate-entry medical student: challenges to transition through medical school

by

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requirements for the degree of

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DECLARATION

This thesis has been submitted to the University of Warwick in support of my application for the degree of Doctor of Medicine. I wrote this thesis and it has not been submitted for any previous application for any degree. I carried out all the work presented in this thesis unless specified below: -

- *Consultation with key stakeholders in study protocol development*

  After I drafted the study protocol, I consulted Asim Yousuf (second year student at the University of Warwick Medical School graduate-entry medicine degree programme), Mike Smith (second year student), Nina Owen (fourth year student), Dr. Emma Kirk (newly-qualified Foundation Year 1 doctor graduate from the University of Warwick Medical School) and Dr. Jane Kidd (research supervisor) about the research question and the study protocol. Although their feedback did not lead to any material changes to the study protocol, they confirmed the research question I have identified was important and the study proposal was relevant to exploring the experience of graduate-entry medicine degree programme students.

- *Involvement of medical students in a grant application*

  This study was selected for a £2,000 GBP project award from the University of Warwick Institute of Advanced Teaching and Learning's Collaboration Fund through a university-wide competitive application process. I was an associate clinical teacher

(honorary role) at the University of Warwick Medical School and the staff applicant for the award. Asim Yousuf, Nina Owen and Mike Smith were medical student co-applicants for the award.

The award paid for the research expenses of employing a professional person to transcribe the interview audio recordings and the reimbursement of study participants' travel expenses.

- *Involvement of medical students in practice interviews*

  I had to ensure the interview questions were appropriate and relevant to the scope of this study. I conducted practice interviews with Asim Yousuf, Nina Owen and Mike Smith. The feedback I received led to changes to my approach in conducting interviews, such as considering the chronology of the interview questions and the follow-up questions I could ask. These practice interviews provided me with the opportunity to practice transcribing audio recordings, data coding and analysis (the practice interview results were excluded from this study). These early experiences enabled me to conduct the actual study interviews more fluently.

- *Transcription of audio recordings*

  There were over 20 hours of audio recordings generated from 35 interviews. I transcribed 19 of 35 (54 per cent) interview recordings and 16 of 35 (46 per cent) interview recordings were transcribed by a professional transcriber commissioned through a University of

Warwick-affiliated temporary staffing agency called Unitemp. I checked every transcript against the original audio recording to ensure their accuracy.

- *Involvement of a medical student in a peer-reviewed publication*

  I involved Asim Yousuf in the writing of a manuscript on medical students' experience of managing health advice requests from their family and friends (Appendix 17).

The paper was published in a peer-reviewed journal. I was the first author of this paper responsible for the literature review, data analysis and drafting of the manuscript. I consulted Asim Yousuf on the relevance of the study findings to his experience as a graduate-entry medicine degree programme student. He critically appraised the manuscript and suggested minor revisions to improve the grammar and flow of the manuscript. Both authors approved the final draft of the manuscript.

Due to circumstances beyond our control, my initial research supervisors Dr. Jane Kidd and Dr. Mandy Barnett, were not in a position to continue with the supervision of my research degree. They had read an initial draft of the manuscript. A new research supervisor, Dr. David Davies, was later appointed. The manuscript was substantially rewritten during the period of absence of a research supervisor. All research supervisors were not named

authors of this publication as they did not fulfil the authorship criteria set by the journal (The Clinical Teacher, 2016).

I invited John Lee, a first year undergraduate-entry medicine degree programme student from King's College London, for general comments on the manuscript. He found the findings relevant to his experience as an undergraduate-entry student (Lee, 2015, pers. comm., December). All contributors to this manuscript were acknowledged for their contributions. The full citation of this paper is as follow: Tso, S. and Yousuf, A. (2016) Student giving health advice to family and friends. *The Clinical Teacher*. 13(3): 219-222. Doi: 10.1111/tct.12413

- *Feedback from a generalist reader*

  I considered it was important for my research work to be accessible to generalist readers. I invited a friend, Tim Kwan, who worked as a secondary school teacher in London to read the first draft of my thesis in 2015. He commented the content of the thesis has helped him understand about medical school training and the thesis was readable at his level (Kwan, 2015, pers. comm., September).

- *External validity check*

  I invited Dr. William Hunt, a medical doctor with qualitative research experience to analyse the coded data on three themes:

medical students managing health advice requests from their family and friends, the experience of disabled medical students and professional identity. Our discussions helped to refine the themes.

I have presented findings from this study at the following scientific conferences:

- Tso, S., Kirk, E., Yousuf, A., Owen, N., Smith, M. and Kidd, J.M. Graduate-entry medicine students' perceptions and attitudes towards health advice requests from family and friends. (*E-Poster Presentation, Association for the Study of Medical Education Annual Scientific Meeting 2013, Edinburgh*)

- Tso, S., Yousuf, A., Barnett, M. and Kidd, J.M. Understanding the process of transition through graduate-entry medicine and the challenges involved. *(Oral Presentation, Association for the Study of Medical Education Annual Scientific Meeting 2014, Brighton)*

- Tso, S., Yousuf, A., Barnett, M. and Kidd, J.M. The diversity of graduate-entry medicine students in a UK medical school. *(Poster Presentation, Association for the Study of Medical Education Annual Scientific Meeting 2014, Brighton)*

Based on the work originated from this thesis, I have also published the

following paper in a peer-reviewed journal:

- Tso, S. (2017) Disabled graduate-entry medical student. *The Clinical Teacher*. (in press). Doi: 10.1111/tct.12653. (Appendix 18)

The Graduate-Entry Medical Student: Challenges to Transition Through Medical School

ABSTRACT

This study aims to make a sociological contribution to understanding the experience of medical students from graduate-entry medicine degree programmes. In this study, I asked the research question 'what are the challenges experienced by graduate-entry medicine degree programme students during their transition through medical school training?' Medical students from the University of Warwick Medical School graduate-entry medicine degree programme were invited to take part in this interview-based study. A volunteer sample of 21 medical students took part in a stage one semi-structured one-to-one interview. Fourteen of 21 medical students took part in a follow-up stage two interview between four to thirteen months later. Their interview transcripts were transcribed verbatim and analysed using thematic analysis. Results showed there were three key transition periods within the University of Warwick Medical School's graduate-entry medicine degree programme. Medical students encountered a range of challenging issues throughout their medical school journey that could be categorised under three conceptual themes: challenges associated with the curriculum, challenges associated with their social role and generic life challenges. Learning, professional identity development and managing coping strategies were the three key challenging issues dominating their transition experience. These challenging issues were in keeping with my findings from literature review on the medical school experience of undergraduate-entry and graduate-entry students. This study has made one original sociological contribution to understanding the professionalism issue about how medical students manage health advice requests from their family and friends. The findings from this study could be useful to educators and medical schools in enhancing their student support services. It could also be useful to prospective and existing medical students in understanding the realities of undertaking a graduate-entry medicine degree programme.

ABBREVIATIONS

BMA   British Medical Association

FY1   Foundation Year 1

GMC   General Medical Council

NHS   National Health Service

NSS   National Student Survey

UCAS   Universities and Colleges Admissions Service

UHCW   University Hospitals Coventry and Warwickshire NHS Trust

TERMS AND DEFINITIONS

Many different terms and phrases have been used to describe different groups of medical students. Some of these are poorly defined in the literature. As the discourse of these terms and phrases can be variable, therefore, I considered it important for me to provide the definition of various terms and phrases used throughout this thesis.

'Transition'

Transition denotes any change in circumstances that could impact upon how an individual perceives themselves or their surroundings and the management of the change in circumstances (please refer to Chapter 4.14 for details on the construction of this definition).

'Challenge'

The word 'challenge' has been defined in the Oxford Dictionaries as 'a task or situation that tests someone's abilities' (Oxford Dictionaries, 2016). In this thesis, any tasks or situations that test medical students' abilities, provoke an unpleasant response or require medical students to apply an effort to resolve would be considered as a challenge or challenging issue.

'Undergraduate medicine academic programmes'

In the United Kingdom, undergraduate medicine refers to university academic programmes up to the level of a bachelor's degree, which includes undergraduate-entry medicine degree programmes and graduate-entry medicine degree programmes.

'Medical students'

The phrase 'medical students' refers to students undertaking undergraduate medicine academic programmes.

'Graduate-entry students'

In the literature, phrases such as 'graduate students', 'graduate-entry students', 'mature students', 'older students' or 'tertiary students' have been used to describe university graduates undertaking undergraduate medicine academic programmes. In this thesis, I have selected the phrase 'graduate-entry students' to refer to this population of medical students.

'Graduate-entry medicine degree programme students or graduate-entry programme students'

These phrases refer to medical students from graduate-entry medicine degree programmes only.

'Undergraduate-entry medicine degree programme students or undergraduate-entry programme students'

These phrases refer to medical students from undergraduate-entry medicine degree programmes only. These medical students could be undergraduate-entry or graduate-entry students.

'Undergraduate-entry students'

Individuals undertaking an undergraduate-entry medicine degree programme with secondary education qualifications only (i.e. without a university degree) have been described as 'undergraduate students', 'undergraduate-entry students', 'non-graduates', 'school-leavers' and 'secondary students'. In this thesis, I have selected the phrase 'undergraduate-entry students' to refer to this population of medical students.

'Foundation Year 1 doctors'

These are newly qualified doctors in their first postgraduate year of training in the United Kingdom. They have a provisional licence to practice medicine under supervision in approved clinical settings.

CHAPTER ONE: OVERVIEW

1.0 Organisation of this thesis

This thesis is structured as follows: Chapter one provides the research question, study objectives and my motivation for undertaking this study; Chapter two reviews the literature on medical student experience making a case for the study. A detailed literature review and data collection were conducted concurrently and this Chapter ends with my report on the concepts that emerged from the literature review; Chapter three describes the research purpose of this study and outlines the rationale for the selection of the study methodology and methods; Chapter four presents findings from the study. It begins with a description of the data and ends with a report on the themes that have emerged from the data; Chapter five discusses the findings in relation to the research question and the literature review. I have also described the strengths and limitations of this study; Chapter six provides a conclusion of the study and ends with a summary of my recommendations and suggestions for future research.

1.1 Aim

This study aims to make a sociological contribution to understanding the experience of medical students from graduate-entry medicine degree programmes. Graduate-entry medicine degree programmes exist in countries such as Australia, Canada, Ghana, Iran, Republic of Ireland, Japan, Malaysia, Netherlands, Poland, Portugal, Singapore, United Kingdom and

the United States of America. North America has a long tradition of delivering graduate-entry medicine degree programmes. In the United Kingdom, these commenced in 2000 with the Leicester-Warwick and the St George's London degree programmes.

The focus of my investigation is graduate-entry medicine degree programme students' individual experience during their degree programme. I aim to explore the range of social experience they perceived to be challenging.

This study takes place against a backdrop of increasing number of graduate-entry medicine degree programmes offered by medical schools across the United Kingdom and the implementation of widening access policies (Secretary of State for Education, 2004; Panel on Fair Access to the Professions, 2009). In 2016, a total of fourteen medical schools in the United Kingdom offered a graduate-entry medicine degree programme.

1.2 The research question and study objectives

In this study, I have asked the research question 'what are the challenges experienced by graduate-entry medicine degree programme students during their transition through medical school training?' There are two components to this research question:

- o Could we define the transition periods within a graduate-entry medicine degree programme?

o Could we relate the challenging issues experienced by graduate-entry medicine degree programme students to these different transition periods?

The main objective of this study is to answer the research question. I have set myself three additional study objectives. I want to find out if the challenging issues reported by graduate-entry medicine degree programme students in my study are in keeping with the published literature on medical student experience, to find out if the challenges anticipated by medical students is the same as the challenges they later experience, and to find if there are areas of medical student experience that had not been explored in the literature previously.

1.3 Motivations to undertake this research study

My journey as an undergraduate-entry medicine degree programme student began at the age of 19. Following the completion of my secondary school education (A Levels) in the United Kingdom, I spent two years studying pre-clinical medicine at Barts and the London School of Medicine and Dentistry followed by a one-year intercalated bachelor's degree programme in neuroscience at the same institution.

Then, I was transferred to the University of Cambridge to complete the clinical phase of my undergraduate medicine academic programme. At both institutions, I met medical students from a diverse range of backgrounds.

Most of my peers were undergraduate-entry students. I have also met many graduate-entry students with many years of work experience before deciding to change career to embark on an undergraduate medicine academic programme.

Thus far, I have worked in six National Health Service (NHS) hospital trusts across England through my full-time professional role as a doctor. I have taught medical students from undergraduate-entry and graduate-entry medicine degree programmes. Through my personal experience as a medical student and later as a doctor, I became aware of two main sociological reasons that motivated me to undertake this study.

Firstly, I noted there were observable similarities and differences in the characteristics, attitudes and behaviour of medical students in undergraduate-entry and graduate-entry medicine degree programmes. I considered these could not simply be explained by the differences in the curriculum of their respective degree programmes.

Next, I noted that many undergraduate-entry students and NHS staff had preconceptions about graduate-entry students, for example, the maturity and past experience of graduate-entry students had increased their preparedness for their undergraduate medicine academic programme.

As I began to teach graduate-entry students at my workplace, I found some of these assumptions were not substantiated by published evidence or conflicted with my own observations. I found this situation highly unsatisfactory and this led to the design of this study.

There were three methodological considerations that led me to undertake this study. Firstly, I considered that the socialisation process between undergraduate-entry and graduate-entry students could have an impact on how graduate-entry students interpret their experience in medical schools and construct their professional identity. From personal experience, I have observed wide variability in the opportunities for socialisation between these two populations of medical students at two medical schools in England.

Secondly, a significant proportion of published literature on the experience of graduate-entry medicine degree programme students originated from North America, Europe, and Australasia. These countries have a different medical education system compared to the United Kingdom. When it comes to studies reporting on United Kingdom graduate-entry student experience, the study population was typically drawn from those studying in undergraduate-entry medicine degree programmes and not directly from graduate-entry medicine degree programmes.

Thirdly, the existing literature on undergraduate medicine academic programmes often compares and contrasts the experience of undergraduate-entry students with graduate-entry students. Whenever I encountered these comparative studies, I always asked myself two questions. Firstly, could the professional socialisation process between the two populations of medical students have an impact on the study findings? Secondly, how much do we actually understand about the baseline experience of graduate-entry students?

I considered that having a good understanding of their baseline experience might help to define novel areas of medical education research and facilitate us in explaining the observable differences between undergraduate-entry and graduate-entry students. I have spoken to different people at past academic conferences and at my workplace. Many individuals made the assumption that the range of medical school experience of graduate-entry and undergraduate-entry students are broadly similar to one another based on their anecdotal experience.

I am a strong believer in evidence-based medical education. I felt the urge to go and find out how graduate-entry medicine degree programme students experienced their medical school journey. Perhaps, I could even learn something new by studying their experience.

Then, I began to consider how I should organise a research study to explore the experience of graduate-entry medicine degree programme students in the United Kingdom, bearing in mind the three methodological issues already

stated above. In the United Kingdom, only Swansea University Medical School in Wales and the University of Warwick Medical School in England offer a four-year graduate-entry medicine degree programme without an undergraduate-entry programme.

I considered undertaking this study at the University of Warwick Medical School was appropriate because the observations I made to justify the conduct of this study took place in England only.

1.4 Pre-research planning

Before I approached Dr. Jane Kidd at the University of Warwick Medical School with my research proposal, I had already reflected upon my ontological and epistemological stances, my past experiences and pre-existing awareness of the literature. I was aware that my philosophical stances and preconceptions could potentially have an impact upon my selection of the study methodology and methods.

Ideally, I would have liked to conduct my literature review when data collection commenced as an ongoing iterative process until the end of the study. This would have prevented me from being biased by the literature during data collection and data analysis. However, I had to undertake a limited literature review to support my research proposal, as this was a requirement for applying to study a part-time Doctor of Medicine degree at the University of Warwick.

In Chapter 1.3, I described that the experience of graduate-entry medicine degree programme students is an underexplored area in the literature with various assumptions made about their characteristics, attitudes and behaviours.

I noted that a high proportion of historical studies on medical student experience in the United Kingdom were undertaken with a positivist or post-positivist approach. I have been involved in research studies in the past and had experience in using a range of qualitative research methods. I planned to approach this study from a constructivist paradigm to explore the challenges graduate-entry medicine degree programme students experienced during their degree programme through the case study of medical students from the University of Warwick Medical School via one-to-one interviews.

I planned to select thematic analysis as my approach to analysing the study data. Braun and Clarke (2006) commented on the work by Dey (1993) and Holloway and Todres (2003) who have demonstrated that 'thematising meaning' from the data was one of the few basic shared techniques across a wide range of qualitative research data analysis methods. I considered the selection of this data analysis approach could potentially improve the accessibility of my research work by generalist readers.

I felt that I would need to conduct at least twenty interviews to obtain sufficient data to address my research question. Initially, I planned to conduct a single stage of interviews only. However, after presenting my

research idea to Dr. Jane Kidd and other educationalists at the University of
Warwick Medical School, I came to the realisation the merits of conducting
a follow-up interview with study participants, as this would enable me to
capture a broader and richer dataset necessary to address the research
question. This idea was later incorporated into my draft research proposal.

1.5 Pre-existing awareness of the literature

I have some pre-existing awareness of the literature about the experience of
medical students in undergraduate medicine academic programmes in the
United Kingdom, which I have already disclosed in Chapters 1.3 and 1.4. I
am also aware of the following: -

- There are three transition periods within an undergraduate medicine
  academic programme (the transition into the degree programme, the
  transition from pre-clinical to clinical phase of the curriculum and
  the transition into professional practice as newly qualified doctors).

- Medical students can encounter a wide range of challenging issues
  as they progress through their degree programme. There are medical
  school related issues such as acquiring the knowledge and skills
  needed to become a doctor, managing uncertainties about what to
  learn and managing relationships with their peers and NHS staff.
  There are generic life challenges such as maintaining relationships
  with family and friends and managing student debts.

- There have been assertions made about the characteristics, attitudes and behaviour of graduate-entry students. They are typically much older than undergraduate-entry students, they are more committed to pursuing medicine as a career and their life experience could make them better prepared for their degree programme.

I felt that the findings from a study exploring the experience of graduate-entry medicine degree programme students could be potentially useful to educators and student support services.

The study findings could also be useful to individuals interested in pursuing medicine as a career by providing them with information about the realities of being a medical student. By helping medical students anticipate and prepare for these potentially challenging issues, they could then focus on acquiring the core skills, knowledge, competencies and mindset required to become a doctor.

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

This Chapter critically appraises and summarises the literature on the challenging issues medical students could experience during their degree programmes.

The search strategy is described in this Chapter. The literature review begins with a description of the assertions made about graduate-entry students. Then, I outline the characteristics of graduate-entry medicine degree programme students in the United Kingdom. Medical students' perceived sources of stress and their medical school transition experience are reported in this Chapter.

I highlight evidence from existing literature on graduate-entry student experience largely drawn from those undertaking undergraduate-entry medicine degree programmes. I described the similarities and differences between undergraduate-entry and graduate-entry medicine degree programme students in order to make a case for the study.

This Chapter includes a section on the professionalism issue about how medical students and doctors manage health advice requests from their family and friends and a section on the experience of medical students with disabilities. I did not anticipate these two themes in my initial literature

search and these themes only emerged from the interview data. Thus, a literature review on these two topics was later added to this Chapter.

The Chapter ends with my description of the emerging themes that could summarise the challenging issues experienced by these students during their degree programme.

2.1 Search strategy

I performed a limited literature search during study protocol development. The search strategy involved identifying relevant articles from PubMed and Scopus that were published between 1980 and 2011 using the keywords: 'medical student', 'graduate', 'mature', 'transition', 'perception', 'challenge' and 'stress'. The Boolean operator word 'OR' was used to combine search phrases together to broaden the search.

Only articles published in the English language were included in the literature review due to my limited knowledge of other languages. This was acknowledged as a weakness of the study in Chapter five. Over 80 potentially relevant articles were identified through this process.

Then, I involved the library service at the University Hospitals Coventry and Warwickshire (UHCW) NHS Trust, Coventry, England, in 2011 to conduct an independent literature search based on my research questions. The library's search strategy involved identifying relevant articles from PubMed, Scopus and PsycINFO that were published between 1980 to 2011

using the keywords: 'medical student', 'graduate', 'transition' and 'challenge'. The Boolean operator word 'AND' was used to combine search phrases together to limit the search. The library service identified 41 potentially relevant articles from their search published in the English language. This list was compared with my own list. This process yielded an additional 23 potentially relevant papers that were included in my initial literature review. There was a difference in the number of articles identified by the two literature searches because of the differences in the range of web-based academic search engines used and the differences in the Boolean operator search strategy.

The initial literature review involved reading the abstract of the articles only. A further in-depth literature search was conducted as I commenced data collection and analysis. This process involved reading the full text of the papers and electronic search for additional papers from relevant academic literature.

2.2 An overview of the structure of doctor training in the United Kingdom

Doctor training in the United Kingdom follows an outcome-based education model (Harden *et al*., 1999). The training process is broadly divided into three stages. The first stage is undergraduate medicine. The next stage is foundation programme training. The third stage is specialty training.

Progression through each stage of training requires the medical student or trainee to demonstrate competency against a set of standardised criteria laid

out by the regulatory body, the General Medical Council (GMC), and the relevant professional bodies such as the royal colleges.

Medical students typically spend four to six years in universities studying towards an undergraduate medicine academic programme. They learn about medical sciences and undertake clinical placements in hospital and community settings. These experiences equip them with the basic skillsets and knowledge required to understand and support patient care activities when they qualify as a doctor.

Upon graduation from their undergraduate medicine academic programmes, they are eligible to apply for provisional registration with the GMC for a license to practice medicine under supervision in approved clinical settings such as in NHS trusts, general practice or community placements. They have to undertake two years of supervised postgraduate training called the Foundation Programme.

Doctors undertaking Foundation Programme training are called Foundation Year 1 doctors and Foundation Year 2 doctors. Local education and training boards, consisting of stakeholders from medical schools and organisations hosting these training posts, are responsible for the local delivery of the Foundation Programmes.

Foundation Programme doctors rotate through a range of hospital or community-based placements to gain generic patient management

experience. They gradually assume increasing patient care responsibilities throughout their Foundation Programme. Upon completion of the first year of their Foundation Programme, they are eligible to apply for full registration with the GMC. They have to complete the second year of their Foundation Programme satisfactorily before they could progress to specialty training through a competitive national selection process.

In specialty training, doctors undertake at least three to eight years of specialty-focused training at different clinical placements. During this training period, they have to develop their management, leadership, research and teaching skills. Upon completion of their specialty training programme, they are eligible to apply for a Certificate of Completion of Training so that they could be included into the GMC's specialist register.

All doctors in the United Kingdom have to demonstrate active engagement in continuous professional development activities, be up to date with knowledge and fit to practice in order to maintain their GMC registrations.

2.3 Selection into undergraduate medicine academic programmes in the United Kingdom

There are two main routes of entry into undergraduate medicine academic programmes in the United Kingdom. They are the five or six-year undergraduate-entry medicine degree programmes aimed at school leavers and the four-year graduate-entry medicine degree programmes aimed at

university graduates. University graduates can also apply to study in undergraduate-entry medicine degree programmes.

In 2014, 31 of 33 (94 per cent) medical schools across the United Kingdom offered these programmes of which thirteen also offered graduate-entry medicine degree programmes (Universities and Colleges Admissions Service, 2013). Swansea University Medical School and the University of Warwick Medical School are the only United Kingdom medical schools that offer graduate-entry medicine degree programmes and not the undergraduate-entry programmes.

There are three new medical schools being established in England with the first intake of medical students at the Buckingham Medical School, University of Central Lancashire Medical School and the Aston Medical School scheduled for the 2015-2016, 2015-2016 and 2017-2018 academic year respectively.

The admissions process varies between medical schools (General Medical Council, 2016). The application process for undergraduate medicine academic programmes usually, but does not always require applicants to undertake an admission aptitude test, for example, the United Kingdom Clinical Aptitude Test, the BioMedical Admissions Test or the Graduate Medical School Admissions Test. Applicants also have to submit an application via the Universities and Colleges Admissions Service (UCAS).

Each applicant is permitted to apply to a maximum of four undergraduate medicine academic programmes per UCAS application. Each applicant can only apply to UCAS once a year. Prospective students with disabilities are strongly encouraged to declare their disability status at the UCAS application stage. The admissions panels of the relevant medical schools review the UCAS applications. Shortlisted applicants are invited to attend a competitive selection process.

Successful applicants are given unconditional or conditional offers by medical schools. Applicants need to satisfy the conditions of their offers in order to be accepted into an undergraduate medicine academic programme. If the prospective student's background or health status raise potential concerns about their future fitness to practice as doctors, then their application could be reviewed by the fitness to practice panel of the medical schools.

There are alternative routes of entry into United Kingdom medical schools, for example, the undergraduate medicine academic programmes with a pre-medical year and the one-year access to medicine courses. These are widening access initiatives aimed at encouraging individuals from underrepresented backgrounds and non-science disciplines to pursue medicine as a career.

Students successfully completing a pre-medical year could be directly transferred to the same medical school's undergraduate medicine academic

programme. Students who completed an 'access to medicine' course could apply to an undergraduate medicine academic programme at medical schools that recognise their qualifications through UCAS.

In the 2013-2014 academic year, there were 40,625 medical students studying in 33 medical schools in the United Kingdom (Medical Schools Council, 2013). Statistics showed there were 622 and 894 graduate-entry medicine degree programme places in the 2003-2004 and the 2009-2010 academic year respectively (Garrud, 2011). This accounted for approximately 10 per cent of the annual intake into all undergraduate medicine academic programmes. Graduate-entry medicine degree programmes attract over 10,000 applications per annum (Garrud, 2011).

The GMC is responsible for the quality assurance of undergraduate medicine academic programmes. Graduate-entry medicine degree programme students are expected to achieve the same learning outcomes and competencies as undergraduate-entry students. These competencies are set out in the GMC publication called 'Outcomes for graduates' (General Medical Council, 2015).

2.4 Assertions made about graduate-entry students

There are different assertions made about graduate-entry students' characteristics, attitudes and behaviour, for example

- *'… Graduates are more motivated and committed because they are making a more informed choice of career.'* (Wilkinson *et al.*, 2004 commented on the work by McCrorie, 2002 and Geffen *et al.*, 1994)

- *'… Graduates tend to be more mature, older, more committed, less likely to drop out, more confident, more self-directed, possibly from different ethnic backgrounds to school leavers, greater breadth of knowledge, more life experience and possess study and research skills.'* (Wilkinson *et al.*, 2004 commented on the work by McCrorie, 2002)

- *'… Graduates may have concerns regarding finances and relocation, family and relationship ties, limited science background and less flexible attitudes.'* (Wilkinson *et al.*, 2004 commented on the work by McCrorie, 2002)

- *'… Mature students with broader pre-entry training and life experience will have a more understanding approach to patients, better interactional skills, and more diverse skills with which to cope with an increasing range of professional outcomes. They are better learners, with better interactional skills, and staff find them more stimulating to teach.'* (Wilkinson *et al.*, 2004 commented on the work by Donald, 2000)

I considered that these assertions should be interpreted with caution, as they do not necessarily represent the whole spectrum of society's viewpoints towards the characteristics of graduate-entry students. In Chapter 2.5, I have outlined the demographic background of graduate-entry medicine degree programme students and then discuss the similarities and differences between graduate-entry and undergraduate-entry students in Chapter 2.6.

2.5 Demographic diversity of graduate-entry medicine degree programme students

The introduction of graduate-entry medicine degree programmes to the United Kingdom in 2000 diversified the range of medical students admitted into medical schools (Powis *et al*., 2004). Garrud (2011) reported 57 per cent of applicants accepted into graduate-entry medicine degree programmes were females and 43 per cent were males. In terms of their age group, these medical students were typically in their 20s and 30s (Garrud, 2011). White British ethnic group accounted for 76.5 per cent of applicants accepted into graduate-entry medicine degree programmes (Garrud, 2011).

Table 1 shows the demographic background of applicants accepted into graduate-entry and undergraduate-entry medicine degree programmes between 2003-2009. However, there was no public access to the demographic data of graduate-entry medicine degree programme entrants from 2010 onwards.

	Applicants accepted into graduate-entry medicine degree programmes	Applicants accepted into undergraduate-entry medicine degree programmes	Statistical significance
Gender			
Male	43%	42.1%	No statistically significant gender difference between the two groups.
Female	57%	57.9%	
Age Group			
Age 17-21	17.7%	89.3%	Statistically significant age difference between the two groups. (p = <0.001)
Age 22-24	42.7%	6.1%	
Age 25-39	37.9%	4.3%	
Age >40	1.6%	0.2%	
Ethnicity			
UK White	76.5%	68.2%	Statistically significant ethnicity difference between the two groups. (p = <0.001)
Black	5%	2.3%	
South Asian	8.4%	15.2%	
Chinese Asian	3.5%	7.1%	
UCAS points			
0-359	54.7%	6.8%	Statistically significant UCAS point difference between the two groups. (p = <0.001)
360-479	31.3%	37.7%	
>480	14.1%	54.2%	

Table 1. Accepted applicant profile for graduate-entry and undergraduate-entry medicine degree programmes in the United Kingdom between 2003-2009. Table adapted from Garrud (2011).

The study by Garrud (2011) has its limitations. It analysed a limited range of student characteristics. Other admission statistics such as disability status, school type (state school vs independent schools) and fee status (home student vs international students), if available, could potentially extend our understanding of the demographic diversity of medical students.

2.6 Similarities and differences between graduate-entry and undergraduate-entry students

Demographics

Garrud (2011) reported there was no statistically significant gender difference between students admitted into graduate-entry and undergraduate-entry medicine degree programmes, however, there were statistically significant differences in their age and ethnicity (Table 1; Garrud, 2011). Females accounted for approximately 60 per cent of annual intake into United Kingdom graduate-entry and undergraduate-entry medicine degree programmes (Calvert *et al*., 2009; Garrud, 2011; Mathers *et al*., 2011).

In Australia, Iran and the United Kingdom, studies have shown applicants accepted into graduate-entry medicine degree programmes were typically older than those in undergraduate-entry programmes by approximately 5 to 10 years (Rolfe *et al*., 2004; Hayes *et al*., 2004; James *et al*., 2008; Shehmar *et al*., 2010; Mathers *et al*., 2011).

In contrast to the assertion about graduate-entry programme student ethnic diversity described in Chapter 2.4 (Wilkinson *et al*., 2004), studies showed there was less ethnic diversity amongst graduate-entry programme students than undergraduate-entry programme students. There was a higher proportion of the white ethnic group (James *et al*., 2008; Garrud, 2011; Mathers *et al*., 2011) and black ethnic group (Garrud, 2011), but a lower proportion of Southern and Chinese Asian ethnic groups (Garrud, 2011) amongst graduate-entry medicine degree programme entrants as compared to those entering undergraduate-entry programmes.

The strength of the studies by Garrud (2011) and Mathers and colleagues (2011) relate to their study methodology. They explored national admissions statistics into medical schools over a period of time. On the other hand, the study by James and colleagues (2008) examined the admissions statistics in one academic year at a United Kingdom medical school, which limited the generalisability of the study findings.

James and colleagues (2008) also reported graduate-entry medicine degree programme applicants were more likely than undergraduate-entry programme applicants to have a higher Townsend score (James *et al*., 2008). Townsend score (also called the Townsend deprivation index) is a census-based measure of material deprivation within a population taking into consideration of four factors (unemployment, non-car ownership, non-home ownership and household overcrowding; Townsend *et al*., 1988). Townsend

score is calculated every ten years and it can be calculated per geographical area or postcode.

A higher Townsend score suggested that graduate-entry medicine degree programme applicants had experienced more social deprivation than undergraduate-entry applicants (James *et al*., 2008). However, this finding should be interpreted with caution. The study sample included applicants to the University of Nottingham Medical School undergraduate medicine academic programme with the intention to commence their course in 2003. The authors determined the applicants' Townsend score based on the resident address stated on their UCAS application form and the 1991 United Kingdom census data. Thus, the Townsend score calculated could not be an accurate reflection of applicants' recent socioeconomic status. It would be reasonable to assume that undergraduate-entry applicants were more likely to use parental address in their UCAS application form than graduate-entry applicants.

Furthermore, graduate-entry applicants could use parental address, their student accommodation address at the final year of their degree programme, or their own resident address (potentially relevant to those in employment that rented or owned their accommodation) in their UCAS application form. It would be reasonable to assume that parents of undergraduate-entry applicants could afford to live in more affluent postcodes than graduate-entry applicants. These factors could give rise to the impression that graduate-entry programme applicants had experienced more social

deprivation than undergraduate-entry programme applicants. Therefore, I considered there was no clear evidence to support that graduate-entry programme applicants had experienced more social deprivation than undergraduate-entry programme applicants. Further research is needed to establish if there is an association between social deprivation and graduate-entry student status.

Academic ability: Secondary school achievements

UCAS points are tariffed against an individual's post-sixteen qualifications, for example, A Levels, international baccalaureate, diplomas and vocational qualifications. It is used as a key criterion for the selection of students into universities and colleges in the United Kingdom.

James *et al* (2008), Shehmar *et al* (2010) and Garrud (2011; Table 1) reported undergraduate-entry medicine degree programme students had higher UCAS points than graduate-entry students and the differences were statistically significant.

In my opinion, UCAS points are not a good parameter for comparing undergraduate-entry and graduate-entry programme students' academic abilities. The UCAS points of graduate-entry programme students were calculated from their historical post-sixteen qualifications. By the time undergraduate-entry programme students undertook the same qualifications as graduate-entry programme students, there could be significant changes to the course curriculum, contents and assessment method (e.g. uniform mark

scheme used to set grade boundaries) that may impact upon the grades and UCAS points awarded. Furthermore, some graduate-entry programme students' choice of post-sixteen qualifications may not be relevant to their later intention to pursue medicine as a career. Thus, one should be cautious about the findings from these studies.

Academic ability: Performance in clinical and knowledge-based medical school assessments

A number of studies compared graduate-entry with undergraduate-entry students' performance in high stakes medical school examinations with conflicting findings. Reid and colleagues reported that graduate-entry and undergraduate-entry students from Melbourne Medical School's four-year Doctor of Medicine degree programme performed similarly in clinical assessments (Reid *et al.*, 2012).

Price and Wright (2010) compared the examination performance between 140 graduate-entry medicine degree programme students and 1,254 undergraduate-entry medicine degree programme students at the Newcastle University Medical School in the United Kingdom. They reported graduate-entry medicine degree programme students had statistically significantly higher mean assessment scores than students in the undergraduate-entry programme (Price and Wright, 2010).

Byrne and colleagues reported that graduate-entry medicine degree programme students performed statistically significantly better at some examinations than undergraduate-entry programme students in a Republic of Ireland medical school (Byrne *et al*., 2014)

Kay-Lambkin and colleagues conducted a database analysis of medical students' academic performance in their first year initial and final assessment at the University of Newcastle, Australia (Kay-Lambkin *et al*., 2002). At the time the study was conducted, the University of Newcastle only offered an undergraduate-entry medicine degree programme. Study participants were the 1994-1997 cohort of medical students consisting of 102 undergraduate-entry students and 176 graduate-entry students. They reported that older medical students were statistically significantly less likely than younger students to be 'not satisfactory' at their first year initial assessment (relative risk = 0.8; 95% confidence interval 0.7-0.9). However, the difference was no longer present at their first year final assessment (Kay-Lambkin *et al*., 2002).

Shehmar and colleagues compared the examination performance of graduate-entry and undergraduate-entry medicine degree programme students at the Leicester-Warwick Medical School in the United Kingdom (Shehmar *et al*., 2010). At the Leicester-Warwick Medical School, the graduate-entry and undergraduate-entry medicine degree programmes were delivered at the University of Warwick and University of Leicester campuses respectively with students taught a broadly similar curriculum.

The authors observed three cohorts of medical students over a six year period. The participants were 285 graduate-entry and 316 undergraduate-entry medicine degree programme students. University graduate entrants in the undergraduate-entry medicine degree programme were excluded from the study. Results showed graduate-entry medicine degree programme students performed less well in a clinical examination midway through their degree programme as compared to undergraduate-entry programme students (mean total score 60.69 and 63.90 respectively; p-value 0.006). However, there was no statistically significant difference in a final year clinical assessment between the two groups (mean total score 168.88 and 165.61 respectively; p-value 0.084) (Shehmar *et al*., 2010). They did not find any statistically significant difference between the two comparison groups in terms of the proportion of individuals passing two high stakes knowledge-based written examinations (Shehmar *et al*., 2010).

Manning and Garrud (2009) compared the examination performance between 171 graduate-entry medicine degree programme students and 450 undergraduate-entry programme students at the University of Nottingham, United Kingdom. They reported that graduate-entry medicine degree programme students performed less well at four knowledge-based assessments, performed better at a clinical knowledge examination and had a higher degree programme completion rate as compared to undergraduate-entry programme students (Manning and Garrud, 2009).

On the other hand, Dodds and colleagues (2010) reported that graduate-entry students performed better than undergraduate-entry students in four of four knowledge-based assessments and one of three clinical assessments (Dodds *et al.*, 2010).

Calvert and colleagues also reported that graduate-entry medicine degree programme students were more likely than undergraduate-entry programme students to perform better in clinical examinations and to obtain an honours degree (Calvert *et al.*, 2009).

I considered there was insufficient evidence from the literature to draw any conclusion about the similarities or differences in medical school performance between graduate-entry programme and undergraduate-entry programme students given the variability of these studies' findings. These studies were typically single centred studies (i.e. study findings were not generalisable), comparative studies involving cohorts of students from different medical schools (i.e. non-comparable cohorts) and the assessment methods under investigation were not standardised national examinations (i.e. study findings not generalisable and could not be included in a meta-analysis). I considered that local factors such as student selection criteria, curriculum design, assessment methods, teaching quality and resources, could have an impact on medical student performance rather than graduate-entry student status itself being associated with poorer performance than undergraduate-entry students.

Unlike the United States of America, there is no national licensing examination for medical students in the United Kingdom. Thus, it is not possible to directly compare the academic abilities of medical students from different undergraduate medicine academic programmes. However, a national standardised psychometric test, called the Situational Judgment Test, was introduced in 2012 to assess medical students' judgment and behaviour. It forms one of the selection criteria for Foundation Programme training. At the time this thesis was written, I could not identify published literature that has compared the performance of graduate-entry and undergraduate-entry students in Situational Judgment Tests.

Utilisation of medical school library resources

Martin (2003) examined the utilisation of library resources amongst graduate-entry and undergraduate-entry medicine degree programme students at the St George's Medical School in the United Kingdom. Library gate entry statistics and library facility usage were monitored. The study participants were 24 graduate-entry and 59 undergraduate-entry medicine degree programme students. Library gate entry readings showed that the average graduate-entry medicine degree programme students visited the library 40 per cent (183 vs 131) more often than undergraduate-entry programme students over a nine-month period. Results showed graduate-entry medicine degree programme students utilised more library resources than undergraduate-entry programme students in the following categories: usage of journals, photocopiers, printers, library catalogue and databases

(Martin, 2003). There was a low usage of video facilities and computer-aided learning packages in both comparison groups.

I considered that there were confounding factors present, such as the differences in their curriculum, proximity of the library to medical student accommodations and the preferred learning style of the medical students. This study's findings would not be generalisable as this was a small single centre study and similar studies have not been carried out elsewhere. In my opinion, there was insufficient evidence in the literature to support the notion that graduate-entry programme students had a higher library resource utilisation rate than undergraduate-entry programme students.

Preparedness for postgraduate practice

I considered there was insufficient evidence from the literature to support an association between graduate-entry student status and preparedness for professional practice.

Cave and colleagues conducted a questionnaire study of the 2005 cohort of newly-qualified doctors in the United Kingdom to explore their perceived level of preparedness to start working as a doctor (Cave *et al*., 2009). The response rate was 43.1 per cent (2062 of 4784). Respondents were asked to rate their response according to a 5-point Likert-scale ranging from 'strongly agree' to 'strongly disagree'. The results showed there was no association between graduate-entry student status and preparedness to practice (Cave *et al*., 2009).

Hayes and colleagues conducted a questionnaire study at the St George's Hospital Medical School in the United Kingdom (Hayes *et al*., 2004). The aim of the study was to find out if graduate-entry medicine degree programme students felt better prepared for full-time clinical studies than undergraduate-entry programme students. Study participants were 27 graduate-entry and 135 undergraduate-entry medicine degree programme students. The questionnaire involved two open questions and 13 closed questions asking respondents to rate their responses from 'strongly disagree' (on the left side of the scale) to 'strongly agree' (on the right side of the scale) via a 7-point Likert-scale. The authors performed non-parametric statistical analysis on the 13 Likert-scale questions and content analysis on the free text responses to the two open questions (Hayes *et al*., 2004). The authors reported graduate-entry medicine degree programme students were more confident, less anxious, less frightened, less intimidated and more prepared for the clinical workplace than undergraduate-entry students (Hayes *et al*., 2004).

However, Likert-scales have limitations. For example, the position of positive labels on the left hand side of a Likert scale could lead to higher mean scale scores than positioning positive labels on the right (Hartley and Betts, 2013; Hartley, 2014). Although the questionnaire used by Hayes and colleagues (2004) was tested for face validity only, I considered this was a well designed questionnaire as it utilised negatively worded questions and the authors placed the negative labels on the left side of the Likert-scale

(Hartley, 2014). Nevertheless, the study findings were not generalisable as it was a small single centre study.

Dean and colleagues compared preparedness for hospital practice between graduate-entry medicine degree programme students at the University of Sydney (questionnaire conducted in 2001) against the published survey results of undergraduate-entry programme students at the University of New South Wales, Australia (questionnaire conducted in 1995) (Dean *et al*., 2003). The authors reported graduate-entry medicine degree programme students perceived themselves as more prepared for hospital practice than undergraduate-entry medicine degree programme students (Dean *et al*., 2003). However, I considered that the methodological limitations of this study (non-comparable groups due to differences in geographical location, time of survey and curriculum) made it challenging to draw any conclusion from the study findings.

Performance in postgraduate training

Grey and colleagues compared the clinical supervisor ratings of doctors that graduated from the University of New South Wales in Australia between 1993-1996 (Grey *et al*., 2001). Of the 173 study participants, 110 individuals had been undergraduate-entry students and 63 individuals had been graduate-entry students in their undergraduate medicine academic programme. The outcome measure was a score derived from clinical supervisor ratings using a 7-point Likert-scale with responses ranging from 'unsatisfactory' (to the left of the scale) to 'outstanding' (to the right of the

scale). The authors analysed the data using non-parametric statistical analysis and they did not find statistically significant differences between the two comparison groups' mean clinical supervisor ratings (Grey *et al*., 2001).

However, this was a small single centre study and I could not identify similar comparative studies in the United Kingdom. Thus, I considered there was insufficient evidence draw a conclusion on the similarities or differences between graduate-entry programme and undergraduate-entry programme students' performance in postgraduate training.

Career choice

Two large United Kingdom questionnaire-based studies reported graduate-entry programme students were more likely to choose general practice as their career intention. However, I considered one should be cautious about the findings as individuals' career intentions could evolve over time.

Lambert and colleagues conducted a postal questionnaire of doctors qualified in the United Kingdom in 1993 and 1996 (Lambert *et al*., 2001). Goldacre and colleagues surveyed over 10,000 qualified doctors about their career choice three years after qualification (Goldacre *et al*., 2007). Both studies reported doctors that were graduate-entry students were more likely to choose general practice as a career as compared to doctors that were undergraduate-entry students. The differences were statistically significant (Lambert *et al*., 2001; Goldacre *et al*., 2007).

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Goldacre and colleagues also reported that doctors that were graduate-entry students were less likely to choose paediatrics as a career compared to doctors that were undergraduate-entry students (Goldacre *et al*., 2007). Rolfe and colleagues surveyed the career choice of doctors in Australia and did not find any statistically significant associations between their career choice and graduate-entry student status (Rolfe *et al*., 2004).

However, these studies had their limitations. Study participants were surveyed about their career intentions towards the end of their first postgraduate year of training in the study by Lambert and colleagues (2001), and in the first and third postgraduate year of training in the study by Goldacre and colleagues (2007).

I considered it was possible for medical students' career intentions to evolve over time. Mahoney and colleagues (2004) reported fourth year medical students at a United Kingdom medical school were typically attracted to an average of 2.6 different specialities. By the time they became newly qualified doctors they were attracted to an average of 2.8 different specialities (Mahoney *et al*., 2004).

Furthermore, the authors reported there was a statistically significant decrease in mean attractiveness scores for general practice and psychiatry, and a statistically significant increase in mean attractiveness scores for radiology and anaesthetics when the study participants became newly qualified doctors (Mahoney *et al*., 2004).

Personal qualities, values, attitudes and experience of stress

Previous studies reported that graduate-entry students differed from undergraduate-entry students in the following ways: their motivation to pursue an undergraduate medicine academic programme, psychological characteristics, perceived sources of stress and coping strategies.

Kusurkar and colleagues (2010) conducted a questionnaire-based study at a medical school in the Netherlands using the validated Strength of Motivation for Medical School questionnaire. The sample size involved 540 undergraduate-entry programme students and 153 graduate-entry programme students. The authors reported graduate-entry students had stronger motivation and willingness to pursue medicine than undergraduate-entry students. The Cohen's effect size for this observation was 0.559, indicating this was a medium effect (Kusurkar *et al*., 2010).

Rolfe and colleagues conducted a cross-sectional postal questionnaire study at the University of Newcastle in Australia (Rolfe *et al*., 2004). The aim of the study was to compare the socio-demographic characteristics, research and academic achievements, medical school experiences and practice outcomes of medical school graduates. This medical school only offered the undergraduate-entry medicine degree programme at the time the study was conducted. Study participants were medical school graduates who have completed their studies between 1983-1998. Out of the 916 questionnaires distributed, the respondents were 344 undergraduate-entry students and 154 graduate-entry students.

Rolfe and colleagues reported the overall range of motivations to pursue medicine did not differ between graduate-entry and undergraduate-entry students (Rolfe *et al.*, 2004). There were a higher proportion of graduate-entry students motivated to pursue medicine 'by the need for professional independence and the desire to prevent disease'. There were a higher proportion of undergraduate-entry students motivated to pursue medicine due to parental expectations (Rolfe *et al.*, 2004).

In addition, Rolfe and colleagues reported that a higher proportion of graduate-entry students had experienced stress in medical school as compared to undergraduate-entry students. The authors reported that graduate-entry students experienced more stress due to 'lack of leisure time, finances and balancing commitments' whereas undergraduate-entry students experienced more stress 'due to doubts about being a doctor' (Rolfe *et al.*, 2004).

James and colleagues (2009) conducted a questionnaire-based study at the University of Nottingham Medical School in the United Kingdom. The study explored psychological diversity amongst medical students. The University of Nottingham offered a graduate-entry and an undergraduate-entry medicine degree programme at the time the study was conducted. A battery of three validated personality questionnaires (Goldberg's Big 5 Personality Test, Personal Qualities Assessment and Depression and Anxiety Stress Scale) was used to assess thirteen personality traits. Study participants were 213 undergraduate-entry and 32 graduate-entry medicine

degree programme students. Their findings showed there was no statistically significant difference between the two groups in the trait categories of emotional stability, intellect, surgency, moral orientation, narcissism, confidence, depression and stress (James *et al*., 2009). However, graduate-entry medicine degree programme students were reported to be less anxious, less empathetic and less conscientious than undergraduate-entry medicine degree programme students and these differences were statistically significant (James *et al*., 2009).

Shacklady and colleagues conducted a web-based questionnaire study at the University of Manchester Medical School in the United Kingdom (Shacklady *et al*., 2009). Their study aimed to quantify the effect of maturity on medical students' transitions into the clinical environment. The University of Manchester had a problem-based learning curriculum and only offered an undergraduate-entry medicine degree programme at the time the study was conducted. Study participants were 29 graduate-entry students and 58 gender-matched undergraduate-entry students. Results showed the odds for graduate-entry students rating they had experienced good transitions and rating that their prior experiences had prepared them for the transition into the clinical phase of their degree programme was higher than undergraduate-entry students and these differences were statistically significant (Shacklady *et al*., 2009). They further claimed that maturity and life experiences had eased graduate-entry students' transition into the clinical phase of medical school training (Shacklady *et al*., 2009).

The Graduate-Entry Medical Student: Challenges to Transition Through Medical School

A qualitative study of graduate-entry medicine degree programme students at the Swansea University Medical School by Rapport and colleagues provided a rich description and analysis of how previous life experience and maturity enhanced graduate-entry medicine degree programme students' learning experiences and helped them cope with the challenges of their degree programme (Rapport *et al*., 2009).

Honney and colleagues conducted a cross-sectional questionnaire-based study in a United Kingdom medical school (Honney *et al*., 2010). Participants self-administered the Patient Health Questionnaire-9 (an instrument to screen for depression). The authors reported that graduate-entry students had a lower prevalence of depressive symptoms as compared to undergraduate-entry students (Honney *et al*., 2010).

Nedjat and colleagues conducted a questionnaire-based study at the Tehran University of Medical Sciences in Iran (Nedjat *et al*., 2013). The study aimed to compare the cognitive skills, personality traits and moral characteristics of undergraduate-entry and graduate-entry students admitted to their university. The Tehran University of Medical Sciences offered an undergraduate-entry medicine degree programme and later introduced a graduate-entry programme in 2007. The study participants were the 2007 and 2008 cohort of graduate-entry medicine degree programme students (35 females) and gender-matched undergraduate-entry programme students (105 females). The authors administered the Personal Qualities Assessment questionnaire to the study participants. The authors claimed that

undergraduate-entry medicine degree programme students had higher cognitive ability, were more libertarian and less resilient in confronting stress and unpleasant events, and less self-control than graduate-entry programme students (Nedjat *et al*., 2013).

Many of the studies discussed above were questionnaire based studies using closed ended questions. However, I considered that exploring medical student personal qualities, values, attitudes and experience of stress objectively from a positivist approach could be challenging in determining the intricate and subjective human social experience and behaviour.

2.7 Wide variability of medical student experience and perception towards the quality of their undergraduate medicine academic programmes

The National Student Survey (NSS) is an annual survey of higher education students' experience of their academic programmes. Students in their final year of studies are invited to rate their level of satisfaction in five domains of their academic programme (include teaching quality, assessment and feedback, academic support, organisation and management and learning resources) and their overall satisfaction with the quality of their degree programme (Higher Education Funding Council for England, 2012).

The results of the 2012 NSS showed a wide variation in medical students' overall level of satisfaction with the quality of their degree programme

across different United Kingdom medical schools (UNISTATS, 2013). Appendix 1 outlines the results from the NSS.

From the 2012 NSS results (as well as from NSS results published in the subsequent academic years), I noted that even within the same medical schools, undergraduate-entry and graduate-entry medicine degree programme students gave different ratings for their level of satisfaction for their degree programmes. This suggested graduate-entry and undergraduate-entry medicine degree programme students' experience of their degree programme could differ despite being taught in the same institution with access to similar learning resources and student support services.

However, the NSS has its limitations. A report by Buckley described the NSS lacked information about the experience of part-time students and data on student perception about their course related to employability (Buckley, 2012). Furthermore, only final year degree programme students were invited to take part in the survey. Academic institutions could only view anonymised results except in circumstances that put individuals at risk of harm (National Student Survey, 2017). Thus, opinionated groups of individuals could potentially skew the results of the survey.

2.8 Medical student stress and anxiety, their evolving nature and their impact

Sources of medical student stress and anxiety

I considered that an appreciation of the source and the impact of medical student stress and anxiety are necessary to understand the challenges they could face during their degree programme. I found there is a rich literature about medical student stress, anxiety and psychological morbidities, for example, Firth, 1986; Niemi and Vainiomäki, 1999; Tyssen *et al*., 2001; Shaikh *et al*., 2004; Hayes *et al*., 2004; Dahlin *et al*., 2005; Sreeramareddy *et al*., 2007; Lewis *et al*., 2009; Shah *et al*., 2010; Honney *et al*., 2010; Rees and Monrouxe, 2011 and Pereira and Barbosa, 2013. Table 2 summarises the range of medical student stressors that have been reported in the literature.

Citation and country	Sample size and method	Stressors reported
Firth, 1986; United Kingdom	Question-naire-based study; 318 students	Talking to psychiatric patients, presenting cases, dealing with death and suffering, poor relationship with consultants.
Niemi & Vainiomäki, 1999; Finland	Question-naire-based study; 110 students	Theoretical teaching, work-life balance, examinations, inadequate time, personal life concerns, high expectations.

Shaikh *et al.*, 2004; Pakistan	Question-naire-based study; 264 students	Workload, examinations, lack of access to counselling, poor student-teacher relationship.
Dahlin *et al.*, 2005; Sweden	Question-naire-based study; 309 students	Workload, lack of feedback, worried about future endurance or competence, pedagogic shortcomings, non-supportive climate.
Sreeramareddy *et al.*, 2007; Nepal	Question-naire-based study; 407 students	Quality of food in mess hall, high parental expectations, dissatisfaction with the class lecturers, vastness of academic curriculum or syllabus, worry about the future, lack of entertainment in the institution, examinations, becoming a doctor, performance in examinations, lack of time for recreation, adjustment with roommates, accommodation away from home, difficulty in the journey back home, non-availability of learning materials, sleeping difficulties (overstrain / disturbance in hostel), living conditions in hostel, lack of special guidance from faculty, political situation of the country, feeling of loneliness, relations with the opposite sex, financial strain (financial instability in the family), illness affecting performance in class and examinations, difficulty in reading textbooks, inability to socialise with peers, family problems, physical disability, alcohol or drug abuse.

Lewis *et al.*, 2009; United Kingdom	Question-naire-based study; 280 students	Students did not know what the faculty expected of them, too many small group sessions facilitated only by students resulting in an unclear curriculum, lack of opportunity to explore academic subjects of interests.
Shah *et al.*, 2010; Pakistan	Question-naire-based study; 161 students	High parental expectations, frequency of examinations, vastness of academic curriculum, sleeping difficulties, worrying about the future, loneliness, becoming a doctor, performance in examinations.
Rees & Monrouxe, 2011; United Kingdom	Group interviews; 22 students	Student abuse, status-related abuse, direct verbal abuse, sexual harassment and discrimination.

Table 2. Potential stressors that medical students could experience during their undergraduate medicine academic programme.

Vitaliano and colleagues broadly categorised the sources of medical student stress into three categories: academic, social and financial issues (Vitaliano *et al.*, 1984). Dyrbye and colleagues further summarised the potential causes of medical student distress as adjustment to the medical school environment, ethical conflicts, exposure to death and human suffering, student abuse, personal life events, and educational debt (Dyrbye *et al.*, 2005).

However, these studies had limitations as they were seeking respondents' retrospective point of view about their medical school experience. The data collected could be affected by social desirability and recall bias.

Questionnaire based studies were also restricted in their ability to explore potential relationship between the sources of student stress and their medical school journey.

Evolving nature of medical student stress

Medical students' perception of the main source of stress, their views and values could vary depending on the stage of their degree programme.

Guthrie and colleagues conducted a questionnaire-based study at the University of Manchester medical school, United Kingdom (Guthrie *et al*., 1998). At the time the study was conducted, the University of Manchester only offered the undergraduate-entry medicine degree programme. In their study, first year medical students were invited to complete two validated questionnaires, the General Health Questionnaire (GHQ-12) and the Maslach Burnout Inventory, and two non-validated questionnaires, participant demographic questionnaire and a 22-item course stress questionnaire asking participants to rate the level of stress associated with various aspects of the degree programme. The GHQ-12 is a 12-item questionnaire used for screening psychiatric disorder in the general population. The 22-item Maslach Burnout Inventory is used to measure burnout in relation to occupational stress. The response rate was 84.3% (172/204). The respondents were invited to complete the same questionnaires again in their fourth and fifth year of their degree programme. Guthrie and colleagues reported the subgroup of 25 medical students scoring above threshold for the GHQ-12 on two or more occasions were

more likely than other students to find the degree programme stressful in the first year but not the subsequent years of the degree programme (Guthrie *et al*., 1998). However, the findings from this single centre study may not be generalisable to today's medical students as the results were dated almost two decades ago.

Dahlin and Runeson (2007) conducted a study with medical students at the Karolinska Institute in Sweden. All first year medical students were invited to complete postal questionnaires and the response rate was 89% (113/127). The questionnaires included the Health Relevant Personality questionnaire (modified version), Higher Education Stress Inventory (modified version), the Oldenburg Burnout Inventory (full version), performance based self-esteem scale and the Major Depression Inventory (modified version). Two years later, these medical students were in their third year of medical school training and they were invited to repeat the same questionnaires with a response rate of 80.3% (102/127). All 102 respondents were invited to take part in an interview with a 78.4% (80/102) interview participation rate. Dahlin and Runeson reported medical students were increasingly worried about their future endurance and capacity, and have more financial concerns as they progressed from the first to third year of their degree programme, while workload decreased significantly (Dahlin and Runeson, 2007). The triangulation of two sources of data gave the study considerable strength. Despite being a single centre study, I considered the study findings could be of potential relevance to the United Kingdom setting.

Shaikh and colleagues conducted a questionnaire-based study in a medical college in Pakistan with a response rate of 88% (264/300). The authors reported a higher proportion of medical students in the last two years of their degree programme felt stressed and they were also less likely to talk to others about their stress as compared to medical students in other year groups (Shaikh *et al*., 2004). In my opinion, the findings from this single centre study could not be generalised to the United Kingdom context due to differences in the medical education system and culture.

Dahlin and colleagues conducted a questionnaire based study at the Karolinska Institute in Sweden. Medical students in year one, three and six were invited to take part in the study. The response rate was 90.4% (309/342). Participants completed the Higher Education Stress Inventory, Major Depression Inventory and a questionnaire on suicidal ideation. The authors reported year one students gave higher stress ratings towards workload and lack of feedback, year three students gave higher stress ratings to worries about future endurance, competence and pedagogical shortcomings, and year six students gave higher stress ratings towards non supportive climate as compared to medical students in other year groups (Dahlin *et al*., 2005). However, I considered the study findings would not be generalisable to the United Kingdom context as this was a single centre study, it did not explore the experience of year two and four medical students and the study methodology prevented the authors from exploring why did the participants gave these ratings.

Wenrich and colleagues conducted a survey in a United States of America medical school. The study respondents were 56 of 97 (58%) members of the clinical faculty, 30 of 33 (91%) members of the preclinical faculty and 115 of 185 (62%) medical students (Wenrich *et al*., 2010). The authors reported there were differences between pre-clinical and clinical faculty's expectations of medical students in terms of the preclinical faculty had higher expectations than clinical faculty over the extent of medical student preparation needed for clerkship for basic skills (e.g. taking a comprehensive history, perform full physical examination and oral case presentations; Wenrich *et al*., 2010). I considered that the finding from this single centre study was not generalisable to the United Kingdom context due to differences in their medical education system.

O'Brien and colleagues conducted an interview based study with 83 medical students and 65 clerkship directors from ten medical schools across the United States of America. The authors reported understanding roles, responsibilities and expectations, managing logistical information, handling frequent changes, discipline and people, and performing clinical skills were the domains less frequently recognised by clerkship directors as being challenging to students as compared to medical students' perspectives (O'Brien *et al*., 2007). I also considered that findings from this single centre study were not generalisable to the United Kingdom context.

Although the findings from individual studies were not generlaisable to the United Kingdom context, the collective evidence presented above led me to consider the following issues:

- Different groups of individuals can have different perspectives about the experience of medical students, and

- The experience and values of medical students could evolve over time.

The impact of medical student stress

Psychiatric morbidities and stress are prevalent amongst university students (Toews *et al*., 1993; Toews *et al*., 1997; Henning *et al*., 1998; Honney *et al*., 2010). They are prevalent amongst medical students too (Miller and Surtees, 1991; Miller, 1994; Voltmer *et al*., 2008). Some studies reported the prevalence of depressive symptoms among medical students could be higher than the general population (Firth, 1986; Dahlin *et al*., 2005). For example, the study by Dahlin and colleagues reported that the prevalence of depressive symptoms amongst medical students from the Karolinska Institutet Medical University, Sweden, was 12.9 per cent (40 of 309 medical students) as compared to 7.8 per cent in age and gender-matched controls drawn from the general population (Dahlin *et al*., 2005). The findings from these international studies could be relevant to the United Kingdom context. However, my literature review did not identify any studies that had compared the prevalence of depressive symptoms or psychiatric morbidities

between graduate-entry and undergraduate-entry medicine degree programme students.

The inability to cope with stress could lead to burnout (Guthrie *et al*., 1998; Dahlin and Runeson, 2007; de Abreu Santos *et al*., 2011). A number of established and validated instruments have been used to measure stress amongst university students. For example, the Perceived Medical Student Stress Scale, (Vitaliano *et al*., 1984) the General Health Questionnaire-12, (Radovanović and Erić, 1983; Goldberg and Williams, 1988) the Maslach Burnout Inventory, (Maslach and Jackson, 1986) the Graduate Stress Inventory-Revised, (Rocha-Singh, 1994) the Student-life Stress Inventory (Gadzella, 1994) and the College Student Stress Scale (Feldt and Koch, 2011). Depending on the screening instrument used to assess a medical student's mental health status, one study reported as high as 52 per cent (108 of 206) of medical students in a United Kingdom medical school could be classified as having poor mental health (Moffat *et al*., 2004). A study conducted in the United States of America reported the incidence of major depression or probable major depression (as per Diagnostics and Statistical Manual of Mental Disorder-III criteria) during the first two years of a medicine degree programme at 12 per cent (Zoccolillo *et al*., 1986).

A United Kingdom study (1998) reported 16.8 per cent (19 of 113) of final year medical students were noted by lay interviewers to have mental health concerns following interviews (using the Clinical Interview Schedule-Revised which is a standardised assessment tool for use by lay interviewers

in measuring psychiatric disorder in the community) (Lewis *et al.*, 1992). A Swedish study (2005) reported 2.7 per cent of medical students in their sample had made suicide attempts (Dahlin *et al.*, 2005). The literature reported that few medical students seek professional help for their stress and mental health issues (Chew-Graham *et al.*, 2003; Dahlin and Runeson, 2007; Tyssen *et al.*, 2008; Honney *et al.*, 2010; Harris *et al.*, 2015).

Medical students stress and psychological morbidity were reported as common reasons for medical students to apply for dispensation from dropping out of medical school (Ruban *et al.*, 2013). Stress and psychological morbidity experienced during their degree programme could be a predictive factor for future mental health problems when they qualified to become doctors (Tyssen *et al.*, 2008).

Stress could be associated with impaired academic performance, academic dishonesty, cynicism, substance abuse and affect patient care (Firth-Cozens and Greenhalgh, 1997; Dyrbye *et al.*, 2005; Klein *et al.*, 2011).

I considered that cumulative effect of stress and medical students' evolving perspectives about their medical school experience could be potential factors contributing towards the following observations:

- Kjeldstadli and colleagues reported medical students' perceived level of life satisfaction decreased from first year to third year of

medical school training and remained at this low level until graduation (Kjeldstadli *et al*., 2006).

- Park and Alder reported medical students' physical health and psychological wellbeing declined over the course of their first academic year at medical school (Park and Alder, 2003).

2.9 Coping strategies

Previous studies have explored medical students' coping strategies in managing the challenging situations they faced in their degree programme (Lempp *et al*., 2004; Poncelet and O'Brien, 2008; Teo *et al*., 2011). Medical students used a range of adaptive and maladaptive coping strategies when managing stress. Weiten and colleagues categorised these adaptive coping strategies under three sub-categories: appraisal-focused, problem-focused and emotion-focused coping strategies (Weiten *et al*., 2008). Based on my literature review and using the model described by Weiten and colleagues, I have compiled Table 3 that illustrates the adaptive and maladaptive coping strategies medical students generally used to manage stress and challenging issues.

	Adaptive Coping Strategies			Maladaptive
Citation	Appraisal-focused	Problem-focused	Emotion-focused	**Coping Strategies**
Shaikh *et al*., 2004		Demand revised exam schedules, better counselling facilitates and student-teacher relationship	Sports, Socialising	Going into isolation
Sreeramareddy *et al*., 2007	Positive framing, planning, acceptance of one's ability	Active coping	Self-distraction, emotional support, religion	Alcohol, denial, self-blaming, behavioural disengagement
Moffat *et al*., 2004	Acceptance, planning, positive framing	Active coping	Self-distraction, use humour, venting, religion, emotional support	Alcohol, drugs, denial
Pereira and Barbosa, 2013	Avoid comparison with others, setting priorities, respect one's limitations	Discussion of issues with relevant persons	Leisure activities, relaxation	
Lee and Graham, 2001	Taking time out	Enhance support system	Emotional ventilation	
Niemi and Vainiomäki, 1999	Reflection on one's priorities	Studying harder	Hobbies, sports	

Table 3. Adaptive and maladaptive coping strategies used by medical students when dealing with stress and challenging issues.

There is a range of resources available to medical students to help them cope with stress and to provide them with practical support and guidance. Using the University of Warwick Student Support Service as an example (University of Warwick, 2016b), this service can help students in a wide variety of ways such as academic support (through a personal tutor and senior tutor system), life on campus (through residential life team), overseas students support (through international office), social and health issues (through counselling service, mental health team and university health centre), spiritual and religious issues (through chaplaincy), disability issues (through disability support services), safety and security issues (through university security team), and financial issues (through student funding team).

The student advice centre at the Warwick Student Union provides generic support to University of Warwick students. It operates independently from other university pastoral support services. Medical students have access to additional support through their allocated educational or clinical supervisors (who are NHS doctors). They could also choose to access services provided by external organisations such as the British Medical Association (trade union and professional body for doctors in the United Kingdom), the National Union of Students, British Doctors and Dentists Group, and Alcoholics Anonymous, etc.

2.10 The experience of medical students at Swansea University Medical School

In the literature, one qualitative study had specifically explored the experiences of medical students in a United Kingdom graduate-entry medicine degree programme. Rapport and colleagues conducted an interview-based study at the Swansea University Medical School to explore the impact of medical students' previous degree programme and life experience on their current graduate-entry medicine degree programme experience (Rapport *et al*., 2009). Study participants were a total of 44 medical students from the 2004, 2005 and 2006 cohort that were interviewed as eight groups. The interviews were conducted with second or third year medical students. The interviews were tape-recorded, transcribed and analysed thematically.

Findings from their study highlighted that prior work and life experiences had a significant and positive impact on their current graduate-entry medicine degree programme experience. Their prior experiences had helped them understand complex concepts in professionalism, ethics and reflective learning, as well as how to manage patient encounters (Rapport *et al*., 2009).

On the other hand, Rapport and colleagues reported the nature of medical students' previous degree subjects had 'virtually negligible effects' on their current degree programme experience. Medical students reported concerns about the financial impact of undertaking a graduate-entry medicine degree programme and their future career prospects (Rapport *et al*., 2009).

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Rapport and colleagues described that graduate-entry medicine degree programme students formed a closely-knit community and they were relatively isolated from their social support network at home and in the university (Rapport *et al*., 2009). The authors reported the factors contributing to their perceived social isolation included the geographical location of Swansea, the demands of their degree programme, their differences in age and experiences as compared to students in other degree programmes (Rapport *et al*., 2009). This study has extended our understanding on the impact of prior experiences could have on graduate-entry medicine degree programme students' experiences.

However, this study has limitations. It did not explore the experience of first year and final year medical students whose experience could be different from the study participants. It was possible that some participants were reluctant to openly discuss about their experience in a group setting. Unique local factors, such as the Welsh language, the structure of the NHS in Wales and the geographical location of Swansea University Medical School, could potentially impact upon medical student experience. Furthermore, the study did not explore other aspects of graduate-entry programme student life, such as students with carer responsibilities or disabilities. Thus, the study findings would not be generalisable to other medical schools.

2.11 Doctors and medical students managing health advice requests from family and friends

The literature reported that the majority of doctors have provided health advice, examination and treatment to family members at some stage of their career. However, the literature was almost completely devoid of studies about medical students' experience of receiving health advice requests from family and friends other than a British Medical Association (2011) survey of medical students and my paper that was published in a peer reviewed journal in June 2016 (based on my findings from this thesis; Tso and Yousuf, 2016).

Evans and colleagues conducted a questionnaire survey at a neurology conference in Texas, in the United States of America (Evans *et al*., 2007). Of the 186 neurologists that attended the conference, 48 per cent returned a questionnaire. Out of the 90 respondents, 80 per cent and 33 per cent respondents reported they had treated their family members for acute minor illness and chronic conditions respectively. In terms of attitudes, 87 per cent and 36 per cent of respondents rated it acceptable to treat family members for acute minor conditions and chronic conditions respectively (Evans *et al*., 2007).

Dusdieker (1993) reported that 492 doctors at a hospital in the United States of America responded to a questionnaire survey. Dusdieker found that 74 per cent respondents rated that they '… usually treat their own children for an acute illness without fever'. Examples of health conditions they treated

were colds, diarrhoea, vomiting, sore throats, sore muscles, headaches, earaches and abdominal pain. On the other hand, 80 per cent respondents reported they would '… usually consult their child's physician for advice during a febrile illness'. Furthermore, 47 per cent respondents reported they '… always performed a physical examination before treating their ill child' and 8 per cent reported they '… never examine their ill child before treating' (Dusdieker, 1993).

La Puma and colleagues conducted a questionnaire survey at a hospital institution in the United States of America (La Puma *et al*., 1991). The respondents were 465 doctors. The authors found that 461 of 465 (99 per cent) respondents reported receiving medical advice, diagnosis and treatment requests from family members. In addition, 386 of 465 (83 per cent) respondents reported having prescribed medication for a family member, 372 of 465 (80 per cent) having diagnosed medical illness in a family member and 44 of 465 (9 per cent) had operated on a family member (La Puma *et al*., 1991).

Medical students in the United Kingdom have received health advice requests in off-duty settings. In 2011, a British Medical Association survey of medical students found 91 per cent of respondents encountered health advice requests from non-medical family and friends and 60 per cent of respondents stated they did not receive medical school advice on how to handle these situations (British Medical Association, 2011).

While it is possible that many doctors and medical students have a natural desire to help their loved ones, however, there is clear guidance from regulators and professional bodies stating doctors should refrain from providing medical care to their family and friends.

'… Wherever possible, you should avoid providing medical care to anyone with whom you have a close personal relationship.' (General Medical Council, 2013; United Kingdom)

'… Physicians should not treat either themselves or family members, except for a minor condition or in an emergency situation, and only when another qualified health care professional is not readily available.' (The College of Physicians and Surgeons of Ontario, 2007; Canada)

La Puma and Priest (1992) commented that the lack of training, objectivity, accountability and the risk of provoking family conflicts could potentially jeopardise the care of the patient.

However, the studies by La Puma and colleagues (1991), Dusdieker (1993) and Evans and colleagues (2007) and the British Medical Association (2011) had limitations. Although questionnaire based studies could quantify medical students and physicians' experience of handling health advice requests but they could not explore individuals' decision making process behind their chosen behaviour, which was an issue I attempted to address in my paper (Tso and Yousuf, 2016; Appendix 17).

2.12 Medical students with disabilities

Under the Equality Act 2010, a person is defined to have a disability if he or she has 'a physical or mental impairment' and 'the impairment has a substantial and long term adverse effect on the individual's ability to carry out normal day-to-day activities' (HM Government, 2010). There are different types of disabilities that can be grouped into chronic diseases and physical, learning, sensory or mental disabilities (Hebert, 2004; British Medical Association, 2007; Rosebraugh, 2008).

Although an estimated one in every five adults in the United Kingdom has an impairment, only 2.8 per cent (598 of 20,892) applicants and 2.6 per cent (201 of 7,620) acceptances into undergraduate medicine academic programmes in 2005 had identified themselves as having a disability (British Medical Association, 2007).

The proportion of students in higher education receiving disabled students' allowance was 5.9 per cent whereas 4.8 per cent medical students received disabled students' allowance (Medical Schools Council, 2013).

The actual number of medical students with a disability is highly likely to be underreported. Hargreaves and Walker discussed that students who knew they were disabled but chose not to declare or seek support from the university, and students who were unaware of their disability until it was later identified during their degree programme, could be unaccounted for in disability statistics (Hargreaves and Walker, 2014).

Miller and colleagues conducted a questionnaire study with medical students at the University of Aberdeen, United Kingdom (Miller *et al*., 2009). The authors reported 4 per cent of respondents rated they had disclosed their disability status to the medical school on admission whereas 6 per cent of respondents considered themselves having a disability when they applied to study medicine (Miller *et al*., 2009). The reason for underreporting is likely to be multifactorial and could be attributed by the stigma attached to their disability, concerns about discrimination and the individual maybe not feeling their impairment could affect their ability to function (Hebert, 2004; British Medical Association, 2007; "Medical students with," 2008).

The General Medical Council's 'Gateway guidance' document and the Medical Schools Council's 'Guiding principles for the admission of medical students' document provided clear guidance to medical schools on admission issues relating to prospective medical students with disabilities (Medical Schools Council, 2010; General Medical Council, 2014).

Prospective medical students are encouraged to declare their disability at the stage of UCAS application. Medical schools must conform to all relevant legislations on equality and diversity when appraising these applications (HM Government, 2010). On the other hand, medical schools must also determine if a prospective medical student with a disability is capable of being fit to practice on completion of their degree programme (General Medical Council, 1983). Medical schools must provide reasonable

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adjustments to medical students with disabilities to enable their full engagement with their degree programme (Hargreaves and Walker, 2014).

Teherani and Papadakis (2013) compared the academic performance of medical students with protected disabilities (defined by the Americans with Disabilities Act) against year of matriculation, sex and age matched medical students without protected disabilities in a United States of America medical school. Of the 59 medical students with protected disabilities, 49.2 per cent had a mental impairment, 42.4 per cent had a physical impairment, and 8.4 per cent had other impairments. The graduation rate was 86.4 per cent (51 of 59) for medical students with protected disabilities and 99.4 per cent (176 of 177) for those without protected disabilities (Teherani and Papadakis, 2013).

Teherani and Papadakis (2013) further reported that medical students without protected disabilities performed better than those with protected disabilities in five high stake knowledge-based examinations. There was no statistically significant difference between the two comparison groups' performance in a high stake clinical examination (Teherani and Papadakis, 2013). Their results showed the vast majority of medical students with protected disabilities performed satisfactorily in their degree programme. However, this was a small single centre study. Teherani and Papadakis did not explore the reasons behind these medical students' (with protected disability) failure to complete their degree programme as degree non-completion could be due to examination failure or fitness to practice concerns (Hebert, 2004).

2.13 Transitions

The term 'transition' originated from the Latin word 'transitio' meaning 'to go across'. The term 'transition' has been defined in different ways.

Parkes (1971) described psychological transition as the '… abandonment of one set of assumptions and the development of a fresh set to enable the individual to cope with the new altered life space'.

Levinson (1978) described transition as a '… boundary zone between two states of greater stability. It involves a process of change, a shift from one structure to another'.

Bridges (1981, pp.5) described transition as a '… difficult process of letting go of an old situation, suffering the confusion nowhere of in-betweeness, and launching forth again in a new situation... it is based on a theory of personal development that views transition as the natural process of disorientation and reorientation that marks the turning points of the path of growth'.

Schlossberg and colleagues defined transition as '… any event or non-event that results in changed relationships, assumptions and roles' (Schlossberg *et al*., 1995). According to Schlossberg's Transition Theory, an adult development theory, a transition only exists if the individual recognised they are experiencing a transition. Transitions bring different changes and different meaning to different individuals. Thus, it is important to consider

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the type, the context, and the impact of a transition in order for observers to appreciate the personal meaning of the transition process to an individual (Schlossberg *et al*., 1995).

According to Schlossberg, there are three types of transitions: anticipated, unanticipated and non-events (Schlossberg *et al*., 1995). Anticipated transitions are events that are expected by the individual, for example, growing old. Unanticipated transitions are events that took place unexpectedly, for example, a sudden illness or an accident. Non-events are transitions that were expected to occur, but did not take place. However, events such as pregnancy may have been anticipated by some individuals whereas unplanned by others – this is referred to as 'relativity' by Schlossberg (Schlossberg *et al*., 1995).

Context relates to the setting of the transition and how the individual reacted to the transition. Schlossberg and colleagues described the '4 S system' (situation, self, support and strategies) as key determinants in the way individuals manage their transition experience and described that '… no matter where one is in the transitions process, no matter what the transition is, one deals with it differently depending on these 4 S's' (Schlossberg *et al*., 1995). The outcome from a transition could result in changes to personal behaviour, role, learning and perceptions. Figure 1 shows the process of transition according to Schlossberg's Transition Theory.

(Please refer to Schlossberg NK, Waters EB, Goodman J (1995*)

Counseling adults in transition: Linking practice with theory,

New York, Springer. pp. 27 for figure 1.)

Figure 1. The process of transition according to Schlossberg's Transition Theory (Extracted from Schlossberg *et al.*, 1995).

2.14   Transitions within an undergraduate medicine academic programme

The literature reported the three key transition periods within an undergraduate medicine academic programme. These transition periods are:

- The transition into an undergraduate medicine academic programme (Radcliffe and Lester, 2003).

- The transition from the pre-clinical to clinical phase of an undergraduate medicine academic programme (Prince *et al.*, 2000; Radcliffe and Lester, 2003; Prince *et al.*, 2005; Small *et al.*, 2008; van Hell *et al.*, 2008; Godefrooij *et al.*, 2010; Kligler *et al.*, 2013).

- The transition into professional practice as newly qualified doctors (Radcliffe and Lester, 2003; Prince *et al*., 2004; Brennan *et al*., 2010).

Transitions could also be identified in specific modules within the curriculum of an undergraduate medicine academic programme, for example, during dissection training (Lamdin *et al*., 2011).

Radcliffe and Lester (2003) conducted an interview based study with 21 fifth year (final year) medical students from the undergraduate-entry medicine degree programme at the University of Birmingham, United Kingdom. The study aimed to explore medical students' perception of the causes of stress throughout their degree programma using a grounded theory approach. Radcliffe and Lester (2003) described the causes of medical student stress could be conceptualised under the themes of pressure of work, pressures of professional socialisation and lack of guidance. The authors described medical students experienced a series of transition periods within their degree programme. These transitions included role transition from secondary education to first year of their degree programme, role and knowledge transition from preclinical science student status in the second year to apprentice doctor in the third year, and their role and knowledge transition on approaching qualification as doctors (Radcliffe and Lester, 2003). The authors also reported the transition from the pre-clinical to clinical phase of an undergraduate medicine academic programme and the

transition into professional practice as newly qualified doctors as particularly stressful transitions (Radcliffe and Lester, 2003).

To the best of my knowledge, the study by Radcliffe and Lester (2003) was the only study from the literature that has explored medical student transition from secondary education to an undergraduate medicine academic programme. Radcliffe and Lester (2003) described most medical students found this transition period stressful as they had to manage the changes to their lifestyle related to starting university, making new friends and competing with their peers. The authors described many medical students found the less didactic teaching methods in their undergraduate-entry medicine degree programme as stressful (Radcliffe and Lester, 2003). However, this study has its limitations. This was a single centre study. Only final year medical students were invited to take part in the study. Medical students in other year groups could have a different transition experience as compared to the study participants. The authors reported a number of transition periods within an undergraduate medicine academic programme but a definition of transition was not provided to enable full interpretation of the results.

Appendix 2 summarises the literature on the challenging issues medical students could encounter in their journey through an undergraduate medicine academic programme.

2.15 Emerging concepts following literature review

As I become familiar with the literature, I began to notice the emergence of five broad themes relating to the source of medical student stress or challenges. These themes are:

- Dealing with academic or work related pressures (Prince *et al*., 2000; Radcliffe and Lester, 2003; Prince *et al*., 2004; Shaikh *et al*., 2004; Prince *et al*., 2005; Dahlin and Runeson, 2007; Small *et al*., 2008; van Hell *et al*., 2008; Godefrooij *et al*., 2010; Nevalainen *et al*., 2010; Brennan *et al*., 2010; Tweed *et al*., 2010; Shah *et al*., 2010; Kligler *et al*., 2013).

- Challenges of professional socialisation (Prince *et al*., 2000; Radcliffe and Lester, 2003; Prince *et al*., 2004; Shaikh *et al*., 2004; Prince *et al*., 2005; Brennan *et al*., 2010; Godefrooij *et al*., 2010; Shah *et al*., 2010; Lamdin *et al*., 2011; Rees and Monrouxe, 2011; Kligler *et al*., 2013).

- Managing uncertainties (Radcliffe and Lester, 2003; Prince *et al*., 2004; Lewis *et al*., 2009; Nevalainen *et al*., 2010; Brennan *et al*., 2010; Godefrooij *et al*., 2010).

- Concerns about harming patients, such as due to their lack of knowledge or skills (Sarikaya *et al*., 2006; Nevalainen *et al*., 2010).

- General life stressors, such as financial pressures and personal life events (Vitaliano *et al.*, 1984; Dyrbye *et al.*, 2005; Dahlin and Runeson, 2007; Shah *et al.*, 2010).

I also began to notice the emergence of five recurring themes that characterise the process of medical student transition experience through their degree programmes. These themes are:

- Adaptation to evolving roles and responsibilities (Prince *et al.*, 2000; Radcliffe and Lester, 2003; Prince *et al.*, 2004; Brennan *et al.*, 2010; Kligler *et al.*, 2013).

- Managing the challenges of professional socialisation (Prince *et al.*, 2000; Radcliffe and Lester, 2003; Prince *et al.*, 2004; Shaikh *et al.*, 2004; Prince *et al.*, 2005; Brennan *et al.*, 2010; Rees and Monrouxe, 2011; Godefrooij *et al.*, 2010; Kligler *et al.*, 2013).

- Developing skills and competencies (Radcliffe and Lester, 2003; Prince *et al.*, 2004; Prince *et al.*, 2005; Small *et al.*, 2008; van Hell *et al.*, 2008; Godefrooij *et al.*, 2010).

- Dealing with uncertainties and/or mistakes (Prince *et al.*, 2004; Sarikaya *et al.*, 2006; Nevalainen *et al.*, 2010).

- Managing/developing coping strategies (Lee and Graham, 2001; Radcliffe and Lester, 2003; Park and Alder, 2003; Shaikh *et al*., 2004; Moffat *et al*., 2004; Sreeramareddy *et al*., 2007; Small *et al*., 2008; Nevalainen *et al*., 2010; Brennan *et al*., 2010; Shah *et al*., 2010; Lamdin *et al*., 2011; Pereira and Barbosa, 2013; Kligler *et al*., 2013).

2.16   *The rationale for this research study*

In Chapter one, I have introduced my motivation and the rationale for conducting this study. I considered it important for me to elaborate on the methodological reasons as to why this study is needed: -

- *Research gap*

  There is a need to address the research question I have identified and described in Chapter one of this thesis.

- *Evidence from the literature may not be directly relevant to graduate-entry medicine degree programme students*

  The majority of studies identified in the literature review were relevant to the experience of undergraduate-entry medicine degree programme students. I have previously highlighted that there have been assumptions made about graduate-entry medicine degree programme students. I have outlined the similarities and differences

between the characteristics and experiences of graduate-entry and undergraduate-entry students.

I considered the curriculum and the shorter duration of graduate-entry medicine degree programmes could potentially present graduate-entry medicine degree programme students with different challenges as compared to those in undergraduate-entry medicine degree programmes. Thus, I cannot assume all the findings from the published literature on medical student experience are completely generalisable to medical students in graduate-entry medicine degree programmes.

- *The evidence needs to be up to date*

  Medical education is a constantly evolving field. It is becoming ever more internationalised (Bleakley *et al*., 2008) and technologically sophisticated (Dankbaar and de Jong, 2014). Many studies identified in my literature review on medical student transitions and experiences were dated more than five years ago. Therefore, there is a need to conduct a new study to explore if the historical evidence is still relevant to today's medical students.

- *Limitations of the research methodologies of published studies*

  Sample population: I noted that in the majority of studies I came across in my literature review, the study population was drawn from

medical students in selected year groups within undergraduate medicine academic programmes. I considered that some of these studies could benefit from the inclusion of medical students from across all year groups into their study sample as this could provide a more comprehensive and representative perspective on the issues being explored.

Research method: I noted that a high proportion of the studies I came across in my literature review were conducted with a positivist or post-positivist approach such as using closed ended questionnaire study designs. For example, Firth, 1986; Guthrie *et al*., 1998; Prince *et al*., 2005; Sarikaya *et al*., 2006; Sreeramareddy *et al*., 2007; van Tell *et al*., 2008 and Lewis *et al*., 2009. There were fewer interpretivist explorative studies conducted to date. These explorative studies employed interview-based methods (Prince *et al*., 2000; Prince *et al*., 2004; Godefrooij *et al*., 2010; Brennan *et al*., 2010; Lamdin *et al*., 2011) or analysed medical students' reflective writing (Nevalainen *et al*., 2010). Content analysis and thematic analysis (Prince *et al*., 2000; Godefrooij *et al*., 2010; Brennan *et al*., 2010, Nevalainen *et al*., 2010) were the most frequently used data analysis methods in these interview-based studies.

I considered in-depth explorative studies, using one-to-one interview methods, could potentially offer researchers with additional insight into each medical student's unique medical school experiences as

compared to using closed questionnaires, group interviews or analysis of reflective writing.

2.17 Chapter two summary

This Chapter provided a broad overview of medical students' experience. It began with a description of the structure of undergraduate and postgraduate medical education and the selection of students for medical schools in the United Kingdom. I outlined the similarities and differences between graduate-entry and undergraduate-entry students. I described medical student stress, anxieties, psychological morbidities and medical students' coping strategies. I presented evidence that doctors and medical students encountered health advice requests from their family and friends. I discussed medical student disabilities in this Chapter. I ended this Chapter by highlighting the limitations of published literature in order to make a case for the study.

CHAPTER THREE: METHODOLOGY

3.0 Introduction

It is important to select an appropriate research method to ensure this is a valid study that can address the research questions. This Chapter begins with a description of the research purpose. This is followed by a discussion of my philosophical standpoint as I recognised that my assumptions and beliefs could influence the way I approach the selection of the study methodology and methods. I explained why my ontological and epistemiological stances justified my qualitative approach to this study. I outlined the rationale for the selection of different study methods at each layer of the 'research onion' (Figure 2; Saunders *et al*., 2015). This Chapter ends with a detailed account of the data collection and analysis method employed in this study.

(Please refer to Saunders, M.N.K., Lewis, P. and Thornhill, A. (2015) *Research methods for business students*. United Kingdom: Pearson Education. pp.164 for figure 2.)

Figure 2. The research onion (Figure extracted from Saunders *et al*., 2015, pp. 164).

3.1 Research purpose

According to Blaikie (2009), providing a statement on the research purpose of a study helps readers to '… identify the type of knowledge a researcher wishes to produce' (Blaikie, 2009, pp. 8). The purpose of this study is to explore the challenges graduate-entry medicine degree programme students experienced during their degree programme in order to address the research question.

3.2 Theoretical and methodological context

Ontology refers to the beliefs of a person of what constitutes reality. Epistemology concerns how reality could become known. Grix (2002, pp.177) stated '… ontology should be the starting point of all research, after which the epistemology and methodological position of the researcher will logically flow'. Thus, I have begun by commenting on my ontological stance in this study.

Bryman and Bell (2011) stated there are two ontological positions: objectivism and constructionism. They described objectivism '… asserts that social phenomenon and their meaning having an existence that is independent of social actors… It implies that social phenomenon and the categories that we use in everyday discourse have an existence that is independent and separate from actors.' (Bryman and Bell, 2011, pp.21). In other words, the objectivist stance asserts there is an objective truth to social phenomenon that is not influenced by the perception or actions of humans as 'social actors'.

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Bryman and Bell (2011) described that constructivism '… asserts that social phenomenon and their meaning are continually being accomplished by social actors… It implies that social phenomenon and categories are not produced through social interaction but that they are in a constant state of revision.' (Bryman and Bell, 2011, pp. 22). In other words, the constructivist stance asserts that social reality is determined by the perception and actions of humans as 'social actors' that could change as individual and society values evolve over time.

Charmaz (2000) stated '… the constructivist approach assumes that what we take as real, as objective knowledge and truth, is based upon our perspective.' (Charmaz, 2000, pp. 523). I considered reality in the social phenomenon being investigated in this study, medical student experience, as determined through society and individual perspectives and values. Furthermore, my literature review highlighted that medical student experience could evolve over the course of their degree programme. Therefore, I have selected my ontological position in this study as constructivism as I wanted to construct meaning from study participants' accounts of their experience in a graduate-entry medicine degree programme.

There are two broad epistemological positions: positivism and interpretivism. The positivist epistemology asserts there is objective knowledge that could be observed and measured scientifically. According to Bryman and Bell (2011, pp. 15), in positivism '… only phenomenon

confirmed by the senses can genuinely be warranted as knowledge' and that science '… must be conducted in a way that is value free' – in other words, to be free of human preconceptions.

On the other hand, the interpretivist epistemology asserts that social science knowledge is a subjective concept in which our understanding of reality is built upon our interpretation of human experiences. According to Bryman and Bell (2011) '… the subject matter of the social sciences – people and their institutions – is fundamentally different from that of natural sciences.' (Bryman and Bell, 2011, pp. 16).

I considered that my ontological stance does not operate within a completely 'value-free' framework. I considered that the dynamic and complex nature of social experience could not be objectively measured. I acknowledged that I have personal experience of meeting and teaching graduate-entry medicine degree programme students and I have some pre-existing awareness of the literature on the research topic being investigated in this study. These issues have been declared in the earlier Chapters of this thesis. I have selected an interpretivist approach to investigating the social experience of graduate-entry medicine degree programme students, as this is an approach that '… reflects the distinctiveness of humans against the natural order.' (Bryman and Bell, 2011, pp. 16).

Next, I have to consider my approach to theory development. There are four broad approaches to theory development: deductive reasoning, inductive

reasoning, inductive-deductive reasoning and abductive reasoning. According to Cohen and colleagues, deductive reasoning originated from Aristotle syllogism whereby following '… a sequence of formal steps of logic, from the general to the particular, a valid conclusion can be deduced'. However, this type of reasoning has its weaknesses (Cohen *et al*., 2007, pp. 6).

Inductive reasoning originated in the 16th Century from Francis Bacon's objection to deductive approach that he considered as '… the prejudicial influence of hypothesis in orienting the scientist to a prejudged conclusion' (Mouly, 1963, pp. 20). According to Cohen and colleagues, in inductive reasoning, '… the important relationships and laws could emerge and become discoverable by an alert observer when there are sufficient data available… This can occur even if the observer did not have any preconceptions about the significance of the meaning of the data.' (Cohen *et al*., 2007, pp. 6).

In inductive-deductive reasoning, the researcher resonates between Baconian induction and Aristotelian deduction to test a hypothesis vigorously and then make the necessary revisions to the hypothesis (Cohen *et al*., 2007, pp. 6).

In abductive reasoning, the researcher makes logical inference from observations to generate theory. According to Reichertz (2009), abduction '… is a cerebral process, an intellectual act, a mental leap, that brings

together things which one had never associated with one another.'
Lipscombe (2012) provided an alternative description of abduction as '…
the creative, imaginative or insightful moment in which understanding is
grasped, or is thought to be grasped.'

I have selected Baconian induction as my approach to theory development
as this is the approach that is consistent with my constructivist ontology and
interpretivist epistemology. Through the study participants' accounts of
their experience, I would gradually notice patterns in the data and describe
any important relationships between the data.

3.3 Rationale for using a qualitative research approach

There are three broad types of research designs: quantitative methods,
qualitative methods and mixed methods. Quantitative methods enable the
researcher to study naturalistic phenomenon through empirical enquiry. The
researcher objectively quantifies the observations made that produce a
numerical value. The numerical value can then be analysed using statistical
analysis.

According to Bryman and Bell (2015), quantitative method 'takes a view of
society reality as an external, objective reality' whereas qualitative method
'emphasises words rather than quantification in the collection and analysis
of data and takes a view of society reality as a constantly shifting emergent
property of individuals' creation.' (Bryman and Bell, 2015, pp. 38).

Corbetta (2003) described that qualitative research is 'open', 'interactive' and 'observations precedes theory', whereas quantitative research is 'structured', 'deductive' and 'theory precedes observation' (Corbetta, 2003, pp.37).

Bryman and Bell (2015) summarised the differences and the opposing ontological and epistemological positions of quantitative and qualitative methods (Table 4).

	Quantitative Methods	Qualitative Methods
Principle orientation to the role of theory in relation to research	Deductive, testing of theory	Inductive, generation of theory
Epistemological orientations	Natural science model, in particular positivism	Interpretivism
Ontological orientation	Objectivism	Constructionism

Table 4. The key differences between quantitative and qualitative research strategies (Extracted from Bryman and Bell, 2015, pp. 38)

Quantitative and qualitative methods can also be used together in mixed methods research studies to provide what Holmberg and colleagues described as 'a more context-sensitive interpretation' and 'more balanced understanding' of the phenomenon under investigation (Holmberg *et al.*, 2008, pp.181).

As I was investigating a social phenomenon in this study, it was important for me to select a methodology that enabled me to explore and capture the scope of subjective experience of individuals. I considered that the qualitative method would be appropriate for this study as this method enables me to capture the non-numerical subjective individual experience that could be missed using a quantitative method.

3.4 Rationale for using case study design as the research strategy

In my selection of an appropriate research strategy for this study, I begun by considering my philosophical positions. My constructivist ontology, interpretivist epistemology and my selection of qualitative method meant that research strategies such as experimental design and surveys would not be appropriate for this study.

Yin (2003) described that the '… rationale for a single case is when it represents the critical case… when it represents an extreme case or unique case.' Yin (2003) further stated that '… the single case can represent a significant contribution to knowledge and theory building… even help to refocus future investigations in an entire field.' (Yin, 2003, pp.40).

I considered the University of Warwick Medical School a critical case study. It only delivered a graduate-entry medicine degree programme. It has one of the longest running graduate-entry medicine degree programmes in the United Kingdom. It has the highest annual intake of medical students amongst all graduate-entry medicine degree programmes across the United

Kingdom. These factors made it an important institution in undergraduate medicine in the United Kingdom. Any significant curriculum development or educational research output from the University of Warwick Medical School is likely to be of potential interests to other medical schools offering graduate-entry medicine degree programmes.

Furthermore, selecting the University of Warwick Medical School as a case study enabled me to suspend my preconceptions about the impact of socialisation between graduate-entry and undergraduate-entry medicine degree programme students could have on graduate-entry medicine degree programme students' perception of their degree programme experience. By removing or suspending my preconceptions, this prevented me from being prejudiced towards the coding, analysis and reporting of the study data (Glaser, 2013).

3.5 Rationale for using one-to-one semi-structured interviews

According to Yin (2003), there are 'six sources of evidence' that can be obtained in case studies (Yin, 2003, pp. 86). The strengths and weaknesses of the six sources of evidence (documentation, archival records, interviews, direct observations, participant-observation and physical artefacts) are illustrated in Table 5.

Source of evidence	Strengths	Weaknesses
Documentation	Can be studied repeatedly; unobstructive – not created as a result of the case study; contains exact information about the events; broad coverage	Could be difficult to retrieve or access the documents; incomplete collection; reporting bias
Archival records	Same as above for documentation	Same as above for documentation
Physical artefacts	Provides an insight into the item, cultural meaning of the item, reflection of the cultural background	Incomplete collection; may not be available or accessible
Interviews	Interviews can target at the study topic and provides an insight into the event	Results can be biased due to poorly constructed questions, reporting bias, recall bias
Direct observations	Demonstrates the reality of the event; provides the background and context of the event; reliable	It is time consuming and costly to perform, potentially very intrusive to the private lives of individuals' confidentiality. The event being observed may occur differently to reality as the person is being observed
Participant-observation	Same as above for direct observations; provides insight into people's behaviour and motives	Same as above for direct observations; the investigator can manipulate events so the event may proceed differently to reality

Table 5. Six sources of evidence: strengths and weaknesses. (Adapted from Yin, 2003, pp. 8)

I have considered using the method of observation in this study, but this would be too time consuming and potentially intrusive to the private lives of study participants.

As I was exploring a social phenomenon, I considered it would be appropriate for me to obtain first-hand accounts of the experience of graduate-entry medicine degree programme students rather than studying secondary sources like documentation, archival records and physical artefacts. Interviews will enable me to have in-depth discussions with study participants and provide an opportunity for clarification of complex concepts and follow-up discussions.

Next, I had to consider an appropriate interview method for this study. There are three broad groups of interviews: structured, semi-structured and unstructured interviews.

In structured interviews, the predetermined questions are a reflection the preconceived ideas of the researcher and provide limited opportunity for in-depth follow-up of responses (Gill *et al*., 2008). Thus, structured interviews oppose my constructivist approach to this study. On the other hand, unstructured interviews 'do not reflect any preconceived theories of ideas' but they can be 'very time-consuming and can be difficult to manage and participate in.' (Gill *et al*, 2008).

In semi-structured interviews, the researcher asks interviewees a number of key questions to help define the scope of the areas to be explored. This method is flexible as the researcher can ask further follow-up questions depending on the initial response of the interviewees. I considered that the semi-structured interview method is appropriate for this study as it provides a flexible discussion guide that help to improve the flow of the interview and rapport building between the researcher and interviewees.

Then, I had to consider the type of interview to conduct, for example, face-to-face interviews or telephone interviews, and one-to-one interviews or group interviews.

According to Mehrabian (1981), when two individuals discuss feelings and attitudes, non-verbal communication skills (such as the tone of voice and body language) account for the majority of the communication as compared to the literal meaning of the words used. Thus, I considered that face-to-face interviews would be appropriate for this study. If I detected that an interviewee verbally describes an experience that is incongruent to his or her non-verbal body expressions, then I would be able to ask follow-up questions to explore the situation further.

Cohen and colleagues described the purpose of group interviews is to obtain a collective group response (Cohen *et al.*, 2007). They outlined the advantages of group interviews over individual interviews as: the potential to yield a wider range of response, the potential for cross-checking accounts

leading to a complete and reliable record, an opportunity to observe group dynamics and it is timesaving (Cohen *et al*., 2007, pp. 373-4). However, group interviews can be impaired by dysfunctional group dynamics and individual personalities (such as the very quiet or very vocal individual).

From my past research experiences of using group interviews, I found that individuals may be reluctant to discuss personal or embarrassing issues in a group setting. Individuals may also be reluctant to express their own opinions due to social desirability bias. Confidentiality is also an issue in group interviews.

Thus, I considered that one-to-one interviews are appropriate for this study as I found this method helpful in building rapport quickly with interviewees and encourage them to speak openly about their individual experiences. Furthermore, I could provide immediate support or terminate the interview if the interviewee became distressed or revealed fitness-to-practice issues about themselves. The step-by-step management of potential ethical scenarios is shown in Appendix 3.

3.6 Selection of an appropriate time horizon

In Chapter two, I indicated that the perspectives of individuals could potentially evolve over time. Thus, I intended to conduct semi-structured interviews with study participants at two time points approximately twelve months apart (time may vary in order to accommodate the busy time schedules of potential study participants) to ensure study participants had

moved onto the next academic year. I considered this could potentially help to detect if their experiences or perspectives change over time.

3.7 Involvement of University of Warwick Medical School students and graduate as research partners

A systematic review by Brett and colleagues reported there is a positive impact of patient and public involvement in research (Brett *et al*., 2014). The positive impact included and not limited to the development of user-relevant research questions, user-friendly information and interview schedules, more appropriate recruitment strategies for studies and user-focused interpretation of data (Brett *et al*., 2014).

However, patient and public involvement in research can also be challenging due to the disparity in knowledge between laypersons and researchers (Angel and Frederiksen, 2015). It can also be difficult to achieve a consensus opinion at group settings and there is a risk of manipulation of the research agenda by lobbying stakeholders (Angel and Frederiksen, 2015).

I considered the involvement of University of Warwick Medical School students and graduate as research partners in the development of this study was necessary because of the following rationale: -

- They could help to ensure the research purpose of the study is aligned with the priorities of University of Warwick Medical School students.

- They could help develop interview questions that are relevant to understanding the experience of University of Warwick Medical School students.

- To foster a research environment that focuses on the experience of University of Warwick Medical School students.

- It was a part of my professional development plan as a research degree student and clinical teacher to provide research led teaching to University of Warwick Medical School students and develop their research skills.

University of Warwick Medical School students were informed about this research collaboration opportunity through electronic mail (Appendix 4) via the University of Warwick Medical School administrative team. Doctors recently graduated from the University of Warwick Medical School that were working at the Department of Gerontology at UHCW NHS Trust, the department at which I was working as a doctor in 2012, were informed about this opportunity through electronic mail (Appendix 5).

Three University of Warwick Medical School students, Asim Yousuf (second year student), Nina Owen (fourth year student) and Mike Smith (Second year student), and one graduate, Dr. Emma Kirk (FY1 doctor), expressed an interest in the research partner role. Their participation in the study was voluntary and they were explicitly informed they could withdraw their participation in the study at any time. The length of their participation

in the study varied between six to twelve months. They left the study due to academic and clinical commitments. I introduced them to qualitative research methodologies, the ethics and grant application process and protocol development. The level of their involvement in this study was described in the declaration section of this thesis.

3.8 Description of the study methods

This is an interview-based study conducted in two stages at the University of Warwick Medical School, United Kingdom. The study protocol flow diagram is shown in Appendix 6.

Setting

At the time this study was conducted, the University of Warwick Medical School MB ChB degree was a four-year graduate-entry medicine degree programme. It was established in September 2000 in partnership with the University of Leicester. The University of Warwick Medical School later became independent, thus, enabling students to graduate with a University of Warwick degree from 2007 onwards. It was the largest graduate-entry medicine degree programme in the United Kingdom with an annual intake of over 170 students (Warwick Medical School, 2011).

The University of Warwick Medical School's admissions criteria encountered by study participants was an 'upper second degree classification in a biological science or a degree with a substantial

component of biology, including cell biology, molecular biology, genetics and biochemistry' (University of Warwick, 2007).

The study participants were taught in a non-case-based learning curriculum divided into two phases. Appendix 7 provides an overview of the structure and contents of the curriculum. According to the University of Warwick Medical School (2011), phase one was subdivided into three semesters and students spent a total of eighteen months studying different body systems. At the end of each semester there was an assessment called the ESA1, ESA2 or ESA3. Towards the end of phase one, medical students have to complete their Integrated Medical Sciences Assessments and Introductory Clinical Course Examinations in order to progress to phase two. In phase two, medical students spent the majority of time on clinical attachments in acute hospitals, primary care or community placements. Phase two was organised into junior and senior rotations consisting of twelve eight-week clinical blocks and a six-week elective block. Medical students received one-to-one supervision during their clinical placements. During phase two, medical students have to complete the Intermediate Clinical Examination. Towards the end of phase two they had to complete the Final Professional Examination. Before graduation, they had to complete the Additional Clinical Practice course to prepare themselves for professional practice as FY1 doctors (Warwick Medical School, 2011). The General Medical Council (2007) conducted a detailed quality assurance appraisal of the graduate-entry medicine degree programme in the University of Warwick

Medical School and their report provided an insightful account of the curriculum, quality of teaching and student experience.

However, it should be noted that the University of Warwick Medical School implemented a refreshed cased-based learning curriculum (Thistlethwaite *et al.*, 2012; Appendix 8) for the September 2013 cohort of new medical students. This information was relevant because one study participant had to repeat the first year of her graduate-entry medicine degree programme under the refreshed curriculum.

Geography of the University of Warwick Medical School

At the time this study was conducted, the vast majority of the classroom-based teaching activities took place at the University of Warwick Medical School campus. The University of Warwick Medical School campus was relatively isolated from the rest of the University of Warwick main campus as they were approximately 15 to 20 minutes walking distance apart according to my own experience.

Figure 3 shows the relationship between the University of Warwick Medical School campus and the University of Warwick central campus. The University of Warwick Medical School campus was a well-resourced and self-sufficient community as it has its own car parking, public transport links, catering, library and teaching facilities.
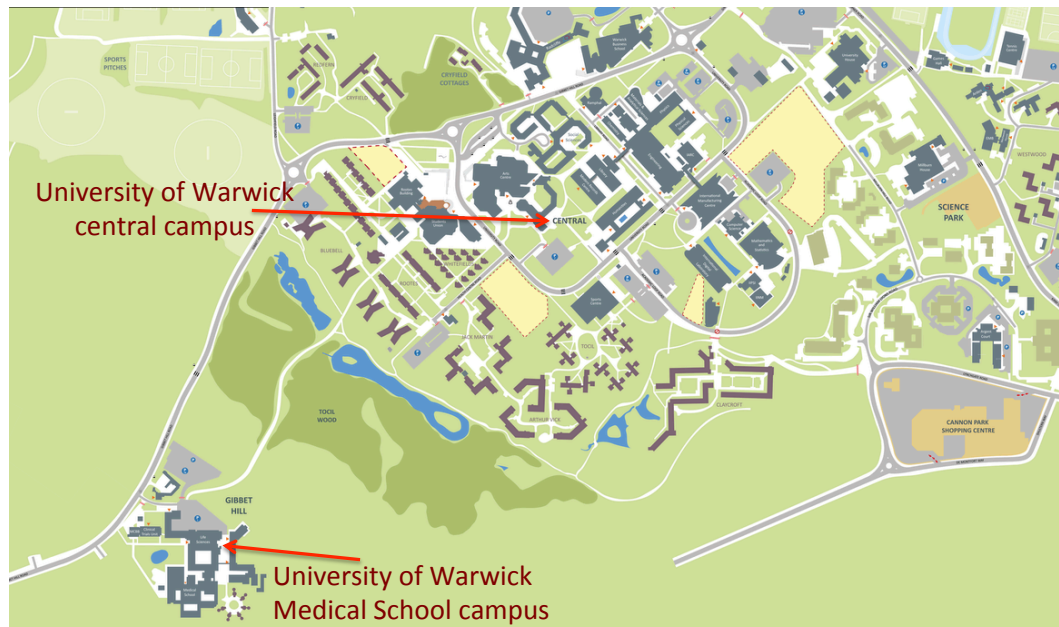
Figure 3. The geographical relationship between the University of Warwick Medical School campus and the University of Warwick central campus (University of Warwick, 2016a).

At the time this study was conducted, phase one medical students were primarily based at the University of Warwick Medical School whereas phase two medical students spent the majority of their time attending regional clinical placements. The regional hospitals affiliated to the University of Warwick Medical School included the UHCW NHS Trust in Coventry and Rugby, South Warwickshire NHS Foundation Trust in Warwick and George Eliot Hospital NHS Trust in Nuneaton (University of Warwick Medical School, 2016a). The geographical relationship between the University of Warwick Medical School and these regional hospitals are illustrated in Figure 4.
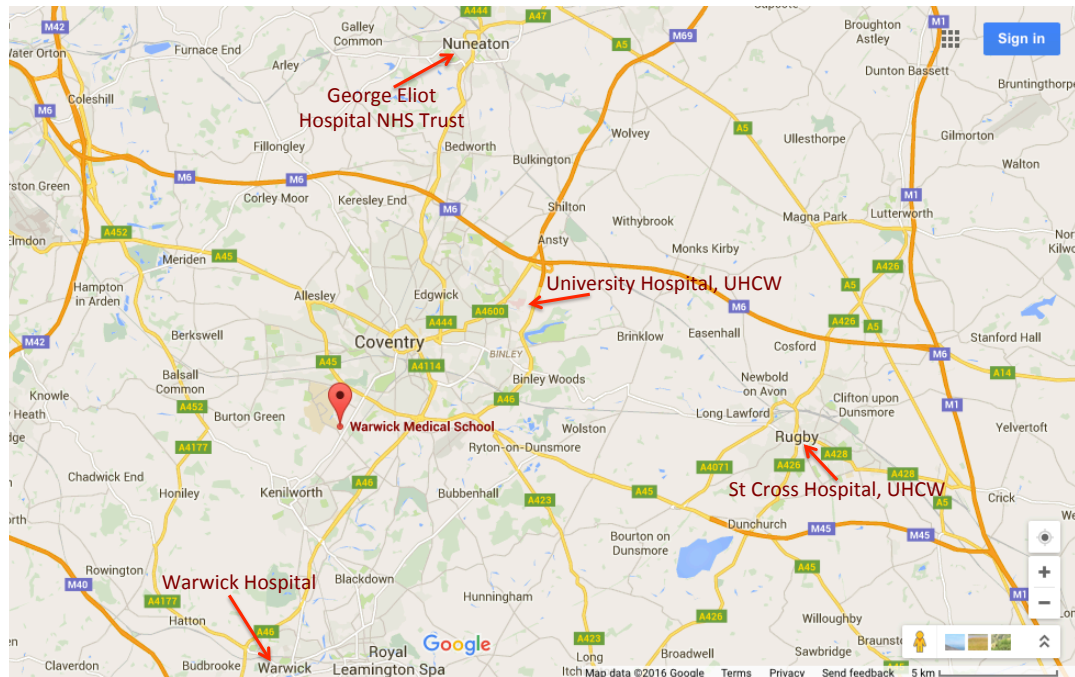
Figure 4. The geographical relationship between the University of Warwick
Medical School and the regional hospitals (Google Map, 2016).

These regional hospitals served a large geographical area extending from
Coventry to Warwickshire within the West Midlands, England. According
to Google Map (2016), the area size of Coventry was approximately
98.64km^2 and Warwickshire was 1,975km^2.

The distance from the University of Warwick Medical School campus to the
following regional hospital placements were:

- 11.3km to University Hospital, UHCW, Coventry.

- 24.5km to St Cross Hospital, UHCW, Rugby.

- 18.2km to George Eliot Hospital NHS Trust, Nuneaton.

- 11.6km to Warwick Hospital, South Warwickshire NHS Foundation
  Trust, Warwick.

Research sites

The study procedures were carried out at two sites including the University of Warwick Medical School campus and the University of Warwick Medical School's Clinical Science Research Laboratories located within the UHCW NHS Trust in Coventry.

Potential study participants

The potential participants in this study were University of Warwick Medical School graduate-entry medicine degree programme students from across all four year groups. They were informed about this study through electronic mail (Appendix 9) via the University of Warwick Medical School administrative team and the Warwick Medical Society (a student organisation) mailing lists. These mailing lists covered all registered medical students at the University of Warwick Medical School.

Recruitment

Potential participants who expressed an interest in the study were provided with a recruitment letter (Appendix 10) and a participant information sheet (Appendix 11) either by electronic mail or in person to the potential participants.

Potential participants were given at least 24 hours to consider if they still wished to participate in the study. Those who still wished to take part in the study were screened for eligibility according to the inclusion and exclusion criteria outlined under Table 6.

	Stage one interview	Stage two interview
Inclusion criteria	The participant must be a current University of Warwick Medical School graduate-entry medicine degree programme student.	The participant must have attended the stage one interview.
Exclusion criteria	The participant must not be a current medical student at any other medical schools. Adults that lacked capacity to consent to take part in the research would be excluded. Medical students who have suspended their studies.	Adults that lacked capacity to consent to take part in the research would be excluded. Medical students who have suspended their studies.

Table 6. Inclusion and exclusion criteria

The exclusion criteria 'the participant must not be a current medical student at any other medical schools' aimed at excluding medical students from other institutions undertaking placements at the University of Warwick Medical School or its affiliated regional teaching hospitals. This prevents the study from exploring the experience of medical students from other countries or institutions.

Consenting procedures

Potential participants were informed that they could withdraw from the study at any time without providing any reasons and their participation would not affect their progression in their degree programme.

If they were still interested in taking part in the study they were asked to sign a written consent form (Appendix 12) to indicate that they agreed to take part in the study and understood the information provided in the participant information sheet.

Sampling: Sample size

According to Luborsky and Rubinstein (1995), there is 'no single formula or criterion' to calculate sample size. From a theoretical perspective, I planned to continue to collect data until theoretical saturation of the first or second order themes. If the data emerging from the interviews revealed it is an underexplored or unexplored area of the literature, then further data collection would continue until theoretical saturation of the second or third-level themes.

Despite this intention, I had to estimate the study sample size as my research supervisors and partners would benefit from knowing the potential scale of the study. Based on my prior research experience, pre-existing awareness of the literature and discussion with research partners and supervisors, I considered a sample size of approximately 30 interviews could be sufficient for my study as Baker and Edwards (2012) reported this number was as a medium size sample that 'offers the advantage of penetrating beyond a very small number of people without imposing the hardship of endless data gathering, especially when researchers are faced with time constraints' (Baker and Edwards, 2012).

Sampling: Sampling strategy

Luborsky and Rubinstein (1995) described a range of sampling strategies such as convenience sampling, purposive sampling, snowball sampling and quota sampling. Each method has its strengths and weaknesses.

In purposive and quota sampling, the selection of participants is guided by the researcher's predetermined agenda. For example, in purposive sampling 'subjects are intentionally selected to represent some explicit predefined traits or conditions' whereas quota sampling 'assures inclusion of people who may be underrepresented by convenience or purposeful sampling.' (Luborsky and Rubinstein, 1995).

Cohen and colleagues described volunteer sampling is a technique useful 'in cases where access (to potential study participants) is difficult and the researcher may have to rely on volunteers' (Cohen *et al*., 2007, pp. 116). However, the drawback of this method is that 'volunteers may have a range of different motives for volunteering' (Cohen *et al*., 2007) and this could have an impact on the type of data collected. For example, McDonald (1972) studied the characteristics of 594 undergraduate students that were invited to volunteer for research under three recruitment methods: pay, extra academic credit and love of science. A battery of questionnaires was administered to the participants to study their social characteristics. McDonald (1972) reported undergraduate students were more motivated to volunteer 'for extra credit than for pay or love of science'. Volunteers scored higher in questionnaires concerning their sociability and ambiguity tolerance but

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lower in conformity and authoritarianism as compared to non-volunteers (McDonald, 1972).

Other studies in the literature also reported some differences in the characteristics and personality of research volunteers and non-volunteers, for example, differences in conscientiousness, neuroticism, extraversion and agreeableness (Lönnqvist *et al*., 2007). Therefore, a volunteer sample is non-representative of the wider population.

Based on my experience and discussion with research partners, I considered phase two medical students could be harder to recruit into the study than phase one medical students. This was because phase two medical students were assigned to attend clinical placements across Coventry and Warwickshire and they may find it challenging to travel to the research sites. I considered there were other potentially hard to reach groups such as medical students with carer responsibilities, those with a first degree unrelated to natural science or healthcare, minority ethnic groups and medical students who had to repeat an academic year. However, access to potential participants with the desired characteristics could be challenging. For example, medical students had no obligation to inform the University of Warwick of their carer status and I could not identify any mechanism that could facilitate me in approaching this group of medical students.

In keeping with my constructivist approach to study design, I did not wish to predetermine the study population to explore. However, as the purpose of

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the study was to explore medical student experience throughout their degree programme, therefore, I considered that the absence of medical students from any year group could potentially skew the study findings. Thus, I considered a mixed volunteer and quota (by student year group) sampling strategy could enable me to suspend any preconceptions about the study population.

When I publicised the research study at a large medical student teaching event, I described the study aimed to be inclusive of individuals from all backgrounds including and not limited to gender, ethnicity, disability status, carer status, prior education and employment history. I also explained I had a disability and appealed to medical students to consider their potential interests in the study.

3.9 Semi-structured interviews

The development of stage one and two interview questions (Appendix 13) was based on consultations with my research partners. This was followed by three pilot exploratory interviews with the three medical student research partners.

The interview schedule is shown in Appendix 14. Actual study participants' stage two interviews took place between four to thirteen months following their stage one interviews depending on their availability. The pilot exploratory interviews carried out with my research partners were excluded from data collection and analysis.

3.10 Data collection

Stage one interview participants attended a one-to-one semi-structured interview each lasting between 30 to 45 minutes. Stage two interview participants attended a one-to-one semi-structured interview each lasting between 15 to 25 minutes. All the interviews were audio recorded using a digital recording device. I kept field notes during the interviews. The field notes consisted of key words representing the salient issues or concepts discussed by the interviewee and potential follow up questions that I could ask the interviewee. Arrows were used, where relevant, to indicate potential relationship between these issues.

I listened to the audio recordings at least once before transcribing them verbatim. I read the field notes when I transcribed the recordings to improve my memory of the interviews and this has helped to ensure transcription was carried out accurately. I transcribed 19 of 35 (54 per cent) interview recordings and 16 of 35 (46 per cent) interview recordings were transcribed by a professional person. I listened to the audio recordings and read the corresponding transcript simultaneously to check their accuracy. I repeated this process until I was satisfied with the accuracy of the transcripts.

Participants were given a copy of their full interview transcript via electronic mail. They were invited to comment on the accuracy of the transcript as part of my respondent validation process. However, only one study participant returned written comments on his transcripts confirming the accuracy of their contents and responded to my query about one data

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point within one week of receiving the transcripts. All stage two study participants provided verbal confirmation on the accuracy of their stage one interview transcripts on the day of their stage two interview.

3.11 Data analysis and data reporting

Data analysis began with the first available interview transcript using thematic analysis. The thematic analysis method I employed was broadly in keeping with the method described by Braun and Clarke (2006), which included six phases as shown below:

- *Phase one: Familiarising yourself with the data*

    Braun and Clarke (2006) described phase one of thematic analysis involved the researcher familiarising oneself with the data through repeated reading of the data and to begin marking ideas for coding. In my study, I read and re-read the interview transcripts in electronic format at least two times alongside the field notes to ensure I was familiar with their contents and made brief notes about what was interesting or unusual in the data.

- *Phase two: Generating initial codes*

    Braun and Clarke (2006) described this phase involved the production of initial codes from the data. In the electronic version of the interview transcripts, I looked for meaningful units of information and underlined these texts. Where relevant, I tagged comments to these units of information in relation to the time (e.g.

stage of their degree programme), person (e.g. student, staff or others), issues (e.g. academic, financial and disability), transition and others (i.e. not assigned yet). The process was rechecked at least once to ensure all meaningful units of information were coded and the tagged comments were appropriate. These comments would later help me search for themes. Table 7 shows an example of the coded data.

Data extract	Coded for
'… I do not want to be given that sort of respnsibility… I very often will ask people not to trust me, to instead to look on the National Health Service direct, or to seek out proper medical assistance.'	1) Student, Perception 2) Signpost, Other people, Health advice
'I'm sorry to hear that, and made sure I gave them that time, and take them away somewhere so it's just me and them. And just say I am sorry you are concerned about that (health issue), and I can see why you are concerned, (and ask) have you been to see your GP… I would not advise them about medications or advise them to do anything apart from referring to medical help.'	1) Student, Emotional support 2) Student, Avoidance, Health advice 3) Signpost, Others

Table 7. Generating initial quotes

- *Phase three: Searching for themes*

  Braun and Clarke (2006) described this phase involved 'sorting the different codes into potential themes, and collating all the relevant coded data extracts within the identified themes'. In this study, I read the codes and their tagged comments repeatedly. Codes with similar meaning or relationship were highlighted in the same colour. I annotated each colour with a description of its meaning. This created a colour map highlighting candidate themes as shown in figure 5.

Figure 5. Initial colour coded thematic map.

- *Phase four: Reviewing themes*

  Braun and Clarke (2006) described this phase involved the refinement of the candidate themes. I read through the codes for each candidate theme to ensure they formed a coherent pattern. Any codes that did not fit in could be reassigned to another theme or removed from data analysis. The next step involved checking

whether individual themes fit in well with the rest of the data set.

Figure 6 shows the developed thematic map.

Figure 6. Developed colour coded thematic map.

- *Phase five: defining and naming themes*

  In this phase, I reviewed the codes again and rechecked that the codes under the same theme fit into a coherent pattern. I further refined the organisation and definition of the themes and provided a narrative to accompany the data analysis. Figure 7 shows a final coded thematic map for the theme health advice requests.
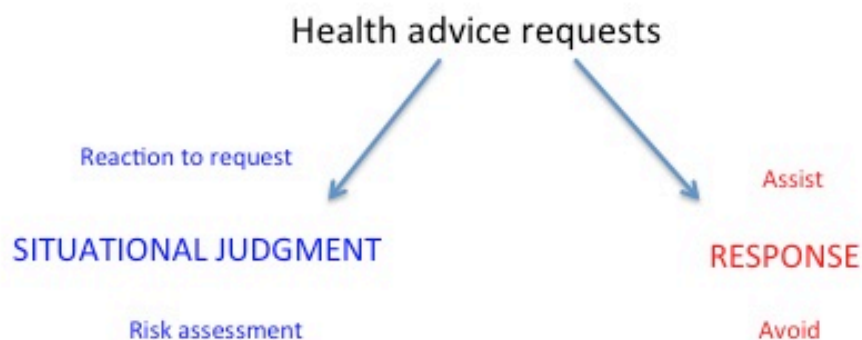
Figure 7. Final coded thematic map.

- *Phase six: producing the report*

  The final phase of thematic analysis was to produce a report on the findings from the study in the form of this dissertation.

In contrast to Braun and Clark's thematic analysis methods (where data analysis begun after completion of data collection), I chose to carry out phase one to phase four of thematic analysis as an on-going iterative process as this could help me orgnaise my data in a much more coherent and internally consistent pattern as compared to analysing all the data at the end. My data analysis began with the first interview transcript. When additional interview transcripts became available, I tested if the new codes fit into the previously conceived themes. If the new code did not fit, then the themes could be changed, removed or new themes added until the themes 'appear to form a coherent pattern.' (Braun and Clarke, 2006, pp.20). This process enabled the refinement of the themes. After the last interview transcript was analysed then I proceeded to performing phase five and phase six of thematic analysis on the whole dataset.

In Chapter four of this thesis, study participants' quotations are presented to illustrate the themes that have emerged from the data. Quotations are presented verbatim where possible except in the following circumstances:

- Acronyms are described in full to avoid confusion.

- Grammatical errors that made the sentences very difficult to read are amended but with the overall meaning of the sentences preserved.

- If relevant, the use of "[ ]" to annotate the quotations to illustrate the context behind a phrase or sentence.

- For the vast majority of the quotations, the author's year group, participant number and the stage of interview are provided unless the disclosure of the information could risk identifying the study participants, for example, quotations about disability issues.

3.12 Finance and funding

This study was funded through a £2,000 GBP project award from the Collaboration Fund, Institute of Advanced Teaching and Learning, University of Warwick, through a university-wide competitive selection process. The award contributed towards the reimbursement of study participant travel expenses at £5 GBP per participant per interview and the transcription costs. One of 21 study participants declined the reimbursement despite having incurred travel expenses.

3.13 Ethical approval

This study was approved by the University of Warwick Biomedical Research Ethics Sub-Committee in March 2012 (Reference: 169-01-2012; Appendix 15). Potential study participants were explicitly informed that they could withdraw from the study at any time without providing an explanation. Participation in the study was entirely voluntary. Written informed consent was obtained from all study participants. Verbal confirmation of consent was obtained prior to all stage two interviews. The

data collected were analysed anonymously. Only anonymised quotations were reported.

3.14 Chapter three summary

In summary, I have stated my ontological and epistemological standpoint that has guided my selection of the study methodology. I have provided justification of my chosen study methods. I described the physical location of the University of Warwick Medical School and provided an overview of its graduate-entry medicine degree programme curriculum. I have provided the rationale for involving University of Warwick Medical School students and a graduate as research partners in the development and conduct of this study. This Chapter ended with a description on how the study was conducted and a local research ethics committee has approved the study.

CHAPTER FOUR: RESULTS

4.0 Introduction

This Chapter reports the findings from this study. It begins with a description of the characteristics of the medical students participating in this study followed by their motivations to pursue medicine as a career. I described their personal journey from application to acceptance into a graduate-entry medicine degree programme, as well as the preparations they made prior to commencing their degree programme. I outlined the changes and challenges they had encountered as they adjusted to the new medical school environment, moved through their degree programme and made preparations for professional practice as a FY1 doctor.

This Chapter describes how medical students managed health advice requests from their family and friends and the experience of medical students with disabilities. Then, it describes how medical students defined the term 'transition' and described the three key transition periods within the graduate-entry medicine degree programme.

This Chapter ends with a description of the challenging processes medical students had to confront during their degree programme.

4.1 Characteristics of medical students taking part in stage one interviews

Demographics

Twenty-one graduate-entry medicine degree programme students from the University of Warwick Medical School volunteered to take part in this study. Appendix 16 shows the participant numbers, their gender, date of interviews and their year group when the interviews took place. The characteristics of medical students that took part in stage one interviews are summarised in Table 8.

They consisted of 9 female (43 per cent) and 12 male (57 per cent) medical students. Their mean age was 26.0 years (median 25 years; range 22-33 years; SD = 3.3). Seventeen of 21 (80 per cent) medical students identified themselves as White Caucasians, 2 of 21 (10 per cent) as South Asians, 1 of 21 (5 per cent) as Chinese and 1 of 21 (5 per cent) as from the Middle East. All medical students taking part in this study were of home student status.

Disability

Eight of 21 (38 per cent) medical students volunteered the information that they had a disability. Thirteen of 21 medical students (62 per cent) did not volunteer their disability status.

	Characteristics of stage one interview participants (N = 21)	Characteristics of stage two interview participants (N = 14)
Year group	29% (6/21) were first year students; 19% (4/21) were second year students; 42% (9/21) were third year students; 10% (2/21) were fourth year students	7% (1/14) were first year students; 29% (4/14) were second year students; 14% (2/14) were third year students; 43% (6/14) were fourth year students; 7% (1/14) were FY1 doctors
Age (years)	Mean 26.0; Median 25; Range 22-33	Mean 27.6; Median 28.5; Range 22-34
Gender	43% (9/21) were females; 57% (12/21) were males	43% (6/14) were females; 57% (8/14) were males
Ethnicity	80% (17/21) were White Caucasians; 10% (2/21) were South Asians; 5% (1/21) were Chinese; 5% (1/21) were from the Middle East	79% (11/14) were White Caucasian; 7% (1/14) were South Asians; 7% (1/14) were Chinese; 7% (1/14) were from the Middle East
Disability status	62% (13/21) disability status not known 38% (8/21) stated they had a disability	64% (9/14) disability status not known 36% (5/14) stated they had a disability
Education	86% (18/21) had a degree related to natural science or health subjects; 14% (3/21) had a degree in other subjects	79% (11/14) had a degree related to natural science or health subjects; 21% (3/14) had a degree in other subjects
Work experience	38% (8/21) had no prior full time work experience 14% (3/21) had work experience outside healthcare settings 48% (10/21) had work experience in healthcare settings	29% (4/14) had no prior full time work experience 21% (3/14) had work experience outside healthcare settings 50% (7/14) had work experience in healthcare settings

Table 8. Characteristics of medical students taking part in stage one and stage two interviews.

Education history

All 21 medical students completed a university degree programme prior to admission into their graduate-entry medicine degree programme. Their highest tertiary qualifications were a bachelor's degree (18 of 21; 85 per cent), master's degree (2 of 21; 10 per cent) or PhD (1 of 21; 5 per cent).

With regards to the nature of their previous degree programme subjects, this could be broadly divided into two groups. One group consisted of 18 of 21 (86 per cent) medical students with a previous degree subject related to natural sciences (i.e. chemistry, biology, biochemistry, genetics and biomedical science) or health (i.e. pharmacology, radiography and clinical technology). Another group consisted of 3 of 21 (14 per cent) medical students with a previous degree in other subjects (i.e. geography, engineering and information technology).

Employment history

Thirteen of 21 (62 per cent) medical students had prior full-time employment experience, of which 10 had worked in health related settings (i.e. worked as allied healthcare professionals or first responder in emergency rescue services) and 3 had worked in other settings (i.e. sports coaching, engineering and business consultancy).

Eight of 21 (38 per cent) medical students did not have full time work experience prior to admission into their graduate-entry medicine degree programme.

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Year group

When stage one interviews were conducted, 6 of 21 (29 per cent) medical students were in the first year of their degree programme, 4 of 21 (19 per cent) medical students were in the second year, 9 of 21 (42 per cent) medical students were in the third year and 2 of 21 (10 per cent) medical students were in the fourth year.

4.2 Characteristics of medical students taking part in stage two interviews

Fourteen of 21 (67 per cent) medical students returned to take part in stage two interviews. Of the 7 medical students that did not take part in stage two interviews, 3 medical students did not respond to 3 repeated electronic mail interview invitations that were sent over a two-month period and 4 medical students replied that they were unable to take part in stage two interviews. They volunteered reasons for non-participation including academic commitments, lack of time or the long distance to travel from their regional placements to the research sites. Table 8 also shows the characteristics of medical students taking part in stage two interviews. They consisted of 6 (43 per cent) female and 8 (57 per cent) male medical students. Their mean age was 27.6 years (median = 28.5 years; range 22-34 years; SD = 3.9).

Following stage one interviews, one medical student stated that she failed her end of first year examination and had to repeat her first year under the new, refreshed curriculum. One medical student stated that he failed an examination that led to the investigation and diagnosis of a learning disability. Thus, when stage two interviews were conducted, 1 of 14 (7 per

cent) medical student was in the first year, 4 of 14 (29 per cent) medical students were in the second year, 2 of 14 (14 per cent) medical students were the third year, 6 of 14 (43 per cent) medical students were in the fourth year and 1 of 14 (7 per cent) was a FY1 doctor.

4.3 Motivation to pursue medicine as a career

Medical students recalled their motivations to pursue medicine as a career were attributed to a combination of 'pull' and 'push' factors. The 'pull' factors were personal factors, influence from significant others and the perceived incentives of pursing medicine as a career.

Many medical students reported 'push' factors that discouraged them from continuing to pursue their originally chosen career path or degree programme but to consider an alternative career instead. These pull and push factors are further described below:

- *Personal factors*

  Medical students described that they were interested in human health and desired to help the sick and improve people's lives.

  '… I always enjoyed knowing more about the body… I was interested in the reasons why they [patients] are in hospital, what was wrong, why they were not going home.' [First year medical student; Participant number Y1-04; Stage one interview]

Their past experience had an impact on their career aspirations. One medical student explained he was inspired to pursue medicine as a career because of his positive childhood experiences of the health services.

'… [Medicine] was a lifelong ambition, which mostly stems from my own experience of the National Health Service because of my own [medical condition] … [I have received] medical intervention and medical care from a very early age… That was the main thing that propelled me into a life in medicine.' [First year medical student; Participant number Y1-03; Stage one interview]

- *Influence from other individuals*

  Medical students' decision to pursue medicine as a career could be influenced by other individuals such as family, partners and teachers. In most instances, they received positive encouragements from other individuals to pursue an undergraduate medicine academic programme. Some medical students reported they were pressurised by their family into pursing medicine as a career.

  '… There was quite a lot of pressure from certain members of my family to do it [medicine].' [Fourth year medical student; Participant number Y4-01; Stage one interview]

One medical student stated he was actively discouraged by his secondary school teachers from applying to undergraduate-entry medicine degree programmes as his secondary school predicted examination grades were unlikely to meet the degree programme entry requirements.

'… they [teachers] told me I will not get the grades and not to bother and waste an application [to an undergraduate-entry medicine degree programme]… I think there was more that they could have done like if you do not get the grades we will give you extra support rather than saying you will waste your application.' [First year medical student; Participant number ID Y1-05; Stage one interview]

- *Perceived incentives of pursuing medicine as a career*
  Medical students perceived a career in medicine could give them the responsibilities, autonomy, job satisfaction, job security, career progression opportunities and remuneration that they desired from a career.

  '… I am going into a career [medicine] that, in theory, has a guaranteed job at the end and is reasonably well paid.' [Third year medical student; Participant number Y3-01; Stage one interview]

- *Perceived disincentives of continuing to pursue their originally chosen career path*

Some medical students described they felt disillusioned with certain aspects of their originally chosen career path. Thus, they were propelled to consider an alternative career. Reasons for their disillusionment included:

  o A lack of career progression opportunities

  '… [my job] has a very thick and very strong glass ceiling. Unless you actually have a medical degree behind you, you cannot break through. I really want more input into patient management.' [Third year medical student; Participant number Y3-04; Stage one interview]

  o A lack of job satisfaction or autonomy

  '… I did not want to work in a laboratory. I got very frustrated with certain aspects of being a practical chemist and the restraints of what you could do. Until you get to the top of the tree [job hierachy], your work was essentially meaningless.' [First year medical student; Participant number Y1-05; Stage one interview]

4.4 The medical student journey: From application to acceptance into a graduate-entry medicine degree programme

Some medical students were determined to pursue medicine as a career since childhood. Others made the decision to pursue a career in medicine at a later stage in life.

Eighteen of 21 (86 per cent) medical students provided an account of their personal journey from application to acceptance into a graduate-entry medicine degree programme. These journeys could be broadly divided into three groups: medicine as an end goal, career indecision and career switchers.

- *Medicine as an end goal*

  Five of 21 (24 per cent) medical student journeys fell into this category (Participant numbers: Y1-03, Y1-05, Y2-02, Y3-06 and Y3-07). They had always been interested in medicine as a career. They applied to undergraduate-entry medicine degree programmes as they approached the end of their secondary education. However, they did not receive offers from medical schools or they failed to meet the condition of their offers. Thus, they moved on to study a natural science or health-related university degree programme. This could be followed on by a period of employment in healthcare settings. Their university degrees and employment experience served as a stepping stone to support their subsequent UCAS applications to study an undergraduate medicine academic programme.

'… I did not get in [medical school]… Medicine was always an end goal for me. It was just about getting my curriculum vitae and getting a place [to medical school] really. So I spent the years between to get more and more experience, and to find out more about myself, and developing different skills that probably helped me apply to medical school.' [Third year medical student; Participant number Y3-06; Stage one interview]

- *Career indecision*

Four of 21 (19 per cent) medical student journeys fell into this category (Participant numbers: Y3-02, Y3-05, Y4-01 and Y4-02). They had considered medicine as a potential career choice in the past but they were unsure if it was the right career path for them. Therefore, they pursued a different university degree subject that interested them. They took time to consider their career options and later made the decision to apply to an undergraduate medicine academic programme.

'… I felt at the age of 16 and 17, I really do not have the capacity to decide what I want to do for the rest of my life. So I pursued something [a biology degree] that interests me.' [Third year medical student; Participant number Y3-02; Stage one interview]

Their indecision to apply to an undergraduate medicine academic programme could be influenced or contributed by unexpected personal life events. One medical student reported that he decided against applying to an undergraduate medicine academic programme due to his family circumstances and personal health issues.

'… I had family issues that got in the way and there was personal illness, I started to doubt whether I would first be able to complete the five-year course.' [Fourth year medical student; Participant number Y4-02; Stage one interview]

One medical student stated he received university offers to study an undergraduate-entry medicine degree programme and a natural science bachelor's degree programme. He met the conditions of both offers. He chose to study a natural science bachelor's degree programme. This was followed by a period of employment in healthcare settings. This gave him the time he needed to consider his career options. He eventually made up his mind and applied to a graduate-entry medicine degree programme.

'… Medicine was always on my agenda when I was at school that is what I have always planned to do… I was just studying science out of interest and because it would be useful no matter what I wanted to do. I thought I would satisfy my interest [by studying a natural science degree] rather than servicing a career path [by studying

medicine]… I was not 100% sure, so I thought it would be good to have some healthcare-related experience and I went for the worst possible jobs and if I could not put myself off, I said I would apply for medicine, and so I did.'

- *Career switchers*

Nine of 21 (43 per cent) medical student journeys fell into this category (Participant numbers: Y1-01, Y1-02, Y1-04, Y1-06, Y2-01, Y2-03, Y3-03, Y3-04, Y3-08). They decided to switch career to medicine by applying to a graduate-entry medicine degree programme due to a combination of pull and push factors that were already described in Chapter 4.3. They resigned from their employment before commencing their degree programme.

One medical student had a unique journey of getting into a graduate-entry medicine degree programme compared to the whole cohort of study participants. She considered medicine was a career that was unattainable due to her disadvantaged educational background. She did not complete her secondary school education. She was in full time employment for many years. Through her part-time role as a first responder and undertaking further training, she gained health care experience and a university degree qualification required to pursue a graduate-entry medicine degree programme.

'… I always wanted to do medicine but having no qualification, it was never an option. I have worked in leisure for years… I could not get any higher within leisure without a degree. I did the [name of a widening access scheme] that got me into a degree. So I applied to do [name of degree programme] as a way into medicine.'

Six of 21 (29 per cent) medical students reported the first time they submitted a UCAS application to study an undergraduate medicine academic programme was towards the end of their secondary school education, 5 of 21 (24 per cent) medical students applied during their bachelor's or master's degree programme, and 7 of 21 (33 per cent) medical students applied during their employment. Three of 21 (14 per cent) medical students did not volunteer this information.

Nineteen of 21 (90 per cent) medical students claimed they were successful in obtaining a place in an undergraduate medicine academic programme following their first or second UCAS application attempt, 1 of 21 (5 per cent) medical student was successful following the third attempt and 1 of 21 (5 per cent) medical student was successful following the fifth attempt.

Medical students described several factors that had influenced their decision to apply to a graduate-entry medicine degree programme over an undergraduate-entry medicine degree programme. These factors included:

- The shorter duration of graduate-entry medicine degree programmes.

- Medical students in graduate-entry medicine degree programme claimed that they were entitled to apply to the non-repayable NHS Bursary scheme as financial support towards their degree programme, which was not available to medical students in undergraduate-entry medicine degree programmes.

- Their preference to learn in an environment with other individuals similar to their background and maturity.

'… *Financially you seem to be in a better position to have support from the National Health Service Bursary system... I only wanted to be back in higher education for four years rather than five years. I was going from a very well paid job to the status as a student with no income rather than loans. Five years seems a long time without a salary, after being used to be living off a bigger salary.*' *[Third year medical student; Participant number Y3-08; Stage one interview]*

'… *I felt that graduate entry medicine would meet my particular needs better than the undergraduate course. Especially I was going to be a lot older than the average undergraduate student and therefore you know I have already got work experiences behind me, a bit more maturity. I do not have the same requirement of socialising, so I want to stay within my own peer group.*' *[Third year medical student; Participant number Y3-03; Stage one interview]*

4.5 Preparing for the start of a graduate-entry medicine degree programme

Medical students reported making a range of preparations prior to commencing their graduate-entry medicine degree programme. These preparations included:

- *Financial preparations*

  They had to make early financial planning so that they could pay for their tuition fees and living expenses for the duration of their degree programme. They financed their degree programme through a range of sources including student loans, NHS bursary, charitable funding, personal savings or parental contributions. One medical student with several years of employment experience stated she was able to save up enough money from her previous job to pay for her graduate-entry medicine degree programme. She did not wish to be in any debt. Some medical students had plans to undertake part-time work during their degree programme.

  '… *I worked hard as locum [radiographer] and saved hard so that I can finish the degree without being in debt.' [Third year medical student; Participant number Y3-04; Stage one interview]*

- *Academic preparations*

  The University of Warwick Medical School provided medical students with a recommended reading list prior to the start of their degree programme. One medical student volunteered that he did not

follow this recommendation. Medical students with a university degree in a natural science or health-related subject perceived their educational background had increased their academic preparedness for their graduate-entry medicine degree programme.

'… I bought a couple of textbooks and did some additional background reading… I have quite a lot of good knowledge and experience about hospitals, a lot of radiology and radiographic anatomy and surface landmarking… I was better prepared [for the degree programme].' [First year medical student; Participant number Y1-04; Stage one interview]

- *Orienteering to medical student life*

Medical students looked up information about medical schools, the UCAS application process and medical student experience from secondary school resources, online resources and knowledgeable individuals. This helped them anticipate the journey of becoming a medical student.

'… The general understanding I had of what medical school was like came from before medical school reading through forum articles on medical school experiences… I remember there was one person who gave me a very good run down on what to expect from medical

education and that was quite useful.' [Third year medical student;

Participant number Y3-03; Stage one interview]

4.6 Adjusting to the new medical school environment

When medical students commenced their degree programme, they had to make academic, financial, social and cognitive adjustments to the new medical school environment. They also had to build a new professional identity as students of a graduate-entry medicine degree programme.

4.6.1 Academic changes

Generally, medical students perceived their previous life experience and transferable skills set (such as team working, communication skills and time management skills) had increased their preparedness for their graduate-entry medicine degree programme.

'… My previous job of four years definitely helped me [cope with the graduate-entry medicine degree programme]… in terms of coping well under pressure, meeting deadlines and having a lot of responsibilities… I can cope with a lot of the stuff thrown at me as a result actually.' [Third year medical student; Participant number Y3-08; Stage one interview]

All medical students had to learn new scientific and non-scientific concepts in phase one as the curriculum covered a broad range of topics that they had not learnt before. Some medical students reported the learning styles they

employed in their previous degree programme did not suit their graduate-entry medicine degree programme.

'… Previously [during first degree] I was just learning the hard science of things whereas now in medicine I learnt a broader picture of things. In medicine on top of learning biochemistry, there are also areas of sciences that I have not learnt before such as anatomy. It took some time to get to grips with the learning style required for learning the non-science aspect of it as well. There was the fact that you have to learn how to learn different things.' [Second year medical student; Participant number Y2-02; Stage one interview]

Medical students with a university degree unrelated to natural science or health subjects perceived the science-based elements of the phase one curriculum had assumed too much prior scientific knowledge from them. They did not always understand the basic scientific concepts the faculty assumed they had already learnt. Thus, they had to revise from secondary school learning materials to build up their baseline scientific knowledge. They found it challenging to adapt to the academic demands of their degree programme.

'… The biggest difficulty I faced was so much assumed knowledge. In my engineering background, I did not have any insight into the contents of the cells. In certain modules like 'molecules', they said 'as you know within the cells' but I do not know what is inside the cells. So the first term was

predominantly for me to go back to A Levels to learn about biology and chemistry and not learning about medicine.' [Third year medical student; Participant number Y2-03; Stage two interview]

On the other hand, medical students with a university degree in a natural science or health-related subject were able to transfer or apply some of the concepts and skills they previously learnt into their graduate-entry medicine degree programme.

'… I am bringing previous knowledge [from radiography degree] that is applicable to medicine. Certain things like surface landmarking and radiographic anatomy, which, I am quite good at. It is second nature to me.' [First year medical student; Participant number Y1-04; Stage one interview]

Some medical students perceived there was a significant difference between their previous university degree programme and their graduate-entry medicine degree programme in terms of the teaching style and the learning environment. In their graduate-entry medicine degree programme, they had to learn a broader range of topics but in lesser depth than they did in their previous university degree programmes. They described the need to be selective when deciding what to revise for examinations in their graduate-entry medicine degree programme with some medical students being reluctant to devote time to explore extra-curricular topics due to the large volume of information they had to learn.

'… my first degree was a pure subject of biological sciences and the depth that we have to go into is incredibly different to what we have to do now in medicine. It was the real struggle that in phase one when I found something I was interested in, I could not give up too much time to go into the details. It would obviously benefit me in terms of knowledge and being able to apply that, but it would not benefit me from an examination or assessment point of view. I really felt that my first degree did not prepare me at all [for graduate-entry medicine degree programme] actually.' [Third year medical student; Participant number Y3-08; Stage one interview]

There was also a stronger emphasis on self-directed learning in their graduate-entry medicine degree programme as compared to their previous degree programme.

'… in my undergraduate, you are basically spoon fed [with information] whereas in medical school, there is a lot of things that you are not going to get taught but we have to know. And it is making decisions on what is important to know and what is important to spend a lot of time on.' [Third year medical student; Participant number Y3-07; Stage one interview]

Some medical students reported they had to adopt new learning strategies to cope with the academic challenges of the graduate-entry medicine degree programme, for example, to change their learning style and work intensity.

'…I have changed. In chemistry I would not particularly work every single night but maybe I would study over the weekend. And towards revision I would do a massive block of just doing exam papers and practice. But I realised that does not work particularly well [for graduate-entry medicine degree programme]. So now I work a bit every single night and have one day off at the weekend and then step it uptowards the exams. So instead of doing everything in one chunk I am spreading it out a lot more as there is so much more to do (in medicine).' [First year medical student; Participant number Y1-06; Stage one interview]

There was a much stronger emphasis on group work and collaborative learning in their graduate-entry medicine degree programme as compared to their previous degree programme.

'… [In my previous degree programme] it was totally lecture based. It was straight lectures and independent studies and I did not do a lot of group work. Whereas here [graduate-entry medicine degree programme] obviously there is a big focus on group work and I much preferred this… I am happy with this way of learning is a lot better than independent learning.' [First year medical student; Participant number Y1-05; Stage one interview]

In collaborative learning, they could draw on the strengths and prior knowledge of their peers to support and supplement their own learning.

'… it is really useful to rely on other people's knowledge sometimes, especially with the group work. Some people know things about specialities that they can be passed along to the whole group which is really handy.' [First year medical student; Participant number Y1-05; Stage one interview]

However, dysfunctional group dynamics could make it challenging for medical students to learn in a group setting.

'… My group last year did not work. Two of them would sit and play games. Some of them would chat and it was me that who wanted to study.' [First year medical student; Participant number Y1-01; Stage two interview]

4.6.2 Financial changes

Medical students incurred expenses related to their degree programme. These expenditures included travelling expenses and the purchase of learning materials and equipment. Some medical students expressed concerns about their financial situation and the prospect of student debts. Some medical students perceived they had to take up part-time employment and some had already done so in order to support themselves through their degree programme.

'... I am hoping it is [student loan] not going to increase too much, I am hoping by getting a part-time job that I will be able to reduce the amount that I borrow in the future but whether this will happen or not is to be seen.

My student loan is going to be massive at the end of this.' [Third year medical student; Participant number Y3-01; Stage one interview]

A number of medical students resigned from their full-time employment to embark on a graduate-entry medicine degree programme. They experienced a loss of income on their return to student status. The prospect of student debts necessitated a significant change to their lifestyle. They had to cut down on expenditures that they could no longer afford as medical students.

'… I have thrown off many indulgences that I was quite used to when I was having salaried work. At one stage when I was a locum, I spent one weekend in [work] and one weekend in Europe [on holiday]. I had some extravagance, I used to eat in very nice restaurants, used to have a personal [fitness] trainer… [as a medical student now] just trying to cut down on the extravagance.' [Third year medical student; Participant number Y3-04; Stage one interview]

One medical student provided an account on the methods he used to minimise expenditures, for example, borrowing medical books from the library or buying second hand medical books instead of purchasing new ones. He also took up part-time employment to generate income.

'… I think the biggest difficulty was going from a well-paid job to earning no money again which is a big struggle. [There was a] change of lifestyle so

I cannot afford to do activities I want to do and eat the food that I want to eat. There are a lot of tools [learning materials and equipment] that I want to have but I cannot afford [being a medical student]. So I rely a lot on library services like books, or using second hand or older versions of books and support materials. I actually got some work with free accommodation as part of that job so that made significant savings.' [Second year medical student; Participant number Y2-03; Stage one interview]

Medical students without previous employment experience were reliant on student loans, NHS bursaries and parental contributions to finance their graduate-entry medicine degree programme. They expressed a strong desire to be financially self-reliant instead of seeking financial support from parents.

'… I can borrow money from the government [student loans] why should I take money out from their [parents'] savings? … My dad has already given me money… my parents are getting older. I do not want to add more burden onto them.' [Third year medical student; Participant number Y3-02; Stage one interview]

4.6.3 Socialisation changes

Medical students taking part in this study originated from different parts of the United Kingdom. Most medical students had to relocate to live near the University of Warwick Medical School. They had to develop a new social support network and form new friendships while finding ways to maintain

existing relationships with their family and friends. The change in their social circumstances and support network could be stressful.

'… I am leaving my friends behind as well and my family… Coming here [University of Warwick Medical School] is the whole uprooting what was normal, and what was comfortable for you… everyone is a graduate, they have done their first degrees, a lot of them have roots somewhere else… it is much harder to make a kind of completely new start. Everyone to be let go of everything, and put in all the effort to make friends [again].' [Third year medical student; Participant number Y3-02; Stage one interview]

One medical student described that living near the University of Warwick Medical School meant she was now living much closer to family and friends as compared to her previous degree programme despite having less free time. This helped her maintain contact with her loved ones.

'… I used to travel like seven hours to come down [in previous degree programme] … but now it is 45 minutes on the train so I actually find it much easier to keep in touch with family and school friends than it used to be. I may not have the same amount of time but, you know, I can nip back home for a day and that never used to be an option.' [Third year medical student; Participant number Y3-01; Stage one interview]

Two medical students reported that coming to the University of Warwick Medical School was their first time to live away from home. It was a

challenging experience. They had to learn to live independently as they moved away from their family support network. One medical student described the length of time it took him to adjust to living independently.

'… Going from living at home, having family there to help you, to not really having that support. Especially in the first four to six months [graduate-entry medicine degree programme] it was quite difficult at times. It was a big change for me and that was not something I was used to. I supposed I have gained a lot more independence than I had originally, which has been very useful.' [Third year medical student; Participant number Y3-05; Stage one interview]

One medical student was still in the process of learning to live independently. He could cook and wash dishes but he was still bringing some of his laundry back home for washing.

'… you have to learn all these independent things, how to cook and do your washing [dishes]. I still do not know how to do my washing [laundry] I just take it home after four to five weeks.'

Medical students reported the quality of their relationship with family and friends has changed after commencing their graduate-entry medicine degree programme. These changes could be a positive or a negative experience.

'… I feel my relationship with my parents probably became stronger probably because there is now a [physical] distance between us and we both make a conscious effort to see each other and do things together. Whereas my relationship with my brother, it used to be the case that I go to his house all the time and he comes to my house and hang out, but now we are both very busy and we do not have time to do that. We get to see each other in a very limited amount of time. In one way there is positive thing with my parents but equally it is a negative thing with my brother.' [Second year medical student; Participant number Y2-03; Stage one interview]

They prioritised their learning over their leisure and social activities as they wanted to succeed in their degree programme. One medical student claimed the degree programme was so important to him that he chose to stay in his accommodation in the University of Warwick central campus to revise for assessments instead of returning home to visit his family over the festive holidays.

'… you are learning so much every day because it is a fast track course you cannot afford to take time off. So over Christmas, rather than being with my family on Christmas Day, New Year's Day, Boxing Day, I was stuck on campus in my little room studying, I just thought to myself 'is this the life I have chosen?'… you cut down on your social life… I do not see my family till once a month now.' [First year medical student; Participant number Y1-03; Stage one interview]

Medical students socialised with their peers as they commenced their degree programme. They reported that social groups could be formed as soon as within a week of starting their degree programme. They tend to remain in the social groups they joined from the start of their degree programme. While some medical students reported they socialised with their peers with ease, others perceived this was not a straightforward experience.

'…Friends wise, I realised that it is very hard to make friends here actually. Maybe it is the demographics of the year group I am in, but from what I have gathered from my friends as well as my personal feelings, our year group is very 'cliquey'. There are a lot of friends that people have made in the first few days of meeting each other, they kind of stuck to. I found that in particularly in phase one, people tend to be in their own groups.' [Third year medical student; Participant number Y3-02; Stage one interview]

Medical students described their academic and social lives were centred on the graduate-entry medicine degree programme student community. This was due to the academic demands of their degree programme as well as the relative isolation of the University of Warwick Medical School campus from the University of Warwick central campus. Medical students did not need to join the wider University of Warwick student societies or sports clubs because many of these societies and sports clubs exist within the University of Warwick Medical School student community. This further contributed to their relative social isolation from the rest of the University of Warwick student community. The phenomenon of academic discussions

taking place during social activities persisted throughout their degree programme. Even in off-duty settings, they frequently found themselves discussing with their peers about concepts related to medicine.

'… We are on our own campus and we are more than anyone else being in a bubble. Everywhere you walk there are medics. I play for the medics' football and cricket team because you do not have time to play university sports. You never get away from medicine. So even when you are not doing medicine, there is always the chance of people asking you something about a patient that they saw that day.' [First year medical student; Participant number Y1-06; Stage one interview]

When Y1-06 was interviewed again seven months later, he reported academic discussions about medicine continued to take place during his social life.

'… We always try [not to discuss medicine] but there is always one person who would say 'Oh I saw this patient, oh I saw this condition, did not understand it.' You cannot get away from it [medicine] even if you go for a drink with someone. You try to keep away from it. Eventually there is always something to do with medicine.' [Second year medical student; Participant number Y1-06; Stage two interview]

One medical student described he was not concerned about the relative isolation of the medical student community and the lack of integration with

students from the rest of the University of Warwick as this enabled him to focus on his degree programme.

'… you are too busy. It is good in a way so there is no extra distraction. Which I do not think you can really afford [distraction] on a postgraduate course. I would not say that it is a bad thing not to be able to integrate with the rest of the university.' [First year medical student; Participant number Y1-04; Stage one interview]

Some medical students joined the University of Warwick Medical School's student societies, sports clubs or undertook volunteering activities. These activities enriched their medical student experience, widened their horizon, expanded their life skills, provided an opportunity for learning outside the curriculum and developed their curriculum vitae.

'… [being involved in a student society] helps with teamwork and learning to delegate and when to know whick tasks you have to take yourself and when to let go. And how to motivate people to do things. So the broad skills. And with the nature of the society being about bone cancer so I have to learn on the side of that as well. But I would not say it contributes awful lot to the course.' [Second year medical student; Participant number Y1-05; Stage two interview]

Some medical students emphasised the importance of separating work from their personal lives. They pursued leisure activities unrelated to their degree programme as a way to maintain a healthy work-life balance.

'… I would go to the gym, go for a run. Cycling to and from university everyday is very good to clear my head.' [First year medical student; Participant number Y1-06; Stage one interview]

4.6.4 Cognitive adaptation

Medical students' adjustment to the medical school environment was characterised by finding meaning to their new experience. They were knowledgeable about their previous university degree subjects or areas related to their previous employment. However, as soon as they commenced their degree programme, they found themselves learning a large volume of new vocabularies and new concepts. The change from being a knowledgeable person or an expert to a complete novice could be overwhelming.

'… Moving from my working life where you know what you are, to being a medical student has been an upheaval. Prior to becoming a medical student I spent six and a half years in my field and I knew things. Walked through those [medical school] doors, and I felt I knew nothing. It was a complete change. You have this list of new words. You go the next day and the next lecture with more new words. I found that really challenging. I have gone to being in the environment where I can troubleshoot anything they could

throw at me, to a situation where I did not even know what the words meant.'

[Third year medical student; Participant number Y3-04; Stage one interview]

One medical student, who used to be an engineer, identified himself as a 'non-science' graduate at the start of his degree programme. He described there was an unequal playing field between medical students from 'non-science' and 'science' degree background in terms of their baseline scientific knowledge. He found it challenging to adapt to the academic demands of the phase one curriculum. He rationalised his underperformance in phase one assessments was due to his 'non-science' medical student status. He no longer held this viewpoint as he commenced phase two.

'… If you are non-science background then you would make it clear that you are non-science background because there are two different level of students. Usually the science students are well performing and the non-science ones are not as good. So you justify why you are not very excellent in certain fields and you have to make it clear that you are from a non-science background. In phase one, I would say I have to justify that I was from a non-science background… I do not feel I have to do that any longer [in phase two] and I feel like I am on par with the rest of the cohort in terms of academic ability and other skills required to be a doctor.' *[Third year medical student; Participant number Y2-03; Stage two interview]*

Reciprocal determinism played an important role in motivating medical students to learn within an academically competitive learning environment as their learning behaviour was influenced by social, personal and environmental factors.

In terms of personal factors, fulfilling one's career ambition held significant meaning to some medical students. One medical student described he took his graduate-entry medicine degree programme much more seriously than his previous degree programme. This was because the end result of his previous programme was 'just' a bachelor's degree whereas his graduate-entry medicine degree programme was a career in medicine. He changed his approach to learning and became very hard working because he treasured his place in the University of Warwick Medical School.

'… In my first degree I was not very attached to the degree. If I never studied, I never felt bad about myself. If I ever failed any exams I just thought, I will just retake it and it will not matter… In my ESAs [Year 1 assessments] in January, the first paper did not go so well and I felt really horrible. Quite honestly I do not think I have ever come out of an exam and felt so horrible in my life – this is because this is a medical degree and I really want to do well in it. That is what gave rise to the emotions… You have to constantly work hard in this degree. In my undergraduate degree I would only work during the Easter revision. During the whole year I would not do much apart from the coursework. My ESA 2 [Year 1 assessment in graduate-entry medicine degree programme] is in 16 weeks' time and I am

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already starting to commit lectures to my brain, which is 16 weeks ahead of the exams – which I have never done before. So I think in this degree, because you have a direction in life and because you are aspiring to be something [a doctor], rather than saying this is just a degree or a general sciences degree.' [First year medical student; Participant number Y1-03; Stage one interview]

There was an academically competitive learning environment in the graduate-entry medicine degree programme. Medical students compared their academic performance against their peers. Some medical students without previous healthcare employment experience claimed they could feel intimidated by their peers that had been healthcare professionals due to their level of experience and skills.

'… It can be intimidating like when you seen people who have been pharmacist for seven years, or a midwife, and you automatically assume they are a lot more confident and competent than you.' [First year medical student; Participant number Y1-05; Stage one interview]

Within their peer groups, they mirrored each other's behaviour in making preparations for examination. They were concerned about the consequence of examination failure such as repeating an academic year or dismissal from the degree programme.

'… This week alone I have heard thirty people had been kicked out [of University of Warwick Medical School]… Anybody can be in that position… Medical school is so intense you make a good group of friends around you and you do not want to be left behind and you do not want to fall short. It is very competitive, you look to the back and sides of you and see someone committed and hardworking and you think you have to be that way. So you are no longer yourself to some extent, you are kind of mirroring the people around you because you do not want to be left behind.' [First year medical student; Participant number Y1-03; Stage one interview]

One medical student further described that failing to pass examinations was analogous to putting their lives on hold until the day they passed their resit examination.

'… those people who are quite competent they would be booking their holidays straight after exams which is a nice welcome break. But for those who were not so competent… we had to put our lives on hold even post exams, post results and through the re-sit period.' [Second year medical student; Participant number Y2-03; Stage one interview]

They put in a lot of effort into their study not for the sole purpose of passing examinations but to become safe and competent doctors. One medical student stated that he would revise across the whole breath of modules to ensure he had a strong knowledge base required to be a competent doctor. Furthermore, reality television show's portrayal of junior doctors has

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reinforced his desire to be a hard working student and to learn from good role models.

'… In my first degree, if there were thirty modules I will probably cut it down to fifteen modules [to revise from] and study them inside out. Here [graduate-entry medicine degree programme] you are like, I am not just studying to pass an exam but I am studying to become a doctor… Do I want to have got my degree from doing selective revision and been lucky? Or do I actually have to put in the effort, learnt everything thoroughly? Therefore, you draw a positive correlation between the latter [to study thoroughly] and being a competent doctor... You watch 'junior doctor's life in your hands' [a reality television programme depicting the lives of junior doctors] and you think I do not want to be a stupid doctor. Then you see another [junior doctor] and you think she is so knowledgeable… I have realised on this degree that it takes a lot of hard work, I have realised that if I want to be successful I have to sacrifice a lot of my time.' [First year medical student; Participant number Y1-03; Stage one interview]

Some medical students had patient care experience in their previous employment. For these medical students, they did not find meeting patients a challenging experience. However, one medical student claimed the patient encounters she had in phase one were not authentic. In these clinical teaching sessions, doctors taught her about individual body systems using patients as models. She felt this approach was impersonal and differed

significantly from the holistic approach to patient care she had delivered when she worked as a health professional.

'… In phase one, the contact you have with patients is a bit fake. It is like your consultant wanted to use the patient as example of a specimen. I always think a little respect perhaps not reciprocated to the patient. So I did struggle a little with that to be fair. I always saw the patient more as a whole… they were not just a bone scan, they were like 'oh this is Mr. so and so.' …I found a bit of a struggle with 'can you examine this lady's foot?'… as opposed to how I used to view patients as more as a whole person, which is a bit of a surprise… you take the patient and the personality into consideration and yet this did not always come through [in phase one clinical encounters].' [Third year student; Participant number Y3-04; Stage one interview]

Medical students began to think about dealing with death and dying as they commenced their degree programme.

'… just wonder how it [death and dying] will affect me and how I will take it and be able to deal with it.' [First year medical student; Participant number Y1-04; Stage one interview]

Another medical student described that dealing with death and dying was a concern when deciding to pursue medicine as a career. In comparison to her peers who had prior experience of dealing with death and dying in their

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health professional roles, she had very limited experience in this area apart from the death of a family friend. Together with a group of her peers, they self-organised a session to observe an autopsy as a way to help them adapt to the emotional impact of death and dying.

'… It [dealing with death and dying] was one of the reasons that made me think long and hard about medicine. I was very anxious about it… I put myself onto an autopsy in a couple of weeks to watch one… because I want to be comfortable with it. I will keep going to watch autopsies until I feel ok with the difficult subject… Not desensitise just so that I will not be shocked when it comes out of nowhere. Just a little more comfortable with the thought of walking into a room with a dead body in it. I know lots of people who have worked in mortuaries and care homes who are totally fine with it… I do not know if I will ever be comfortable with it.' [First year medical student; Participant number Y1-05; Stage one interview]

4.7 Moving through the degree programme

4.7.1 Challenges of moving through phase one

Encountering uncertainties

Some medical students expressed feeling uncertain about their progression through the phase one examination hurdles.

'… There was so much uncertainty about progression through the course because of high failure rate in the examinations.' *[Second year medical student; Participant number Y2-03; Stage one interview]*

They reported feeling uncertain about what could be tested in their examinations. One medical student suggested the provision of more sample examination papers by the University of Warwick Medical School could help address their uncertainties.

'… you just cannot revise them apart from seeing what they are going to ask [in actual examination papers].' *[Second year medical student; Participant number Y1-06; Stage two interview]*

Passing examination hurdles

There were three examination hurdles to pass in phase one. Issues related to the preparation and the undertaking of examinations became the focal point of their discussion about their phase one experience.

'… All the cohort talk about is exams, they say pass ESA 3 [a first year assessment] and you will qualify as a doctor. That is the biggest hurdle. So even though I am sixteen weeks away from ESA 2 [a first year assessment], I must have mentioned ESA 2 in my conversations with people at least once over the last four days so it is a really big hurdle. You just do not want to be a failure.' *[First year medical student; Participant number Y1-03; Stage one interview]*

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They were concerned about the consequences of failing examinations as this could spell an end to their pursuit of medicine as a career.

'… *he was struggling with his exams and he failed his exams and got kicked out of medical school.*' *[Second year medical student; Participant number Y1-05; Stage two interview]*

Unexpected illness and managing the consequences of examination failure
While most of the medical students reported they passed the phase one examination hurdles uneventfully. However, three students stated that they had failed at least one phase one examination.

A first year medical student described her initial first year academic progress as satisfactory. Then, she developed an unexpected long-term illness followed by failing an end of first year examination. She was concerned about repeating the first academic year under the newly implemented refreshed curriculum. She described repeating the first year has led to changes to how she socialised, approached learning and her choice of coping strategies. She described her initial reaction to repeating first year was feeling ashamed but as time passed she was able to switch her coping strategy and applied a positive frame of mind to view this event.

'… *It is scary coming back because it is a new programme [refreshed curriculum], new friends and new everything… It is good to see a friendly face that you know but it makes you feel awful because you think I should be*

there and why I am not there… I think overall it will make me a better doctor by holding me back a year because it will improve the foundation of my knowledge and make me ready for the future.'

Her attitude towards socialisation had changed following this event. Her academic studies now took precedence over her social life.

'*… I do not want to go too much on the nights out because I want to study... If I make more friends then it is a bonus.*'

Looking in retrospect, she acknowledged that during her period of illness she had adopted a maladaptive coping strategy as she declined help.

'*… closing your eyes and just keep swimming and say everything is going to be fine when things are not.*'

She concluded that she needed to learn to accept help and support from others when she struggled.

'*…you do need help and support. There is help and you just have to be prepared to access it and recognise you are struggling.*'

Managing work-life balance

Medical students studied in a highly-pressurised academic environment. The academic demands of their degree programme can be very stressful to some medical students.

'…it was a real stress at the time when workloads are getting really heavy.' [First year medical student; Participant number Y1-06; Stage one interview]

They undertook a range of activities to maintain their work-life balance, for example, entertainment, sports, socialising with family and friends and undertaking extra-curricular activities. Some medical students were satisfied with their work-life balance. Others reported they had to strike a healthier work-life balance as their level of academic or extra-curricular commitments changed over the course of their degree programme.

'… The work life balance is still a problem because I took on a society in the medical school now I am a president of a society. So I did not anticipate how much work that would entail… I moved from a coordinator to a president position, I have taken on a lot more and it has started to interfere with how much work I am doing.' [Second year medical student; Participant number Y1-05; Stage two interview]

Some medical students emphasised that undertaking activities unrelated to their degree programme was an important criterion of striking a healthy work-life balance and to avoid burnout.

'…more importantly I have to to make sure I give myself enough time not to do medicine…make sure you have a good work life balance because I know two or three people in the year so far that they have said they are starting to burnout because they have been working so hard. I think having next week not having any lectures will help to save our sanity.' [First year medical student; Participant number Y1-06; Stage one interview]

4.7.2 Moving from phase one to phase two

Changes to the learning environment

The change from phase one to phase two of the curriculum occurred half way through the second year of the degree programme.

'… Second year is the transition between the first half being the same as first year, and second half is gaining your basic clinical experience.' [Second year medical student; Participant number Y2-03; Stage one interview]

Learning in phase one predominantly took place in a classroom-based environment. They learnt about basic medical sciences, had limited

exposure to the clinical environment and there was a strong emphasis on group work and collaborative learning.

On the other hand, learning in phase two predominantly took place in clinical settings with a strong emphasis on self-directed learning. Y3-01 described her experience of moving from phase one to phase two of the curriculum.

'… up until a couple of months ago [end of phase one] we were going to full-time lectures, nine to five, sitting down with people talking to us and now [phase two] it has become a lot more about what we know… it is a very independent style of learning that we have not really done that much of [in phase one]' [Third year medical student; Participant number Y3-01; Stage one interview]

Medical students were informed by the University of Warwick Medical School and medical students in more senior year groups about the potential changes to the academic and learning environment when they moved from phase one to phase two.

'… [In phase one] we were constantly reminded that it is really important to get the most out of this because when you go to phase two you are in theory seeing patients every day. The skills you have learnt in that half a day [in phase one] really come into their own… we were quite well informed about what to expect in terms of what changes might occur but maybe not so much

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how to cope with it.' [Third year medical student; Participant number Y3-01; Stage one interview]

Some of the information they were given about phase two was accurate. However, they recognised that certain types of information, such as the characteristics of their placement consultants and how to work with them, could not be accepted at face value. Instead, they would use their own judgment when deciding on the authenticity and validity of the information provided. Indirectly, this created uncertainties as to what they could expect to happen at their clinical placements.

'…There are massive rumours that goes around…about things like 'oh this consultant is like this' and 'oh and if you do not do that'. There is just loads of them. So I think that you kind of listen to what people say. You have got to use your common sense and say 'well, that just sounds like nonsense, so I am not going to take that'. [Third year medical student; Participant number Y3-01; Stage one interview]

Medical students described they had to keep a learning portfolio of their clinical encounters in phase two and structure their own learning around the diseases they encountered. Setting their own learning objectives and organising their learning activities could be challenging.

'… you have not got a set piece of work to do per se except for the portfolios that we do. It was going to be lot of time of saying 'Well today I saw this

disease' so when I go home I am going to learn about that… it is quite a

change to have no direction on where you need to be.' [Third year medical

student; Participant number Y3-01; Stage one interview]

Y3-03 claimed that the change in learning environment from phase one to phase two led her to feeling 'lost' initially. She described it took her some time to make the psychological adjustment to the self-directed learning nature of the phase two curriculum and to take control of her learning.

'… oh, I do not have to go and sit in a lecture theatre… you were kind of a

little troop of people following a consultant around, that is almost what it

feels like. You feel a little lost to start with. But then it kind of sinks in over

those couple of weeks that you are a bit like 'oh, hold on, you know, this is

my time. This is when I can choose to do what I want to do, and learn about

what I want to learn about.' [Third year medical student, Participant

number Y3-03; Stage one interview]

The learning outcome of the phase two curriculum was perceived to be less well defined as compared to the phase one curriculum. Together with the self-directed learning nature of the phase two curriculum, it was challenging for medical students to monitor their learning progress and to be certain that they were achieving the curriculum objectives.

'… for phase one, most of what you need to know is covered in lectures or

in teaching sessions… Whereas now [phase two] it is more self-directed and

it is harder to evaluate as to whether I am achieving the objectives or where I am at the present time.' [Second year medical student; Participant number Y2-02; Stage one interview]

In contrast to the structured and scheduled learning activities in phase one, medical students found the opportunities for learning in the clinical environment in phase two could be unpredictable.

'… phase one lectures [happen] every day… you feel like you are learning a lot. In phase two there have been a few days where I felt like I have not learnt enough in a day or I feel I have missed a very valuable learning opportunity because of being in the wrong place. So that can be quite stressful.' [Third year medical student; Participant Y3-03; Stage one interview]

Changes to socialisation

In phase two, medical students were divided into pairs and sent to clinical placements at different regional hospitals. They spent a significant amount of time with their clinical placement partners. However, this had indirectly reduced opportunities for socialising with other peers.

'… we have gone from being based here [University of Warwick Medical School campus] every day and seeing the same people every day to being moved away from one another. We are in pairs now but that means you do not see a lot of the friends that you used to. I need to try and make sure that

I will still see friends and keep the relationships I formed over 18 months [in phase one].' [Third year medical student; Participant number Y3-05; Stage one interview]

Financial changes

Y3-02 reported her expenditures increased after commencing phase two due to rising traveling costs. In phase two, the majority of the learning activities took place in regional hospitals. Due to the distance to commute to clinical placements, she decided to purchase a car. This put a strain on her finance and she had to cut down on other expenditures.

'… I just got a car as well [start of phase two] because I cannot get to the hospital otherwise and this has taken a massive hit on my finances in the sense that I am paying more for petrol then I am on my weekly food.' [Third year medical student; Participant number Y3-02; Stage one interview]

In phase two, medical students had more control over their time schedule. Y3-01 stated that she envisaged there would be more opportunity to pursue part-time work as a healthcare assistant during phase two as she was concerned about accumulation of student debts. Her part time work offered flexible shifts that could fit around her student life. However, her degree programme remained her main priority.

'... I have been able to get on the books of an agency, so, and that is really good because it is really flexible hours and I can pick when I want to work

which I think is really important because if I suddenly get a massive workload that I need to do I know that I cannot pick any shifts. I can fit the work around my life as opposed to having to fit my life around the work... medical school has to come first and that is the most important thing to me because that is my future.' [Third year medical student, Participant number Y3-01; Stage one interview]

Unexpected events

One medical student reported he experienced a burglary during phase two. This had an adverse impact on his academic work. He stated that he turned to his personal tutor for support.

'… It was very inconvenient for me for a period of time to be committing to the course as well as sorting out the burglary. How I was going to work on, and so on. So at that point I went to my personal tutor explained the situation to him.'

Coping strategies

When medical students encountered degree programme-related problems, they may approach the relevant administrative staff and faculty members at the University of Warwick Medical School or regional hospitals to resolve these issues. However, some medical students had been reluctant in engaging with student support services. Y3-02 underperformed in her assessments. She described that she was an autonomous individual and

preferred to self-manage her academic problems instead of asking for help elsewhere.

'…they have asked me to go out there and ask for help…I feel like they are saying because they needed to say it, they need to get it out there, rather than they are thinking about my wellbeing. They feel that just because there is a student support service I should use it and it will make me better, make me a better student. Whereas I feel that this is completely individual and for me… I do not think I need them… I just think that my business is not anybody else's. I carry my own burdens…if I do, the first people I would go to would not be a stranger, it would be my friends, my family.' [Third year medical student; Participant number Y3-02; Stage one interview]

Y3-08 claimed that medical students were more reluctant to complain or raise concerns about their phase two clinical placements than their phase one modules due to concerns about repercussions on their progression through their degree programme.

'… my cohort is very good at if there is something administrative, or something in phase one, no one really has a reservation about raising an issue. I think there is a big difference when it comes to phase two actually… there is that certain fear and trepidation of raising an issue because you do not want it to affect your achievement. And you are only ever placed in one of three hospitals, so if you have a problem and you are back in that

*hospital, it could affect things as well.' [Third year medical student;
Participant number Y3-08; Stage one interview]*

In terms of personal issues, they utilised a range of coping strategies. The
medical student who experienced a burglary turned to his personal tutor for
support. Some students seek emotional support from their family and
friends.

*'…moan about it to my friends and family as well, sometimes that is all you
need to do, just have a bit of a vent…sometimes it is just nice to have a vent
at friends and family I think.' [Third year medical student; Participant
number Y3-01; Stage one interview]*

4.7.3 Moving through phase two

Experiencing uncertainties

The University of Warwick Medical School provided medical students with
a set of phase two learning objectives. However, medical students continued
to feel uncertain about the depth and breadth of knowledge they were
expected to learn in order to meet these learning objectives. They would like
to receive clearer guidance on how to achieve these learning outcomes.
They could turn to the faculty or their peers about how to structure their
learning and monitor their learning progress.

'… I am finding it difficult to know exactly how I go about that. We have been given a list of objectives of the things we should achieve throughout phase two. It is a very good and extensive list… if you just have this list of objectives, it is difficult to know them in enough depth, or what you think you know is actually true… I think you need to ask other people, whether it is your classmates, or people you are working with such as doctors on the course or educational supervisor to ensure your understanding of things are accurate and complete… That is going to be the challenge.' [Second year medical student; Participant number Y2-02; Stage one interview]

Some medical students perceived the lack of formative assessments throughout phase two as making it challenging for them to gauge the progress of their learning. They often compared their progress against their peers. To manage the uncertainties about how much they had to learn, some medical students decided to undertake extensive revisions to ensure they had adequately covered the whole curriculum.

'… My philosophy is that I have to know everything… every single thing I come across that I do not know or not comfortable with I would look up everything and specifically research the area. I do not know if I am doing enough depth or not enough depth, but that is hard to gauge especially when there is no progress checks or examinations. So you try to gauge yourself against other people in the cohort.' [Third year medical student; Participant number Y2-03; Stage two interview]

Academic challenges

Throughout phase two, medical students rotated through a series of placements to gain experience of different clinical specialties. They felt that opportunities for learning could vary widely depending on the clinical teams they were attached to. One medical student described reservations about seeking additional clinical experience with clinical teams he was not formally attached to, suggesting some medical students could potentially be territorial or protective over their placement's learning opportunities.

'… I have been attached to some consultants with no inpatient ward round opportunities. So therefore, my opportunities to be involved in ward rounds was much less without feel like stepping on other student's toes.' [Third year medical student; Participant number Y3-08; Stage one interview]

It was inevitable that multiple learning opportunities could present at the same time. Medical students had to learn to prioritise these learning opportunities according to their learning needs and expectation from faculty members.

'… it is juggling between the consultants, who is more important, who do I need to see this week, is this person's clinic more important than this person's theatre list or is it the other way round. It depends on your consultant, and this consultant says 'I need to see you all the time' then you need to see them all the time. And also not being like a pushover because if a consultant say I need to see you all the time, then you have to say to them

'look, actually no, I need to learn from other consultants as well'. I learnt all of these while making the mistakes.' [Fourth year medical student; Participant number Y3-02; Stage two interview]

In phase one and early on in phase two, medical students employed a system-based approach to patient assessment. As they progressed through phase two, they began to integrate their prior learning and applied a more holistic approach to patient assessment. Y3-06 described this was a challenging skill that he was trying to develop.

'… Being able to link things together. Because at the moment I feel like I am very focused on a certain system. If I go and do a history I will be very cardiology orientated. Whereas next year I need to start thinking about [differential diagnosis] … I need to think more about if they are in the emergency room, they are not going to tell me I have got an endocrine problem. So thinking more laterally. As soon as somebody says something, I need to think right, what are the different causes of this symptom… but for at the moment I am doing cardio, so I only think cardio and heart failure.' [Third year medical student; Participant number Y3-06; Stage one interview]

Learning from positive and negative role models

Medical students observed positive role models during their clinical placements whom they aspired to learn from. For example, Y4-02 observed

a FY1 doctor providing excellent patient-centred care and displaying a high level of professionalism during his work.

'… he knew everything about the patients on his ward, to the point of transport difficulties that they would have, any worries they would have outside of medicine. And I think that only comes from being professional and he was, and being able to create the environment where people could open up to him.' [Fourth year medical student; Participant number Y4-02; Stage one interview]

Some medical students reported they did not encounter any negative or discriminatory attitudes during their degree programme. However, some medical students described examples of negative role models during their placements. For example,

- Some doctors appeared reluctant or not available to provide teaching to medical students.

  '… I have the experience of some placement has not necessarily been very enjoyable because it is clear that the consultants do not want you around or do not want to teach you. If that is the case, then students should not be put with them because it is not benefiting anyone actually.' [Third year medical student; Participant number Y3-08; Stage one interview]

- The process of taking consent from patients for group teaching purposes could be strengthened.

  '… *sometimes without permission be granted to all of us.' [Third year medical student; Participant number Y3-04; Stage one interview]*

- Perceived lack of patient-centred care or professionalism by individual members of staff.

  '… *she almost coerced patients to have surgeries for the sake of doing it because she could do something when potentially another doctor may not have gone down that route. She was rude to staff, she was rude to her team, she was rude to the students… A patient's management plan was almost always decided before the patient was consulted.' [Fourth year medical student; Participant number Y4-02; Stage one interview]*

These positive and negative role models provided an opportunity for reflective learning on what was acceptable and inappropriate professional behaviour.

'… *it does work both ways… the positive reinforement works nicest but sometimes it is [negative role models] that hideous, it makes you think 'No, I am not, I do not want to be like that.' [Third year medical student; Participant number Y3-04; Stage one interview]*

Medical electives

In phase two, medical students began to make plans for their medical electives. Some chose to undertake their electives abroad to learn about the health systems in other countries and develop their clinical experience in areas that they were interested in.

'… I am going to develop my clinical skills and experiences really. We got the electives as part of that so I hope to broaden my knowledge through that [elective] and see how other countries operate their healthcare system.' [Second year medical student; Participant number Y2-03; Stage one interview]

Considering about their future professional practice as doctors

Medical students began to consider issues related to their future professional practice as doctors such as their career choice, taking responsibility for patient care and medical negligence. Some medical students had already considered their future career choice in terms of the speciality they would like to enter. Others remained undecided.

Y3-06 claimed that graduate-entry medicine degree programme students considered their career choice much earlier than those in undergraduate-entry medicine degree programmes.

'… I would like to do a few years on the acute medicine side of things, as I think it excites me… I think as postgraduates a lot of people think about

their careers a lot earlier in the medical degree as compared to undergraduate level. I know a lot of my peers talk about what they want to be, where they want to be doing, and aspirations for the future and a lot of them chase those things in terms of exposure in hospitals.' [Third year medical student; Participant number Y3-06; Stage one interview]

One medical student shared that his biggest future worry was to cause or not being able to prevent patients from dying due to his mistakes or medical negligence.

'… I have been on teams and they lost a patient… Being responsible or not being able to prevent death – I think that is my biggest fear. As a medical student I hopefully I will not have many encounters where I would have caused death. But it is the realisation that in a year's time, I could be responsible for somebody. [They could die] because of my lack of examination or just being rubbish at what I do – that is my biggest fear… Everyone is going to come to the realisation that one day they may caused somebody's death because of negligence.' [Third year medical student; Participant number Y3-07; Stage one interview]

Changes to socialisation

Y3-02 described one of the challenges of progressing through to phase two was to cope with the frequent changes of clinical placements. At each clinical placement, she had to adapt to the new learning environment and

form new relationships. These changes could be more stressful than the academic contents of the degree programme.

'… I found it stressful, not content wise but more adapting to hospitals, adapting to your role as a medical student, as a professional in a hospital, and also your relationship with your consultant, his registrars, senior house officers and the nurses, and also the transition every two months to different hospitals in different blocks, I think that is more stressful than the actual content.' [Third year medical student; Participant number Y3-02; Stage one interview]

Until she became fully acclimatised to the new clinical environment, she would prefer learning by reading from books instead of immersing herself in the hospital wards.

'… because this is a new hospital, it is a new staff. I am moving away from that a little bit because I am not comfortable enough. So at the moment I am concentrating on my books.' [Third year medical student; Participant number Y3-02; Stage one interview]

Some medical students moved accommodation regularly throughout their degree programme. Y3-01 described the stressful event of moving accommodation along with her housemates which had been an annual event.

'…we are going to move house but I am used to doing that every year as a student for such a long time, you move house every year. I am living with the same people.' [Third year medical student; Participant number Y3-01; Stage one interview]

Maintaining work-life balance

Medical students discussed the importance of maintaining a healthy work-life balance during phase two. Y3-06 provided his account of a healthy work-life balance.

'… having good sleep hygiene, getting good sleep levels in… so that you can be effective in hospitals. Go home and see family and friends, do things that you enjoy, whether that is watch the television or for me is trying to keep fit and trying to keep active. I would like to keep on going with those things… manage a good work-life balance is to progress with my studies and maintain all my extra-curricular activities.' [Third year medical student; Participant number Y3-06; Stage one interview]

4.7.4 Approaching qualification as Foundation Year 1 doctors

Academic development

Medical students spent most of their time learning in a clinical environment. As they invested more time and effort into the clinical teams, they became competent in carrying out an increasing number of tasks that newly-

qualified FY1 doctors are expected to perform. The clinical teams reciprocated by entrusting them with additional responsibilities.

'… The more effort you put in, the more the doctors involved you… If they [doctors] see that you are enthusiastic then there is positive feedback and they [doctors] will allow you to do more. They [doctors] see you are more competent and then next time instead of you [student] saying 'can I see a patient?', they [doctors] would be like 'you go and see a patient.' [Fourth year medical student; Participant number Y3-02; Stage two interview]

Medical students practiced taking patient histories independently and rationalised the clinical information provided in order to arrive at a clinical diagnosis.

'… deduce from what the patient tells you and then narrow your diagnosis down.' [Fourth year medical student; Participant number Y3-02; Stage two interview]

They were actively encouraged to practice these decision-making skills in a safe and risk-free environment.

'… there is no sort of consequences, no detrimental effect if you get the diagnosis wrong… it almost therefore encourages you to try and diagnose but at the same token in a relatively care free environment.' [Fourth year medical student; Participant number Y4-02; Stage one interview]

Any discrepancies between their patient management plans with their clinical team's plans provided an opportunity for further learning.

'… I go and see patients by myself, to make the mistakes [such as making a wrong diagnosis] and learn from my mistakes.' [Fourth year medical student; Participant number Y3-02; Stage two interview]

Preparing for professional practice as doctors

Medical students described one of their key tasks in the fourth year of their degree programme was to prepare for professional practice as doctors.

'… final year is more of a preparation to go live on a ward and take on responsibility.' [Fourth year medical student; Participant number Y3-02; Stage two interview]

As they progressed through the fourth year of their degree programme, they had to build the competence in applying their knowledge and skills into actual practice and develop the confidence in their own decision making. Some medical students described they felt competent in undertaking a number of clinical activities such as basic procedural skills and basic prescribing.

'… [At the end of fourth year] it suddenly been a case of you are now expected to do [doctor] stuff, you are expected to know things… As Foundation Year 1 doctors, not only you are expected to know and do this

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stuff, but to a degree that you trust yourself to make medical decisions... and feel ok that I can come up with a sensible and safe management plan…. There are decisions that I can make now, I will be comfortable with... [for example] Basic prescribing for very basic conditions, in otherwise healthy individuals… [such as] treating asthma, treating diabetes and treating high blood pressure.' [Fourth year medical student; Participant Y4-02; Stage one interview]

They have also received practical guidance from their clinical supervisors on how to prioritise their future clinical workload as FY1 doctors.

'… We had a series of lectures from our clinical supervisors talking about prioritising what is urgent versus what is important. I can actually use that in my everyday life like what is urgent 'doing dishes is not urgent but submitting this on this time is very urgent', whereas 'doing the dishes is important but tidying my room is not as important.' [Fourth year medical student; Participant number Y3-02; Stage two interview]

Medical students mentioned about their preparation for the Situational Judgment Test, a national assessment that would form a part of their selection process into FY1 training programmes, and their FY1 job application.

4.8 Being a Foundation Year 1 doctor: The experience of Y4-01

Y4-01 was a FY1 doctor at the time of his stage two interview. Although the scope of this study did not intend to investigate the experience of newly-qualified FY1 doctors, for the purpose of completeness in data reporting, I have included his experience as a FY1 doctor in this thesis.

Y4-01's stage two interview took place two months after he started to work as a FY1 doctor. He described the key difference between a fourth year medical student and a FY1 doctor was the patient care responsibilities.

'…as a student it does not matter if I could actually do it [clinical skills] or not.'

Senior members of the clinical team supervised his work during routine working hours and assigned him with patient care tasks. This contrasted to his out-of-hours work experience where he was much more autonomous in his patient care activities as there was less supervision.

'…There is a big difference between ward rounds and out of hours cover. I make diagnosis and management on my own in out of hours. Whereas during the day unless I really push for it, that never happens.'

He perceived that opportunities for undertaking workplace-based assessments was limited.

'… at ward round I am just writing on the notes and not examining and doing myself, which is difficult to get my case-based discussion workplace assessment done. It is quite hard.'

He found it challenging to determine his exact role as a FY1 doctor within his clinical team, as different team members of the team had different expectations of him.

'… I found it very hard to work out what my role is as compared to senior house officers. I have two senior house officers, one quite overbearing senior house officer, one will not let me write on the notes but other does. I found it hard to make sense of what my role is that I am being part of a team rather than checking bloods.'

Another challenge he encountered as a FY1 doctor was to develop the ability to retain and recall a large volume of clinically relevant information about his patients.

'… I found it difficult to retain a large amount of information about patients in my head. My senior house officers seem to be able to recall specific blood test results for specific patients. They are aware of what is significant points on the results, and then memorising two results, whereas I am looking at the entire length not sure which is most significant and I cannot remember all of it so it looks like I do not have adequate power of recall them.'

In retrospect, he perceived that strengthening his clinical reasoning skills during his degree programme could have made him better prepared for his current role as a FY1 doctor.

'…There is no emphasis on how you are going to do clinical reasoning [in the degree programme]. So that made me feel I am not very confident in my knowledge. In that situation you do this, then choose what to do and why and how you arrive at that conclusion. I do not know that. As Foundation Year 1 doctor you are told what to do and I will read up afterwards why I do it.'

4.9 Dynamics of medical student professional identity

After graduate-entry medicine degree programme students embarked on their degree programme, they reported a number of changes to how they perceived their role and professional identity. Three themes emerged from the data that demonstrated professional identity development was a dynamic process. Each medical student developed their professional identity at their own pace depending on their activities and experience.

Theme: Previous professional identity

There was significant diversity in the education and employment background of medical students taking part in this study. The discourse of the words some medical students chose to describe themselves or their peers, such as 'being a practical chemist' [Y1-06], 'you see people who

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have been pharmacist' [Y1-05] and 'we were called clinical assistant practitioners' [Y4-01], suggested that some medical students carried forward their old professional identity into their graduate-entry medicine degree programme.

Medical students' perception and the utility of their previous professional identity during their graduate-entry medicine degree programme depended on the situation. One medical student described he initially viewed himself as an engineer at the start of his degree programme.

'… when I was initially in phase one, I would say I was more of an engineer. I guess I did work as an engineer so that was my identity.' [Third year medical student; Participant number Y2-03; Stage two interview]

Another medical student claimed his previous identity as a radiographer had condensed into a title rather than an entrenched professional identity after commencing his graduate-entry medicine degree programme. However, he could utilise his title and reactivate his professional identity to take up part-time radiography work during his degree programme should he wish to do so.

'… For me it is just a fact that I got a BSc [radiography] behind my name… I am all registered. For me I see it just as a means of earning a bit of money on the side if I can do some locuming. To me it is just a couple of

letters after my name.' [First year medical student; Participant number Y1-04; Stage one interview]

Theme: Return to learner status

This theme was relevant to all medical students as they transitioned into their degree programme. They had to take on new roles and build a new professional identity as students of a graduate-entry medicine degree programme. Their return to student status meant they reverted from being knowledgeable individuals back to being novices, as they had to learn the basic concepts of medicine. For those with previous employment experience, they were once valued and functional members of a team providing a service to others whereas they now become a non-contributing peripheral observer focusing on their own learning needs as they commenced their degree programme.

'… that was quite a big transition [moving from being a clinical assistant practitioner to a medical student]. Going from being part of a functional team achieving goals, dealing with people coming in, having a specific role that was valued and respected [as a clinical assistant practitioner], to being a passive observer and a consumer [as a medical student]. It was a change from focusing on the needs of the people coming in and my colleagues who were working to the same ends, to suddenly being told that everything I was doing [as a student] was for my own benefit and if I wanted to succeed, I had to do x, y and z to meet the learning objectives set out for us.' [Fourth year medical student; Participant number Y4-01; Stage one interview]

Theme: Identity consolidation

The vast majority of the learning in the first year phase one curriculum was related to basic sciences. They perceived their main social role in the first year was to acquire basic scientific knowledge that will later help them understand clinically-orientated information. Some described feelings of being an ordinary university student rather than being a medical student.

'… we are still learning how to be a medical student.' [First year medical student; Participant number 06; Stage one interview]

'… I felt like I was a university student, just one with a very heavy lecture schedule.' [Third year medical student; Participant number Y3-02; Stage two interview]

Another medical student described her wider responsibility as a first year medical student was to support her peers in the social learning process and to refrain from acting outside of her competency and training.

'… [my role as a first year medical student] I would say to maximise my knowledge as best as I can. It is not my role at all to give my opinion or diagnose anything. To make sure I can learn as much as I can so that when it comes to that point [to start making diagnosis and management] I am as proficient as I can be. Also because of the small group work we do, to help people's learning as well and to make sure I share my knowledge.' [First year medical student; Participant number Y1-05; Stage one interview]

In the second year, medical students reported their key role early on in phase two was to focus on gaining the hands-on clinical experience needed to become doctors.

'… I feel phase two is a lot more on the job learning and more job training and getting ready to be a doctor as opposed to proving your academic ability.' [Third year medical student; Participant number Y2-03; Stage two interview]

Y3-02 described that in the early stages of phase two her role was to observe and learn from the clinical teams rather than being directly involved in patient management.

'… we are medical students, we are there to learn, we are not there to kind of dictate people what to do, we are not there to treat patients, we just there to learn really... I see myself as a student in training to become a doctor.' [Third year medical student; Participant number Y3-02; Stage one interview]

As time passed, the clinical teams increasingly involved phase two medical students in various patient care activities and medical students gradually build their clinical experience.

'… the doctors see us as very much part of the firm, the part of the team, they want us to get in there, talk to the nurses, talk to the patients, cannulate,

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you know. They want us to do everything… I see myself as a person who grab as much opportunities as I can…' [Third year medical student; Participant number Y3-02; Stage one interview]

Throughout the fourth year of their degree programme, medical students undertook an increasing number of patient care tasks and responsibilities as delegated by their attached clinical teams under supervision. They were more autonomous in directing their own learning activities than ever before. Through approximating the duties and behaviour of doctors, such as devising their own patient management plans, they moved away from the peripheral observer learner role and becoming a contributing and functional member of a clinical team.

'… I am actually being part of a team more now than when I first started [early phase two]. I know the hospital and I know how the system works. Blood forms, for example, I know where the portal system are now… They [doctors] are giving us more responsibility. I am more willing to say to them [doctors] 'can I go and see this patient by myself, do as much as I can and then talk to you about it', rather than 'can I come with you to see a patient'. I feel like I am helping with the diagnosis, the investigations, the history taking and lighten their [doctor's] workload as well. That is more like working as a team.' [Fourth year medical student; Participant number Y3-02; Stage two interview]

Medical students described the experience of being directly involved in the provision of patient care activities and undertaking the tasks expected of FY1 doctors has gradually solidified their professional identity as doctors.

'…I have seen myself as a junior doctor when I was doing my nights [night shift] last week. We were in the Acute Medical Unit. There were fifty patients and one registrar. Basically he told us to do as much as we want to do. So we ended up prescribing – obviously he [the supervising registrar] signed it. We ended up doing everything a junior doctor would do like cannulation, prescribing, history taking, assessing and talking to relatives. That is the only time I felt like actually I can do this [being a doctor]. Whereas if I am sitting in a clinic at the back of a room and not talking to a patient then I do not feel like I am a doctor, I do not feel I am involved.'
[Fourth year medical student; Participant number Y3-02; Stage two interview]

The impact of socialisation on professional identity development
Medical students' development of a professional identity was influenced by their socialisation experience with their peers, health professionals, friends and family. Medical students spent significant amount of time socialising with their peers during and outside medical school and clinical placement settings. They discussed about medically orientated issues. The relative isolation of the University of Warwick Medical School campus from the main University of Warwick campus further contributed the medical students' sense of belonging to the same community. Furthermore, they

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began to receive health advice requests from them as they commenced their degree programme. Please refer to Chapter 4.10 for detailed description of the data.

As medical students entered the second year of their degree programme, they came to the realisation that they were no longer the newest members of the community and they were able to reflect upon their personal and professional growth over the past academic year.

'… the change from first to second year is quite a dramatic one. You suddenly see the newbies [new first year medical students] coming in who do not know anything yet and makes you feel you I have actually learnt a lot in a year. It does feel like a big step up to second year.' [Second year medical student; Participant number Y1-05; Stage two interview]

One medical student perceived there was a significant difference in their professional socialisation experience with NHS staff as phase two medical students as compared to their phase one experience. She provided an example where the presence of large groups of phase one medical students in a clinical environment was not always welcomed by NHS staff. As they attended phase two clinical placements as individuals or in pairs, their presence in the clinical environment did not garner these negative feelings. Instead, phase two medical students had been mistaken by NHS staff as doctors. She would correct the mistaken professional identity initially but later desisted in making such corrections if the situation was trivial.

'… I remember in phase one we had one day in hospital and we went around in a swamp. A massive group of people and one of the nurses was like 'oh just go away medical student'. Now is like you go in there and you have a badge. No one looks at your badge and they assume you are a doctor. I find that in a way, at the very beginning, I was like 'No! No! I am a medical student'. And now I feel like if it is not going to do any harm then I just will not correct them and carry on doing what I am doing.' [Third year medical student; Participant number Y3-02; Stage one interview]

Medical artefacts

Medical students described when they put on their stethoscopes and hospital identity badges to attend weekly clinical sessions at the start of their degree programme, they began to get a taste of what it would be like to become a member of the community of doctors. Some medical students reported feeling out of place when they put on stethoscopes, as they did not perceive themselves as a medical student yet. Sometimes, wearing them resulted in the medical students being misrecognised by NHS staff as qualified doctors. One medical student described his mixed feelings about wearing a stethoscope the first time.

'… It was really scary walking around the ward with a stethoscope around your neck as you kind of feel out of place… [I felt] empowered, privileged and really happy. At the same time scary. I know one of my friends walked into Accident and Emergency, put one [stethoscope] around his neck and one of the nurses grabbed him and said are you free because he seemed like

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one of the doctors. You have to be aware of it that people are going to look at your differently… I feel like a doctor in training with stethoscope around your neck and a student when it is not around your neck… Same as when you get your hospital card, it says National Health Service on it and you feel more being part of the team.' [Second year medical student; Participant number Y1-05; Stage two interview]

4.10 Managing health advice requests from family and friends

My results on how graduate-entry medicine degree programme students managed health advice requests from family and friends have recently been published in a peer-reviewed journal (Appendix 17; Tso and Yousuf, 2016).

I have included the published results in this thesis, expanded the description of the results and added supporting quotations where applicable. Any additional data or quotations not previously published are clearly signposted with the phrase *[Not reported in Tso and Yousuf (2016)].*

The social phenomenon of receiving health advice requests from family and friends appeared to be associated with an individual's medical student status rather than the length of time they had been a medical student *[Not reported in Tso and Yousuf (2016)].* In my paper, I reported that as soon as medical students commenced their degree programme, they began to receive health advice requests from their family and friends (Tso and Yousuf, 2016), and they continued to receive these requests throughout their degree programme.

'… Started a week in. I have had people text me [about their health issue]. I had one person ring me two or three times and no matter how much you said 'I have no idea and I have only been here for twelve weeks'. They always assumed that becuase you are a medical student you are a doctor and you know everything already.' [First year medical student; Participant number Y1-06; Stage one interview] [Not reported in Tso and Yousuf (2016)]

Two broad themes emerged from the data. The theme situational judgment described medical students' appraisal of these requests that may influence their preparedness to give advice. The theme response described the four categories of responses medical students could provide to the individual requesting health advice.

Theme: Situational judgment

Medical students reported their initial impression of being asked for health advice could be a positive experience or a negative experience. In my paper (Tso and Yousuf, 2016), I described that medical students perceived it was a humbling but empowering experience to receive health advice requests despite their student status and lacking experience and training. Their family and friends considered the medical students being in a position of trust and had potential access to medical knowledge required to address their health concerns. However, some medical students felt burdened by these requests as they saw themselves as novice and they were not qualified to give health advice.

'… A little bit scared. Mostly ready to embrace it, empowered and wanting to live up to it.' *[First year medical student; Participant number Y1-05; Stage one interview] [Not reported in Tso and Yousuf (2016)]*

'… It quite humbling that people would tell you things that they probably would not tell anyone else. Or they certainly would not have the courage to have a conversation about it. It is quite humbling. But it is quite concerning that people would just tell you that and expect answers. It is nice that people trust you but it is worrying how much they trust you.' *[First year medical student; Participant number Y1-06; Stage one interview] [Not reported in Tso and Yousuf (2016)]*

The expectations from their family and friends could be challenging to manage (Tso and Yousuf, 2016).

'… You do not want to say something if there is a risk that it could be wrong.' *[Second year medical student; Participant number Y2-02; Stage one interview]*

In my paper, Tso and Yousuf (2016), I also reported some medical students expressed frustration at being used by other people as a short cut to access health advice instead of seeking help through formal channels. They felt there should be clear boundaries between their professional and private lives.

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'…*Some saw me as a quick access to the National Health Service.' [Fourth year medical student; Participant number Y4-02; Stage one interview]*

Medical students' preparedness to give advice depended on the nature of the requests and their prior experience. In my paper, I reported that medical students were asked about a wide range of human and veterinary health issues (Tso and Yousuf, 2016). For example, Y3-04 stated she was asked by her friend to assess the forefoot of a horse, which she was not in a position to do so. Medical students could be asked about a wide range of health issues such as:

- Acute health problems

  Examples: Y4-01 claimed he was asked to assess a housemate who experienced a syncope episode; Y1-01 and Y1-04 had dealt with sports injuries; and Y3-07 was involved in the diagnosis of cellulitis.

- Chronic diseases

  Example: a family member asked Y3-07 about the management of ulcerative colitis.

- Generic health issues

  Example: Y2-02 was asked about nutrition.

In my paper, Tso and Yousuf (2016), I reported that medical students were prepared to give health advice on minor health issues they felt competent

and confident to deal with, for example, first aid scenarios that they deemed a reasonable layperson or a first aider would be able to help with.

'… I would talk about [first aid] as someone who is a first aider would talk about [it].' [Third year medical student; Participant number Y3-08; Stage one interview]

In my paper, Tso and Yousuf (2016), I also reported that medical students had increased preparedness to advise on health issues they had received training. Y1-04 used to be a qualified reporting radiographer. Y1-04 described that he would be prepared to review the x-rays of family and friends if he was requested to do so as this was a task he was previously trained to deal with.

The nature of health advice medical students were prepared to give became increasingly complex as they progressed through their degree programme. For example, Y3-07 described she was sent a photograph and she was concerned that her friend's presenting signs and symptoms could represent cellulitis and directed the friend to seek formal treatment from a qualified doctor. This was a health issue that she has learnt to manage during her medical school training.

'… A friend showed me a picture and said her leg was swollen. I said go and see your General Practitioner, it is probably cellulitis and you need

antibiotics.' [Third year medical student; Participant number Y3-07; Stage

one interview]

Some medical students were concerned about the consequences of giving inappropriate health advice and they were not always prepared to accept responsibility for adverse outcomes.

'…I do not want to be given that sort of respnsibility…I very often will ask people not to trust me, to instead to look on the National Health Service direct, or to seek out proper medical assistance. So I try and signpost people to where they should really seek the advice from, instead of myself.' [Fourth year medical student; Participant number Y4-02; Stage one interview] [Not reported in Tso and Yousuf (2016)]

In my paper, Tso and Yousuf (2016), I reported that medical students considered a range of issues before deciding on an appropriate response to health advice requests from their family and friends.

The key issues they considered were:

- Was the setting appropriate for me to give advice?

- Am I competent to give the advice?

- What were the potential adverse consequences if my advice was wrong?

- Was it ethical for me to give the advice?

In my paper, Tso and Yousuf (2016), I provided an example (see quotation below) that illustrated one medical student's decision-making process when he received health advice requests from family and friends.

'… I am in more of a position with these people to infer some sort of personal preference onto them and to sway what they may think about a disease or treatment. I do not want to be responsible for that.' [Fourth year medical student; Participant number Y4-02; Stage one interview]

Theme: Responses

Medical students would either provide assistance or avoid giving assistance to the person seeking health advice. In my paper, Tso and Yousuf (2016), I further reported that there were four categories of responses: problem-orientated, appraisal-orientated emotion-focused and avoidance.

Some medical students perceived they were competent to manage health advice requests and they would advise on diagnosis or management of a health issue (problem-orientated response).

'… I was like 'Go and see your General Practitioner, it is probably cellulitis and you need antibiotics'. [Third year medical student; Participant number Y3-07; Stage one interview] [Not reported in Tso and Yousuf (2016)]

In my paper, Tso and Yousuf (2016), I reported that medical students were generally reluctant to make a diagnosis or give advice on treatment plans on
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their family and friend's health issues. They always advised the person requesting health advice to seek formal help from competent healthcare professionals. Some also acted as a health advocate to direct the persons seeking health advice to the appropriate healthcare professional or to help them understand health information (appraisal-orientated response).

'… I am quite happy explaining to people what things are.' *[Fourth year medical student; Participant number Y4-02; Stage one interview]*

Some provided social and emotional support (emotion-focused response).

'… saying 'I am sorry to hear that, and make sure I give them that time, and take them away somewhere so it is just me and them… and follow up as well.' *[First year medical student; Participant number Y1-01; Stage one interview] [Not reported in Tso and Yousuf (2016)]*

Some medical students adopted a principle-based approach to health advice requests. They declined to offer any health advice (avoidance) as a rule of thumb due to their student status.

'… [I said] I cannot and I am not qualified.' *[First year medical student; Participant number Y1-06; Stage one interview] [Not reported in Tso and Yousuf (2016)]*

The relationship between medical students' experience of managing health advice requests and their transition experience

Encountering health advice requests appeared to be a social phenomenon associated with the transition into a graduate-entry medicine degree programme since medical students from non-health professional background did not encounter these requests previously. Phase two medical students appeared to be more prepared to give health advice as compared to phase one medical students.

4.11 Medical students with disabilities

My paper on disabled graduate-entry medicine degree programme students' experience was recently published in a peer-reviewed journal (Appendix 18; Tso, 2017).

Instead of reproducing the published results in this thesis, I have further expanded the data analysis and added supporting quotations where applicable. Any additional data or quotations not previously published are clearly signposted with the phrase *[Not reported in Tso (2017)]*.

Eight medical students volunteered that they had a disability and provided accounts of their experience in relation to the disclosure of their disability status and their concerns about their medical school journey. To minimise the risks of individual medical students from being identified by their accounts of their experience, their year group, participant number and potentially sensitive information were omitted.

Of the eight medical students that volunteered their disability status, one had a physical disability, two had a sensory disability, two had a mixture of sensory and learning disability, one had a learning disability and two did not specify the nature of their disability. Analysis of transcripts from the interviews revealed four themes.

Theme: Diagnosing disability in medical school

Two medical students reported being diagnosed with dyslexia during medical school. One medical student reported after failing a first year examination, this led to the investigation and eventual diagnosis of his dyslexia (Tso, 2017). He perceived the academic demands of the graduate-entry medicine degree programme was much more vigorous than his previous health-related degree programme, thus, the impact of his learning disability surfaced.

'… My results were not as good as they should have been … Someone said have you thought about it [screening for a learning disability]? They found I was lacking in short-term memory. I think back then the demands of the previous degree was different. There was nothing, the amount you have to learn, the amount of time you have to put in, as compared to medicine.

He further reported that uncovering his disability had been a positive experience as it enabled him to come to terms with his examination failure and gain access to specialist learning resources.

'…*It is nice to know that if I am lacking in something [due to dyslexia] then there's some means of support to try and help you get better to a normal level… it is a nice thing that the university has put in ways to try and fix the problem.*' *[Not reported in Tso (2017)]*

Theme: Disclosing disability during medical school

In my paper, Tso (2017), I reported that all disabled study participants had disclosed their disability to the medical school at some point during their medical school journey though not always at the first available opportunity. Concerns about confidentiality, the potential impact of disclosure on their medical school application outcome and not perceiving their condition had an impact on their ability to function were contributory factors to a reluctance or a delay in disclosing their disability to the medical school (Tso, 2017). On the contrary, some disabled medical students perceived that disclosing their disability to the medical school was a professionalism issue and proactively made the disclosure during the medical school application process. Disabled medical students with prior disability disclosure experience during their previous degree programme or employment had an increased preparedness to disclose their disability to the medical school during the medical school application process as this could facilitate early access to reasonable adjustments and support services (Tso, 2017).

'…*If we disclose those [disability] issues they would be discussed and form part of your selection and therefore it is not confidential … it adds a lot of anxieties. Students do not want to disclose because of that reason.*'

'…I tell them directly. It is out of courtesy and professionalism … You have to be open, forthcoming and honest about your problems [disabilities].'

'… If everyone knows [my disability] people tend to get less annoyed with you because they understand … [I disclosed my disability to the medical school] trying to prevent things before problems arise, which is learning from past experiences [previous degree programme and employment].'

In my paper, Tso (2017) I reported that some disabled medical students wanted to find other disabled students to share their medical school disability experience, and during the process of identifying other disabled students, they had disclosed their disability to medical school staff and students. Some disabled medical students described they were prepared to disclose their disability if this was needed to rationalise the difficulties they had encountered during medical school training. One disabled medical student reported having made a complaint to the British Medical Association (BMA; professional association and trade union for United Kingdom medical students and doctors) about the difficulties in accessing reasonable adjustments at the medical school and the situation improved following the BMA's intervention.

'… I had problems getting into the medical school [building], I could not access the building for some time and parking… I ended up making a complaint which went through the BMA and a lot has changed since then for the positive.' [Not reported in Tso (2017)]

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Theme: Disability related challenges in medical school

In my paper, Tso (2017), I reported medical students discussed about challenging disability related issues they had been concerned about or had encountered during their medical school journey. Some expressed the concern that their future fitness to practice and employability maybe called into question due to their disability. One disabled medical student with hearing impairment stated an examination officer was not aware of his disability despite having previously disclosed his disability to the medical school. This had an adverse impact on his examination performance. One disabled medical student reported receiving belittling comments from her peers directed at her disability. Some also encountered difficulties in accessing adjustments to their learning environment such as the inavailability of disability aids and the time it could take to organise the adjustments.

'… They [medical school] would say that they had students like this before who end up in front of fitness to practise and next thing you know they cannot qualify [as doctors]. You start thinking is that going to happen to me?'

'… [Feedback on a cardilogy clinical examination station] they said that I had not used the bell [of a stethoscope] to check for mitral stenosis, but I did! It is just when you press a button [on an electronic stethoscope it changes to the bell function] … I thought I told [name of staff] and disability team and that was enough. I did not know I had to tell an extra

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person [examination officer] … I do not know everyone who I am supposed to tell unless people tell me?'

'… We were trying to research whether there were clear facial masks [to facilitate students with deafness to lip read other individuals in a surgical theatre setting] … but the company stopped producing them.'

Theme: Perceived benefits of being a disabled medical student

In my paper, Tso (2017), I reported medical students with disabilities generally perceived their disability had helped them empathise and communicate with patients with disabilities and chronic illness due to their own disability experience.

'… you can understand a lot more what patients are going through, you know what they are saying when they say 'it is a real struggle to get my shopping' because you know it is. It is so much easier to think of practical solutions and come up with ideas.'

Transitions and disabled medical students' experience

The transition into a graduate-entry medicine degree programme could be associated with the discovery of a hidden disability, which was described earlier in chapter 4.11. There were differences between disabled medical students' phase one and phase two disability experience. The disability related issues dominating their phase one experience included the disclosure and assessment of their disability (e.g. occupational health), identifying

support structures (e.g. student support service and other disabled students) and organising reasonable adjustments and support (e.g. improved access to learning venues for a student with physical disability, buying electronic stethoscope by a student with hearing impairment and applying for disability student allowance for those in need of financial help and obtaining extra time for examination).

In phase two, some disabled medical students encountered additional challenges as they took part in patient care activities. One medical student with hearing impairment requested nurses to help him make telephone calls and he had to explore using transparent facial masks so that he could lip read others in a surgical theatre setting. One medical student with a physical disability was advised that her wheelchair could not be brought into surgical theatres due to the need to maintain theatre hygiene standards. This prompted her to consider the potential solution of sourcing an additional wheelchair to be used in surgical theatres only.

'… It is difficult for me to use a normal phone so when I needed to call someone, I would ask a nurse to do it.'

'… They [medical school staff] said you cannot go to theatres as you cannot get in [as the student had to use a wheelchair and the wheelchair tyres are not clean]. I said what if I got a clean one [for use in theatres], it was only when you provided the solutions, they [medical school staff] said maybe that would work.'

4.12 The challenges medical students encountered during their degree programme

Based on the study findings reported in Chapter 4.3 to 4.11, the emerging themes on the challenging issues medical students encountered during their degree programme could be divided into three broad themes according to the nature of the challenges (Table 9). These categories are challenges related to the curriculum, challenges related to the social role of medical students and generic life challenges.

Theme: Challenges experienced by medical students that are related to the curriculum	
Sub-theme: Academic work related pressures	Examples: Medical students described it was challenging to learn large volumes of concepts. Some medical students failed their examination. They experienced uncertainties about how to monitor their learning progress.
Sub-theme: Adaptation to changing learning environment	Examples: Medical students said it was challenging to adjust to self-directed learning as they moved from phase one to phase two. One medical student described that each change in clinical placement in phase two could be stressful as she had to adapt to new learning environment and new clinical teams.
Sub-theme: Impact of institutional policy	Example: The University of Warwick Medical School introduced a new refreshed curriculum. One medical student had to repeat her first academic year under the refreshed curriculum instead of the original curriculum.
Theme: Challenges experienced by medical students that are related to their social role	
Sub-theme: Challenges of professional socialisation	Examples: Medical students reported incidents where they had challenging professional interactions with faculty members and NHS staff. Y3-02 described the presence of large group of phase one medical students was not welcomed by nurses and her reluctance to engage with the support services to address her academic underperformance. Y3-4, Y3-08 and Y4-02 described they had encountered negative role models.
Sub-theme: Professional identity development	Development of a professional identity was not an automatic and seamless process but one that took time to build. The challenges of professional identity development were highlighted by medical students' encounters of new or uncomfortable experience, which prompted them to think about their role and identity. For example, medical students putting on their stethoscopes and NHS identity badges for the first time, being misrecognised by NHS staff as doctors and receiving health advice requests from family and friends. Dealing with death and dying, an important element of

	their future role as doctors, was also described as challenging experiences.
Theme: Generic life challenges	
Sub-theme: Financial challenges	Examples: Medical students described general concerns about their finance and student debts. Some decided to take up part-time employment to help with their financial situation.
Sub-theme: Personal life events	Examples: One medical student experienced a burglary. One medical student experienced a period of illness leading to examination failure. Moving accommodation during their degree programme could also be stressful.
Sub-theme: Maintain work-life balance	Examples: Medical students described the academic demands of their degree programme could be stressful and impacted upon opportunities to maintain relationships. There was a need to reconsider their work-life balance as their level of commitments evolved over time.
Sub-theme: Developing coping strategies	Examples: Medical students had to find ways to cope with the challenging issues arising in their degree programme. They had to actively cope with the cognitive adjustment from being an experienced and knowledgeable individual to their new role as a learner. They had to identify new learning strategies to cope with the self-directed learning nature of the phase two curriculum. One medical student reported that she selected maladaptive coping strategies when dealing with her period of illness.
Sub-theme: Living with a disability	Examples: Some medical students with disabilities described the stigma of living with a disability and one medical student had received abusive comments directed at her disability.

Table 9. The challenging issues medical students could encounter during their graduate-entry medicine degree programme

4.13 Anticipated challenges vs challenges experienced

During stage one interviews, medical students provided accounts of the challenging issues they anticipated to occur over the subsequent academic year. Example of these anticipated issues or events included:

- Planned personal life events such as preparing for a marathon and moving accommodation.

- Degree programme-related issues such as preparing for future examinations, planning for medical electives, anticipating changes to the learning environment, learning contents and their learning style as they moved into phase two.

During stage two interviews, medical students reported the challenging issues they had anticipated eventually occurred. They had a broad awareness of what was likely to occur in their degree programme. However, some challenging events came as a surprise to the medical students, for example, new diagnosis of a learning disability.

4.14 Defining the term 'transition'

Medical students described three key elements to the term 'transition': a change in circumstances, the impact of the changes, and how individuals managed the change. A transition could be related to a physical or a psychological change.

'… Transition to me is a process of change from one state to another. Transition is a change but it does not necessary have to be a physical change. It can also be a mental and emotional change.' [Third year medical student; Participant number Y3-04; Stage one interview]

'… Transition means the change from one situation to another and how you cope with it. It is about how you cope with the changes that medical school brings you.' [Third year medical student; Participant number Y3-03; Stage one interview]

Some medical students described that self-awareness was a requisite for an individual to recognise that a transition has taken place.

'… Transition is a passing from one level of understanding and learning and being to another and realising that you are moving into that.' [Fourth year medical medical student; Participant number Y4-02; Stage one interview]

A transition could be brought on by predictable or anticipated events.

'… A normal transition is if I went to kindergarten then to primary school and then to secondary school. It is everything that is set in concrete in your life… Transition is something more relaxed and guaranteed and you move through it.' [First year medical student; Participant number Y1-03; Stage one interview]

The impact of a transition did not only affect the individual undergoing transition. It could also affect other people as one medical student described how it took a family emergency to help her appreciate the impact of her degree programme had on her relationship with her family.

'… *Transition shifted my entire life from what it was, from what I did in undergraduate biology degree to medical school. I am leaving my friends behind as well and my family… Coming here [graduate-entry medicine degree programme] is the whole uprooting of what was normal, and what was comfortable… There was a family emergency a few months back and that made me realise I am sacrificing a lot of time with them. As much as I need support from them, they need support from me as well.'* [Third year medical student; Participant number Y3-02; Stage one interview]

Transitions could bring risks and uncertainties. One medical student described his desire to gain control over his transition experience.

'… *Transition is a change. When I think of transition I think of a change that I am managing… I had risks coming to medical school, financial risks, risks to do with my future career prospects, and knowledge gap risks… I need to make sure I have enough of a financial backing to in case something went wrong. I have to revise and learn a lot in the summer before medical school… Transition means uncertainty, and you are never going to be too happy with uncertainty.'* [Third year medical student; Participant number Y3-03; Stage one interview]

Based on medical students' descriptions and discourse of the term 'transition', I have defined transition as any change in circumstances that could impact upon how an individual perceived themselves or their surroundings and the management of the change in circumstances.

4.15 The transition periods within a graduate-entry medicine degree programme

Three major and a minor transition period could be identified within the four year graduate-entry medicine degree programme using the definition of transition described in Chapter 4.14.

The first major transition period was at the start of a graduate-entry medicine degree programme. Next, it was the transition from phase one to phase two of the curriculum. The final major transition period was towards the end of phase two as medical students approached qualification as FY1 doctors.

Minor transition periods could also be identified within phase two as medical students rotated to new clinical placements. Throughout these transition periods, medical students could encounter any of the challenging issues described in Table 9.

Major transition period: Beginning of a graduate-entry medicine degree programme

In Chapter 4.6, the changes to medical students' circumstances as they embarked on a graduate-entry medicine degree programme had already been described. This transition period was characterised by the following three key themes of personal and professional growth and development:

- *Learning*

  Medical students had to learn basic medical sciences knowledge and gain early patient contact experience.

- *Professional identity development*

  Medical students had to build a new professional identity while reconciling with their previous professional identity.

- *Developing coping strategies*

  Medical students had to identify and utilise their coping strategies to manage the challenging issues they encountered at the start of their degree programme.

Major transition period: The transition from phase one to phase two of the curriculum

In Chapter 4.7.2, the changes to medical students' circumstances as they moved from phase one to phase two of the curriculum had already been described. This transition period was characterised by the following three key themes areas of personal and professional growth and development:

- *Learning*

  Medical students continued to expand their repertoire of knowledge and clinical skills. They had to apply their phase one knowledge and experience into their learning experience in phase two. There was a shift towards an andragogical learning style.

- *Professional identity development*

  They continued to develop their professional identity through professional socialisation with NHS staff.

- *Developing coping strategies*

  Medical students had to identify and utilise their coping strategies to manage the challenging issues arising in phase two of the curriculum and to continue balancing their work-life commitments.

Major transition period: Approaching qualification as Foundation Year 1

doctors

In Chapters 4.7.3, 4.7.4 and 4.8, the changes to medical students'

circumstances as they approached qualification as FY1 doctors had already

been described. This transition period was characterised by the following

three key themes of personal and professional growth and development:

- *Learning*

  Medical students continued to expand their repertoire of knowledge

  and clinical skills in preparation for their professional role as

  doctors. There was an increasing emphasis on developing their skills

  in clinical reasoning, diagnosis and patient management planning.

- *Professional identity development*

  Through working closely with clinical teams and undertaking

  clinical tasks expected of FY1 doctors, they gradually acquired the

  values, knowledge, skills and behaviour appropriate to become a

  FY1 doctor and their professional identity as a member of the doctor

  and healthcare community gradually solidified.

- *Developing coping strategies*

  Medical students continued to balance their work-life commitments

  as they approached qualification.

Minor transition periods: Rotating through new clinical placements

Transitions could also be identified as medical students rotated to new clinical placements. In Chapter 4.7.3, Y3-02 described that when she rotated to new clinical placements in phase two she perceived there was a significant change to the learning environment and socialisation experience.

4.16 Coping strategies

In this study, medical students described they used a wide range of coping strategies to manage the challenging issues arising from their degree programme. Using the categorisation system by Weiten et al (2008), these coping strategies could be categorised under adaptive and maladaptive coping strategies. Examples of coping strategies medical students used in managing the challenges presented by their degree programme are summarised in Table 10.

	Adaptive Coping Strategies			Maladaptive
	Appraisal-focused	Problem-focused	Emotion-focused	Coping Strategies
Academic / work-related issues	Attend teaching on how to prioritise clinical workload, acceptance	Active coping, seek guidance about curriculum objectives	Leisure, sports	Allowing oneself to burnout
Developing a professional identity	Develop own understanding of acceptable professional behaviours through observation of role models	Active engagement in patient care activities to help them develop their professional identity		
Managing health advice requests	Help the individual seeking advice to understand health information and direct them to other source of help	To give advice on the diagnosis and management of the health issue	Showing empathy and offering emotional support	
Disability issues	Working with the institution to assess their disability issues	Ask for reasonable adjustments, find out available support services, active coping		Not seeking help
Generic life challenges	Acceptance, devise strategies to reduce expenditures, positive framing	Active coping, take up part time employment to help with finance	Emotional venting, leisure	Bring laundry back home to wash

Table 10. Examples of adaptive and maladaptive coping strategies used by medical students when dealing with challenging issues arising from their degree programme.

4.17 Chapter four summary

In this Chapter, I described the characteristics of the study participants and presented the findings of the study. I described the journey of medical students from the stage of their application to study an undergraduate medicine academic programme all the way to qualification as a FY1 doctor.

I described medical students' development of a professional identity. I outlined the experience of medical students in managing health advice request from their family and friends. I highlighted medical students' experience in disclosing their disability status and the challenges they had encountered in their degree programme. I summarised the challenging issues medical students could encounter during their degree programme and reported there were three major and one minor transition period within the University of Warwick Medical School graduate-entry medicine degree programme. This Chapter ended with a description of the challenging theme of issues that characterised each major transition period.

CHAPTER FIVE: DISCUSSION

5.0 Introduction

This Chapter discusses the findings from this study in relation to the literature and how the study findings addressed the research question and study objectives. To the best of my knowledge, existing academic literature on medical student experience has always investigated targeted areas of medical students' experience or scope of practice. Very few studies had involved medical students from across all year groups of an undergraduate medicine academic programme. My study explored the experience of 21 University of Warwick Medical School graduate-entry medicine degree programme students across their whole medical school journey. Through their first-hand accounts of their experience at the University of Warwick Medical School, I was able to identify a wide range of challenging issues they had encountered during their degree programme. I was able to relate the challenging issues they had encountered to the different transition periods within their degree programme.

5.1 Characteristics of medical students taking part in this study

The entry requirement into United Kingdom graduate-entry medicine degree programmes varied between medical schools. Some medical schools accepted graduates from any degree subject while others only accepted graduates with a science or relevant health-related degree subject. Appendix 19 provides examples of medical schools' academic admissions criteria.

The University of Warwick Medical School's graduate-entry medicine degree programme considered applicants that were university graduates from a wide range of degree programmes at the time this study was conducted. Thus, medical students participated in this study were found to have originated from a diverse range of demographic, education and employment background, which included three medical students without a science or health-related first degree.

On reflection, the study's sampling strategy had a significant impact on the characteristics of the volunteers. Female medical students were under-represented in my study sample as compared to the national statistics (43% vs 57%) reported by Garrud (2011). My direct appeal for potential study participants from hard to access groups had mixed success. The proportion of ethnic minority medical students in my study sample was higher than national statistics (20% vs 13.5%) (Garrud, 2011) but I could not recruit participants from the Afro-Caribbean ethnicity. There was an over-representation of medical students with disabilities in my study sample as compared to the statistics (38% vs 6%) reported by Miller and colleagues (Miller *et al.,* 2009). A potential explanation towards these findings could be due to my status as a disabled researcher from an ethnic minority group. These factors helped me build trust and rapport with potential study participants sharing similar characteristics with me and added to their motivation to volunteer to take part in research (Flanagan and Hancock, 2010).

I considered the reimbursement of £5 per interview attendance was adequate in compensating participants' transportation costs but unlikely to incentivise them to take part in the study. Their motivation to volunteer for this study was not related to extra academic credit (McDonald, 1972) as I have explained to all potential participants that their participation in the study had no impact on their medical school assessment or appraisal outcome. I considered it was likely that their interests in research and their desire to express their opinion about their medical school experience were motivating factors to their decision to take part in the study.

The literature estimated there were over 6.5 million carers in the United Kingdom in 2011, and three in five people became carers at some point in their lives (Carers UK, 2015). Although I could not find statistics on the number or prevalence of United Kingdom medical students with carer responsibilities, it would be reasonable to assume that they were present in the University of Warwick Medical School. Potential explanation for their lack of motivation to take part in this study could include their perceived lack of flexibility (Flanagan and Hancock, 2010) of the interview time and venues, and I did not communicate my carer status and the relevance of the study to them well enough when I publicised the study.

The sampling strategy used enabled me to recruit medical students from across all year groups. However, fourth year medical students were significantly underrepresented in stage one interviews. Potential explanation could include their perceived lack of relevance of the study to them, as they

would soon graduate from their degree programme and the challenges of taking time to attend a research site when they had other priorities (such as preparing for their finals examination and professional practice). Nevertheless, the study design enabled me to explore fourth year medical student experience during stage two interviews.

Even though my sample size of 21 study participants appeared very modest, there was still significant demographic diversity amongst the study participants.

5.2 Motivation to pursue medicine as a career

In my study, I reported that medical students encountered a range of 'pull' and 'push' factors that motivated them to pursue medicine as a career. According to the Self-Determination Theory by Ryan and Deci (2000), there are three broad categories of factors that can influence motivation which are situated along a continuum: intrinsic factors, extrinsic factors and amotivation.

In my study, medical students reported intrinsic factors such as personal interests in human health and their previous experience of the health service had pulled them towards a career in medicine. They reported extrinsic factors such as influence from family members and the lack of career opportunities in their previously chosen career path had pushed them towards a career in medicine.

One medical students in my study reported he was amotivated to apply to an undergraduate-entry medicine degree programme due to a lack of support from his secondary school teachers. Overall, I considered that my findings on medical students' motivation to pursue an undergraduate medicine academic programme were broadly in keeping with the theoretical framework of the Self-Determination Theory (Ryan and Deci, 2000).

Furthermore, the 'pull' and 'push' factors described in my study were also reported by Newton and colleagues whose study had explored the motivation of students pursuing a graduate-entry dentistry degree programme in a London dental school (Newton *et al*., 2011). The authors reported that personal factors such as interests in oral health and financial security had pulled them towards a dental career whereas the lack of job satisfaction and career development opportunities in their previous degree programme or career had pushed them towards dentistry.

In my study, no attempts were made at quantifying which were the key motivators for pursuing a career in medicine. Nevertheless, the literature has highlighted that intellectual curiosity and the desire to help other individuals are the most frequently cited motivating factors.

Pagnin and colleagues conducted a structured questionnaire-based study with 277 medical students at a medical school in Brazil (Pagnin *et al*., 2013). Respondents were asked to rate their main reason for pursuing medicine as a career. The authors reported that 27.1 per cent respondents

were motivated by intellectual curiosity, 23.5 per cent by professional autonomy, 18.1 per cent by altruism, 17.3 per cent by interest in human relationships, 6.5 per cent by the influence of someone, 4.3 per cent by economic concern and 3.2 per cent by illness or death experiences (Pagnin *et al.*, 2013).

Sulong and colleagues reported that 89.7 per cent of 185 graduate-entry medicine degree programme students in a university in the Republic of Ireland rated they were motivated to pursue medicine as a career by the desire to help people, 85.4 per cent wanted to cure and prevent disease, 70.2 per cent wanted to work with people, 47 per cent were motivated by professional independence, 29.7 per cent were motivated by intellectual satisfaction of medicine as a career, 27.5 per cent due to financial reasons and 26.5 per cent being encouraged by friends and relatives to study medicine (Sulong *et al.*, 2014).

Extrinsic factors such as family culture and a lack of social mobility could have an impact upon individuals' career choice. Popper-Giveon and Keshet (2015) reported that the choice of medicine as a career amongst ethnic-minority doctors in Israel was strongly influenced by family values that viewed a career in medicine as a means for socioeconomic mobility and integration with society. This could provide a potential explanation to Y4-01's perception of being pressurised by his family to pursue medicine as a career.

5.3 Journey into a graduate-entry medicine degree programme

There are different methods of categorising medical students' journeys into a graduate-entry medicine degree programme. Sulong and colleagues described two groups of graduate-entry medicine degree programme students (Sulong *et al*., 2014). One group consisted of individuals that did not intend to later study medicine when they selected their first degree subject. Another group was individuals who selected a first degree subject that would keep their options open to pursue medicine as a career later on (Sulong *et al*., 2014).

In my study, I described three categories of medical student journeys into a graduate-entry medicine degree programme. These categories included 'medicine as an end goal', 'career indecision' and 'career switchers'. Medical students in the 'medicine as an end goal' group had selected a first degree subject that later served as a stepping-stone to help them apply to a graduate-entry medicine degree programme. Intuitively, it could also be argued that medical students in the 'career switchers' group initially did not intend to study medicine when they selected their first degree subject. They later decided to leave their established career path to pursue medicine.

All four medical students in the 'career indecision' group had a science or health-related first degree. It is a possibility that they purposely chose a first degree subject that would keep their options opened to pursue medicine as a career later on. These medical students recalled confronting a number of

career decision-making challenges such as the lack of capacity to decide and

a lack of readiness to commit to a career in medicine.

Gati and colleagues described a theoretically driven taxonomy of career

decision making difficulties that could potentially help explain towards my

findings of medical students' career indecisions (Gati *et al*., 1996). The

taxonomy was categorised into three broad clusters: lack of readiness, lack

of information and inconsistent information (Gati et al, 1996). Lack of

readiness could be attributable to a lack of motivation, general

indecisiveness or dysfunctional beliefs. Lack of information could involve

the career decision making process, the self, the occupations and the ways

of obtaining additional information. Inconsistent information could be due

to unreliable information, internal conflicts and external conflicts (Gati *et

al*., 1996).

Newton and colleagues described three groups of medical student journeys

into a graduate-entry dentistry degree programme (Newton *et al*., 2011).

The first group were students interested in a career in dentistry but they

could not achieve the necessary secondary school qualification. Thus, they

had to pursue an alternative career path that would facilitate their

subsequent application to a graduate-entry dentistry degree programme. The

second group were students who left their established career to pursue

dentistry due to a range of 'pull' and 'push' factors. These two groups were

similar to the 'medicine as an end goal' and 'career switchers' groups of

medical students that were reported in my study.

The third group Newton and colleagues reported were medical graduates who pursued a graduate-entry dentistry degree programme in order to specialise in maxillofacial surgery (Newton *et al*., 2011), a career that required a dual qualification in medicine and dentistry. However, none of the medical students taking part in my study have held a dental degree qualification and I could not access University of Warwick Medical School statistics on the number of these medical students. The small study sample size and the use of a convenience sampling strategy could potentially explain the absence of individuals pursing maxillofacial surgery as a career in my study sample.

In undergraduate medicine, widening access is an umbrella term referring to coordinated efforts that encourage and support individuals from underrepresented or disadvantaged background to consider medicine as a career (Cleland *et al*., 2014). Initiatives such as mentoring schemes (Smith *et al*., 2013) and outreach programmes (Ratneswaran *et al*., 2015) are aimed at supporting secondary school students to apply to undergraduate-entry medicine degree programmes. One medical student in my study has utilised a widening access scheme in order to get into her first degree, which in turn served as a stepping-stone into a graduate-entry medicine degree programme.

Graduate-entry medicine degree programmes provide individuals from science and non-science backgrounds the opportunity to consider medicine as a career (James *et al*., 2008) and to improve fairness to access

undergraduate medicine degree programmes by different socioeconomic groups of the population (Medical Schools Council, 2014).

A career in medicine could be seen as a form of upward social mobility (Popper-Giveon and Keshet, 2015). In my study, nine medical students were categorised as 'career switchers'. Richardson and Watt (2007) reported that career switchers into graduate-entry teacher training programmes in Australia can come from career backgrounds of similar or lower occupational status than teaching. In my study, one medical student demonstrated that through training and determination, individuals from disadvantaged educational background stood a real chance of pursuing medicine as a career.

5.4 Challenging issues encountered by medical students

In this study, I highlighted a wide range of challenging issues graduate-entry medicine degree programme students had encountered in their degree programme. The challenging issues medical students from my study had reported, such as academic work-related pressures, adaptation to changing learning environments, professional socialisation, development of a professional identity and generic life challenges, were in keeping with the findings from my literature review.

Based on my literature review and my study findings, I noticed the emergence of three higher level themes that could describe the range of challenging issues medical students could encounter in their degree

programme. These themes included challenges related to the curriculum, related to the social role of medical students and generic life challenges. The way I constructed these three higher level themes differed from the categories described by other researchers (Vitaliano *et al*., 1984; Dyrbye *et al*., 2005). The purpose of this proposed categorisation system is to facilitate medical students, educationalists and student support service in describing the nature of the challenging issue and the likely source of support needed.

For example, the institution and faculty members could have limited involvement in some of the generic life challenges that medical students could encounter like the burglary incident reported by one medical student.

On the other hand, the institution and faculty members could potentially have a much higher level of involvement in addressing the curriculum-related challenges encountered by medical students, for example, the case of a medical student who was diagnosed with a learning disability following failing an examination.

In terms of the challenges that are related to the role of medical students, the institution could have a role in helping medical students better understand their role, support their professional identity development and provide guidance on acceptable and inappropriate professional behaviours.

In terms of academic challenges, Garrud and Yates examined the records of 53 students that struggled to progress through the University of Nottingham

graduate-entry medicine degree programme (Garrud and Yates, 2012). The authors reported the markers for struggling students could include 'missed attendance, unsatisfactory attitude or behaviour, health problems, social and family problems, failure to complete immunity status checks, and attendance at academic progress committee' (Garrud and Yates, 2012). In my study, some study participants reported encountering health problems, social and family problems, lack of motivation to attend clinical placement and attendance at academic progress committee. Two of three medical students in my study had failed an examination, of which two reported their health issue or undiagnosed learning disability had contributed to their examination failure.

Garrud and Yates described medical students struggling with their degree programme could be categorised into five groups (Garrud and Yates, 2012). Strugglers were described as students encountering multiple problems throughout the course. Pre-clinical strugglers were students encountering problems largely confined to the first 18 months of their degree programme. Clinical strugglers were students encountering problems largely confined to the later years of the degree programme. Health-related strugglers were students with problems largely related to ill health. Borderline performance referred to weak students with generally low marks throughout the degree programme (Garrud and Yates, 2012). Although my study did not aim to explore the experience of struggling students, nevertheless, I noted the student who had to repeat year one under the refreshed curriculum could be classified as a health-related struggler.

In the study by Garrud and Yates, the study findings showed a higher percentage of graduate-entry programme students with a degree in humanities, law, social science or arts falling into the struggler group as compared to students making normal academic progress (28.3%; 15/53 vs 24.7%; 76/309). On the other hand, there was a lower percentage of medical students with a degree in biological or life sciences in the struggler group as compared to the group of students making normal progress (39.6%; 21/53 vs 41.2%; 127/309) (Garrud and Yates, 2012). From my study, a medical student from non-science background perceived non-science students were less prepared for the academic contents of the phase one curriculum (but not the phase two curriculum). This led me to consider the potential for non-science students to be more at risk of being preclinical strugglers than science students and further research could be conducted to explore this observation. Nevertheless, non-science students could benefit from receiving targeted academic support to help smooth their transition into their graduate-entry medicine degree programme and I was aware of the University of Warwick Medical School providing additional academic support to these students (such as additional tuition and reference reading lists).

Tordes and colleagues conducted an interview-based study to explore medical students' perception of the factors affecting their academic performance (Tordes *et al*., 2012). Fourth and fifth year medical students at King's College London, United Kingdom, were invited to take part in the study. The participants included eight resitting students (defined as students

who had failed one or more formative assessments) and ten high achieving students (defined as students that had achieved the highest marks for the same assessments). The authors compared the experience of both groups of students and reported a lack of engagement with learning, lack of reflective practices and lack of motivation to study medicine were factors associated with academic underperformance (Tordes *et al*., 2012). Despite both group of students having had encountered health and social issues that could affect their academic performance, high achieving students were noted to be much more motivated than resitting students in engaging with the learning process in order to overcome the difficulties (Tordes *et al*., 2012). Perhaps motivational interviewing interventions, a patient-centred method of behavioural change counselling, could potentially be used to support underperforming medical students as these interventions were noted in a systematic review (Dunhill *et al*., 2014) to have supported learning and improve learner satisfaction in postgraduate medical education.

As my study only included registered students, thus, it could not explore the experience of medical students that were withdrawn from the degree programme. In the literature, Yates explored the student records of 73 medical students that failed to complete their degree programme at the University of Nottingham, of which 61 had left the degree programme voluntarily and 12 had their degree programme terminated before the second year due to academic failure (Yates, 2012). Yates reported academic failure was the key factor associated with first and second year students exiting the degree programme. Mental health problem was a key factor for

students exiting the latter half of their degree programme (Yates, 2012). Other factors that contributed to student leaving their degree programme included social isolation, financial pressure and lack of motivation to pursue medicine as a career (Yates, 2012).

There was one challenging issue reported in the literature that had not been covered in my study. My literature review identified that encountering undermining behaviour was one of the challenging issues medical students could encounter. A medical student with a disability has reported receiving belittling comments from her peers directed at her disability. One medical student reported a health professional verbalising the displeasure of seeing a large group of medical students. None of the other medical students had volunteered experience of observing or being subjected to verbal abuse in the academic or clinical setting. Potential explanations for this finding could include medical students being reluctant to disclose these incidents due to social desirability bias or concerns about the consequences of disclosure. It was also possible that age, maturity, life experience or the graduate status of these medical students could be protective factors from student abuse that could be explored further in future research.

The explorative nature of my research study enabled me to uncover an area of professionalism that has not been explored in the academic literature previously. In my paper (Appendix 17; Tso and Yousuf, 2016), I described medical students from across all four year groups had received health advice requests from their family and friends. One medical student began receiving

health advice requests about one week after starting his degree programme. This suggested that receiving health advice requests was a social phenomenon linked to an individual's medical student status rather than their level of experience in medicine.

Medical students are peripheral members of a community of doctors and health professionals. Lave and Wenger (1991) described that 'peripherality is an empowering position'. Perhaps, through the medical students' membership of these communities, family and friends saw them as legitimate persons to ask for advice about their health concerns. There was insufficient data from my study to comment on whether family and friends wanted advice from the medical students or hoping that medical students could act as conduits to qualified health professionals for advice. Further research could be carried out with friends and family of medical students to explore their motivation and expectations of seeking health advice from medical students.

The vast majority of medical students had encountered health advice requests from family and friends at some stage of their medical school journey (British Medical Association, 2011). Undergraduate-entry students may or may not handle these health advice requests differently as compared to the medical students in my study and this could be investigated in future research.

In my paper (Tso and Yousuf, 2016), I also reported that medical students showed an ambivalence towards health advice requests, wishing to be helpful but not to give the wrong advice. I considered it is a possibility that the alteration to the power dynamics between individuals and their family or friends could account for this finding.

On one hand, the medical student status of these individuals put them in a position of knowledge and power with their family and friends looking up to them for health advice. However, medical students may lack the knowledge or experience needed to address these health advice requests safely and confidently, thus, they expressed concerns about the consequences of giving inappropriate advice. It is also possible that medical students' relationship with their family and friends could make some medical students feel obliged to give out advice.

In my paper (Tso and Yousuf, 2016), I reported that some medical students justified that they could offer health advice on minor conditions, such as a sprained ankle, as they deemed a reasonable layperson or first-aider would be able to help with. It was possible that graduate-entry medicine degree programme students with prior healthcare experience had already developed the competency in managing a range of minor or complex health conditions.

However, every individual has different background experience and training. Medical students should carefully consider if they have adequate

training, competency and confidence to manage health issues no matter how trivial the health issue might first appear.

In my paper (Tso and Yousuf, 2016), I have recommended that medical students could be taught about professionalism and ethical issues raised by these health advice requests and the practical ways of handling these requests sensitively through discussion of case scenarios with acceptable and inappropriate behaviours. These early experiences are important, as medical students are likely to encounter requests for informal clinical consultations by colleagues, friends and strangers when they qualify as doctors (Guberman *et al*., 1994).

To the best of my knowledge, there are several other areas of medical student experience highlighted in my study that was underexplored in the literature.

The experience of medical students with disabilities is an underexplored area of the literature. Two medical students in my study were discovered to have a learning disability during the course of their graduate-entry medicine degree programme rather than in their first degrees. The literature reported that uncovering learning disabilities during higher education is not an uncommon finding and the first diagnosis of a learning disability could be shocking to an individual (Pino and Mortari, 2014).

Individuals with learning disabilities utilise a range of coping strategies to manage the impact of their disability has on their social functioning (Pino and Mortari, 2014). I considered it is possible that the differences in workload and learning methods between their graduate-entry medicine degree programme and their first degrees decompensated their existing coping mechanisms that manifested as examination failure. Their examination failure subsequently led to the investigation and diagnosis of their learning disability. In my paper, Tso (2017), I discussed there was a need for medical school staff to continue to keep an open mind about undiagnosed disability as a potential contributory factor to graduate-entry medicine degree programme students' academic underperformance so that struggling students, if relevant, could be offered appropriate investigation and support.

Another disability issue I have reported in this study was the disclosure of disability status by medical students. While some medical students with disabilities in my study were upfront with the disclosure of their disability status to the University of Warwick Medical School, others had been reluctant or had not disclosed their disability status.

Medical students were motivated to disclose their disability status due to ethical considerations and practical considerations. My findings were in keeping with a report by the Social Care Workforce Research Unit (2007) describing the motivations to disclose disability status amongst staff in

higher education institutions could include legal obligations, ethical considerations and practical needs.

Social Care Workforce Research Unit (2007) also reported that disclosure of disability status was unlikely to be experienced as a single event but as a series of steps. In my study, one medical student claimed that he did not know he had to inform the examination officer about his disability status, assuming the institution and the disability support service would have disseminated the information to the relevant persons. It was not until he discovered he was penalised in his clinical examination due to the use of specialist equipment before he became aware of the need for repeated disclosures of his disability status. It was possible that this was an isolated incident. In my paper, Tso (2017), I discussed that such a situation could potentially be prevented through regular dialogue between students with a disability and the relevant medical school representatives to define who, when and how other staff members could have access to the student's disability information. If individuals prefer to take the responsibility of disclosing their disability status themselves, the institution should provide them with clear guidance on how, who and when to make these disclosures.

Furthermore, the transition from phase one to phase two of the curriculum brought on a different set of challenges to disabled medical students. Thus, a flexible institutional disability support mechanism was necessary to ensure crucial information was cascaded to the relevant individuals to minimise the potential stress of repeated disclosures, to facilitate disabled medical

students in accessing reasonable adjustments and to be responsive to their evolving needs.

Miller and colleagues reported that 75 per cent of 311 medical students with and without disabilities rated that they perceived some forms of disability, such as sensory, learning and physical disabilities, prevent an individual from studying medicine (Miller *et al.*, 2009). In particular, sensory disability such as visual and hearing impairments were the top group of disabilities that were perceived by medical students to be incompatible with working as a doctor (Miller *et al.*, 2009).

In contrast to the findings by Miller and colleagues, none of the medical students with a disability from my study had expressed concerns about their own fitness to practice as doctors. A potential explanation was their acceptance into the graduate-entry medicine degree programme had reassured them their disability would not bar their entry into the medical profession, otherwise, they would have been screened out at the application stage.

Disclosure of a disability status is a personal and sensitive matter (Hargreaves and Walker, 2014). In my paper, Tso (2017), I discussed medical students' previous disability disclosure experience appeared to have an impact on their preparedness to disclose their disability to the medical school. However, many individuals are reluctant to disclose their disability status due to widespread negative attitudes towards individuals with

disabilities (Aiden and McCarthy, 2014). Individuals with disabilities may not perceive their disability had an impact on their ability to function and this could potentially contribute to a delay or reluctance in disclosing their disability to the medical school (Tso, 2017). On other hand, medical students with newly-acquired disabilities will certainly need additional practical and psychological support to help them adjust to their disability and the learning environment.

In my paper, Tso (2017), I discussed that until the barriers to the disclosure of disability were removed, it was inevitable that some individuals would remain reluctant to disclose their disability to their medical school. Nevertheless, the non-disclosure of a disability could be a potential professionalism issue, even when medical students perceived their disability or condition did not have an impact on their functioning and would not pose a risk to patients. One must consider the right to confidentiality for a medical student with a disability, the medical student's role in the health service, the ethical principle of non-maleficence (to protect patients, colleagues and the public) and how an objective assessment of the medical student's potential risks could be achieved in the decision-making process before drawing a conclusion on whether a disclosure of disability should be made to the medical school or a third party (Tso, 2017). In my paper, I recommended that students must recognise the limitations of their disability or condition, consider seeking early help or advice from their general practitioner or the medical school, and act within established GMC guidance (Tso, 2017).

A potential solution to lowering barriers to the disclosure of disability status and improving access to reasonable adjustments is a student support card system (Cook *et al*., 2012). The system was used by medical students with disabilities or health issues in two medical schools in London, United Kingdom. Cook and colleagues reported this was a credit card-sized card stating the nature of the cardholder's need for support and the type of help required with the request for adjustment coming from the medical school's dean for students (Cook *et al*., 2012). The authors evaluated the system. Thirty-one cardholders completed a non-validated questionnaire about their usage and perceived effectiveness of the card, with six respondents also taking part in one-to-one semi-structured interviews to explore their card usage experience. Study findings showed the student support card system could increase the self-confidence of medical students in need of support and empowered them to access the reasonable adjustments they needed to participate in learning activities (Cook *et al*., 2012). However, cardholders may not always choose to utilise the card, for example, if using it could potentially affect their educational attainment by avoiding a learning task (Cook *et al*., 2012).

Medical education policy research is an underexplored area of the literature. In my study, I highlighted that medical student experience could potentially be affected by changes to an institution's educational strategies. One medical student had to repeat her first academic year due to examination failure. As a result of the implementation of the refreshed curriculum in 2013, she had to repeat her first academic year under the refreshed

curriculum instead of the original curriculum and she was concerned about this. I was aware that at least five more medical students had to repeat their first academic year under the refreshed curriculum (Davies, 2016, pers. comm., June). The new, refreshed curriculum, made the challenging experience of repeating an academic year even more complex.

It was beyond the scope of my study to investigate the impact of changing educational strategies or policies could have on medical student experience. Nevertheless, my study provided the baseline data that could enable future comparison with the experience of medical students undergoing the new, refreshed curriculum. Future research could explore the impact of departmental, institutional, national and international policy changes could have on higher education student learning experience and teaching quality.

There were a number of notable areas of medical student experience that should be highlighted in this thesis even though they may have been well described in the literature.

Rapport and colleagues described graduate-entry medicine degree programme students at Swansea University Medical School as relatively isolated from students from the rest of the Swansea University (Rapport *et al*., 2009). My study findings were supportive of their claim.

In my study, several factors could potentially contribute to medical students' sense of perceived social isolation from the rest of the University of

Warwick student community. Firstly, there was a physical separation between the University of Warwick Medical School campus and the University of Warwick main campus. Next, the University of Warwick Medical School campus was a relatively self-sufficient community. Medical students did not have to travel to the main campus for lessons or socialising. Thirdly, medical students spent the majority of their time in phase two at clinical placements in regional hospitals. In addition, many medical students expressed a preference to socialise with individuals from similar maturity and background as they are.

I considered that the relative isolation of phase two medical students from the rest of the university community as inevitable and a potentially positive experience. This was because in phase two, they had to immerse themselves in the clinical environment in order to learn the role of a doctor. These socialisation experiences are crucial to their development of their professional identity and prepare them for professional practice as doctors.

In my study, I also reported that the knowledge, past experience and transferable skills of graduate-entry medicine degree programme students had an impact on their current degree programme experience. For example, their decision to pursue medicine as a career, disclosure of their disability status and their preparedness for the academic and clinical aspect of their degree programme.

Similar to the findings by Rapport and colleagues, it is also my impression from conducting this study that medical students' life experience (especially previous employment experience in healthcare settings) had a more significant impact than previous degree experience in helping medical students to cope with the demands of their current degree programme.

Nevertheless, the academic components of their previous science or health related degrees had been useful to some medical students as they were directly relevant to some basic science modules (e.g. anatomy and basic biology) and clinical components (e.g. radiology and practical procedures such as venepuncture) of their current degree programme.

In my study, one medical student seemed to be cautious about attending ward rounds he was not allocated to attend because this could 'step on other student's toes'. This seemed to suggest the presence of certain social etiquettes that medical students observe when learning in a clinical environment. To the best of my knowledge, this is an unexplored area of medical student professionalism. From personal experience of learning and working in hospital settings, the daytime hospital learning environment can be congested with learners ranging from medical students, allied healthcare students and qualified health professionals preparing for their professional examinations. At each clinical placement, medical students are allocated to specific teams where the majority of their learning would occur. I had encountered medical students that had been very protective of the learning opportunities available to their allocated teams because patients can tire

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easily, not every patient is suitable to be seen by medical students and not all patients will permit medical students to take history and examine them. This would be an interesting area for future research.

Although the aim of this study was to explore the experience of medical students through their degree programme only, nevertheless, my stage two interview with Y4-01 took place two months after his qualification as a newly qualified FY1 doctor. This has provided an opportunity to explore his experience as a newly-qualified doctor. Potentially challenging issues arising in Foundation Year 1 training, as reported by Y4-01, were in keeping with the literature, for example, the development of his professional identity, (Nothnagle *et al*., 2014) and difficulties in undertaking workplace-based assessments (Wood and Tso, 2012; Pentlow and Field, 2015). Gaining an awareness of these challenging issues could further improve medical students' preparedness for professional practice as FY1 doctors.

5.5 Professional identity development

Through the exploration of the challenging issues medical students experienced during their degree programme, this has provided an opportunity to study their development of a professional identity. The development of a medical student's professional identity involves complex social interactions between individual medical students and the social structure they belong to (Goldie, 2012). Mann (2010) described 'professional identity development is both a personal and social process and is not separable form the knowledge and skills that are required'.

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In my study, phase one medical students spent the majority of their time learning in a classroom-based environment focusing on the acquisition of basic knowledge and skills. It is possible that due to limited professional socialisation opportunities with health professionals, some medical students perceived themselves simply as a university student only as they did not feel connected to the wider doctor and healthcare communities. When second year medical students met the new first year medical students, they were able to reflect upon their personal and professional growth in their degree programme.

Hay and colleagues described experience-based learning, learning through supported participation, helped to address medical students' learning skills needed to be effective workplace learners (Hay *et al*., 2013). This has an impact on medical students' sense of belonging to a community (Wenger, 1998) and professional identity development (Hay *et al*., 2013). In my study, when medical students commenced phase two, they frequently observed doctors and other health professionals providing care to patients. Their level of participation in community activities gradually increased over phase two. Through their situated learning experience such as observation of role models and active peripheral participation in patient care activities (such as undertaking the tasks expected of newly qualified FY1 doctors), they gradually solidified their professional identity as a doctor.

There was one element of professional identity development that was unexplored in this study. The Oxford Dictionary defined the phrase

imposter syndrome as the 'persistent inability to believe that one's success is deserved or has been legitimately achieved as a result of one's own effort of skills' (Oxford Dictionary, 2017). Villwock and colleagues described imposter syndrome was 'characterised by chronic feelings of self-doubt and fear of being discovered as an intellectual fraud… those suffering imposter syndrome are unable to internalise a sense of accomplishment, competence or skills' (Villwock *et al*., 2016). They reported about a quarter of male and half of female medical students at a United States of America medical school that volunteered to take part in their web-based survey had experienced imposter syndrome (Villwock *et al*., 2016). It was likely that medical students in my study had feelings of being an imposter but did not volunteer their experience due to social desirability and volunteer bias. The literature reported imposter syndrome could stifle healthy development of a professional identity and it was associated with increased risk of burnout as medical students (Villwock *et al*., 2016) and as junior doctors (Oriel *et al*., 2004). In my opinion, medical students should be encouraged to explore their feelings during routine meetings with their medical school and clinical supervisors so that those in need of support could be identified and supported.

5.6 Transitions

In my study, medical students' description of the term transition was used to identify the different transition periods within a graduate-entry medicine degree programme. My study findings on the transition from phase one to phase two of the curriculum and on approaching qualification as FY1

doctors were in keeping with findings from the published literature on medical student transition experience.

The transition into university is also a well-recognised transition period perceived by most students as a particularly challenging and stressful time (Fisher and Hood, 1987; Fisher and Hood, 1988; Thurber and Walton, 2012). However, to the best of my knowledge only one previous study from the medical education literature has acknowledged the start of an undergraduate medicine academic programme as a transition period (Radcliffe and Lester, 2003).

Radcliffe and Lester (2003) conducted an interview-based study with undergraduate-entry medicine degree programme students at the University of Birmingham, United Kingdom. The authors provided a short description of this transition period as being associated with a change in the medical students' lifestyle, socialisation experience and learning style.

In my study, I provided a much more comprehensive description of this transition period. The transition into graduate-entry medicine degree programme could be associated with significant changes to medical students' professional identity and they had to make academic, socialisation, financial and cognitive adjustments as they adapted to the new learning environment. Thus, this study has extended our understanding of the transition experience of individuals entering a graduate-entry medicine degree programme.

In my study, I have further reported there could be a series of minor transition periods within the phase two curriculum as medical students changed clinical placements. They were described as minor as only one medical student (Y3-03) reported the presence of these transition periods and the impact of the minor transition was much smaller than other major transition periods. It was not a surprising finding to identify a minor transition period within the degree programme as Lamdin and colleagues reported medical students could experience transition within the anatomy and dissection module of an undergraduate medicine academic programme (Lamdin *et al*., 2011).

Seltz and colleagues explored medical students' experience of working with frequently rotating paediatric inpatient attending physicians who change over on a weekly basis (Seltz *et al*., 2014). The authors reported that these frequent changes could be an emotionally stressful experience for some medical students, as they had to adapt to different patient care and teaching styles. Furthermore, the lack of continuity with the attending physician made it more challenging for medical students to demonstrate their learning and personal growth as well as building a professional relationship (Seltz *et al*., 2014). The challenging issues described by Seltz and colleagues could be relevant to the experience of medical students in my study as they offer potential explanations towards my finding of these minor transition periods and their potential impact on medical student experience.

Gallagher and Hoare (2016) explored the transition experience of medical students that were health professionals as they commenced their degree programme at a medical school in New Zealand. The authors described a range of themes associated with their transition into an undergraduate medicine academic programme. These themes included seeking a challenge, returning to student status, missing professional life, establishing informal networks and affirming core skills (Gallagher and Hoare, 2016).

In my study, medical students that were health professionals decided to change career as medicine offered more career development opportunities and autonomy. They missed the lifestyle they could afford when they were still in employment. They formed social groups. They were in possession of some core skills (e.g. communication skills) and basic knowledge (e.g. anatomy knowledge) that helped them prepared for the start of their current degree programme. Thus, my study findings on this group of medical students' transition experience were broadly in keeping with the themes reported by Gallagher and Hoare (2016).

5.7 Coping strategies

In my study, medical students employed a range of positive coping strategies in managing the challenging issues arising from their degree programme. These coping strategies were in keeping with the published literature.

However, few medical students volunteered that they used maladaptive coping strategies and this is likely to be due to social desirability bias. Furthermore, students could encounter difficulties disclosing shame or circumstances giving rise to shame (Lindström *et al*., 2011), for example, experience of academic failure (Turner and Schallert, 2001). Their maturity and independence could also offer a potential explanation towards Y3-02's refusal to engage with the student support service following her examination failure, as she wanted to address her academic problems herself.

5.8 How do the study findings address the research question and study objectives?

In my study, I used medical students' own description and discourse of the term transition to identify a number of transitions periods within a graduate-entry medicine degree programme. I outlined the challenging issues that medical students could experience during their degree programme and relate them to the major transition periods. Therefore, I have directly addressed my research question 'what were the challenges experienced by graduate-entry medicine degree programme students during their transition through medical school training?'

I have also addressed all three study objectives I have set myself to achieve. In this study, detailed literature review and interview data collection occurred concurrently. This enabled me to compare and contrast my study findings with the literature. In Chapter 5.2 to 5.7, I have discussed about the key study findings in relation to the literature review. Overall, the range of

challenging issues medical students from this study had experienced and the transition periods they encountered were in keeping with the published literature.

Medical students seemed to have a broad awareness of what to expect to happen in their degree programme although life events such as uncovering a disability could not be anticipated. I have also described the experience of medical students as they transitioned into their degree programme and the experience of medical students with disabilities, which are underexplored areas in the academic literature.

Finally, I have uncovered an area of professionalism issues that had not been explored in the academic literature previously. The findings on how graduate-entry medicine degree programme students manage health advice requests from family and friends could be relevant to undergraduate-entry students.

Overall, I considered my study has addressed the research question and the study objectives satisfactorily.

5.9 Strengths and limitations of this study

The strength of this study rests with its methodology. Overall, the selection of study methodology and methods was shown to be appropriate as I was able to address the research question and study objectives. The involvement of University of Warwick Medical School students and graduate as research

partners helped me design and conduct a study that was directly relevant to studying the experience of graduate-entry medicine degree programme students.

I provided a rich description of my philosophical stance and my experience as a medical student and doctor. This would have helped readers critically appraise the results generated from this study.

Two areas of my work originated from this thesis have withstood the peer-review process and published in a respected journal (Tso and Yousuf, 2016; Tso, 2017). This showed that findings from my study could be of interest to the wider medical education community. In addition, I have taken steps to ensure my research was readable and accessible to generalist readers.

Despite the modest study sample size of 21 volunteers, this has yielded 35 datasets with over 20 hours of audio recordings. The volunteers were highly motivated in sharing their experience, including sensitive information such as disability, examination failure and the challenges they encountered during their medical school journey. By interviewing study participants twice, this gave me the opportunity to follow up their progress. Otherwise, I could not have captured the experience of the medical student who had to repeat her first academic year in the new refreshed curriculum or the medical student who was newly diagnosed with a sensory disability.

I attempted to improve the rigour in the collection of the interview data. I listened to audio recordings of interviews transcribed by the transcriptionist that enabled me to correct transcription errors and omissions. I invited study participants to comment on the accuracy and contents of their stage one and stage two interview transcripts. All stage two participants provided verbal confirmation on the accuracy of their stage one interview transcripts. One participant returned written feedback on his interview transcripts within a week of receiving them. However, stage two interviews took place between four to thirteen months after stage one interviews were conducted and this could introduce recall bias. Nevertheless, interviewee transcript review could have a positive impact on the researcher and research participant relationship (Hagens *et al.*, 2009) and I felt this has helped me conduct stage two interviews more fluidly and facilitated interviewees to talk about difficult issues.

I found sending my coded data and themes on disability, managing health advice requests from family and friends, and professional identity development to external individuals for validity check was useful in verifying the quality of my work. However, in order to demonstrate authorship of my work I did not send the rest of my coded data for external validity check. An alternative approach could involve asking study participants to perform member check over the themes and their description at the conclusion of the study. The literature reported that member check could improve the accuracy, credibility and validity of study findings (Harper and Cole, 2012).

The literature was largely devoid of studies exploring the experience of medical students with carer responsibilities or with disabilities, which I considered were hard to reach groups of potential research participants. It was encouraging that my study's sampling strategy and publicity event had attracted medical students with disabilities. Although the study sample included medical students from across all year groups with different ethnic, employment and education background, the study findings would not be representative of the experience of the majority of medical students studying at the University of Warwick Medical School. The study lacked participants that were of international student status, Afro-Caribbean ethnicity or had carer responsibilities. It was possible that disabled medical students had a strong opinion about their disability experience in medical school and they were motivated to express their views. Thus, volunteer bias has resulted in a high percentage of disabled medical students in the study sample. I recognised that volunteer bias could potentially impact upon the accuracy of findings and conclusions of a research study (Jordan *et al*., 2013). If my study was to be repeated again, a purposive sampling strategy could be used to ensure the inclusion of medical students from all demographic groups so that the study sample would reflect the study population.

There are other limitations to this study. Only studies that were published in English were included into the literature review. Nevertheless, I noted a number of these papers were written in English but originated from countries where English was not their official state language (e.g. Finland, Iran, Israel, Nepal, Norway, the Netherlands, Sweden and Turkey).

A single centre study involving 21 study participants is not enough to generate theory from the study findings. Only 14 of 21 (67 per cent) study participants attended a stage two interview. I have attempted to improve the study participant retention rate by offering flexible interview dates and they had a choice of attending their interviews at any of the two research sites. Study participants also received £5 GBP per interview attendance as reimbursement of their public transport costs. While study participant retention rate could potentially be improved through sending even more interview invitation reminders, offering additional reimbursement for travel expenses and setting up additional research sites, but I must draw a fine line between what is ethical and what is practical to do. I considered I should not overburden my study participants with too many electronic mail communications. I considered that payment above £5 per interview could be viewed as a financial incentive to take part in the study. It would not be practical for me to keep opening additional research sites.

Data saturation (stated in the methods section as the continuation of data collection until theoretical saturation of second or third order themes) was achieved in a number of domains that were crucial in addressing the research question. For example, identifying the transition periods within the degree programme, exploring the range of challenging issues medical students had encountered and uncovering the professionalism issue of medical students managing health advice requests in off-duty settings.

Very few study participants had volunteered examples of their shortcomings or their negative attitudes or behaviours (e.g. using a maladaptive coping strategy). This was likely to be caused by social desirability bias, the lack of trust and a statement in the participant information leaflet about reporting fitness to practice concerns to the medical school (Appendix 11), which can be very challenging to overcome. I have attempted to address this type of bias by informing potential study participants of my research student status in the University of Warwick Medical School who has no role to play in their assessments in the hope that they would be open and honest about their experience.

Although the refreshed case-based learning curriculum introduced in September 2013 was not the same as the original curriculum, I considered that the range of challenging issues medical students could face in the refreshed curriculum was unlikely to differ significantly as they were still taught towards the same GMC curriculum requirements. Instead, the introduction of the refreshed curriculum created the opportunity for future research to compare the impact of curriculum changes to the experience of medical students before and after its implementation.

5.10 Chapter five summary

In summary, this Chapter discussed the study findings in relation to the literature. It began with a discussion of the characteristics of the medical students taking part in this study. This was followed by a discussion on their motivations to pursue medicine as a career, the challenging issues they have

encountered during their degree programme, development of a professional

identity, transitions and coping strategies.

I have explained how did my study findings have addressed the research

question and the study objectives. This Chapter ended with my description

of the strengths and limitations of this study.

6.0 Conclusion of this study

This study explored the experience of graduate-entry medicine degree programme students at the University of Warwick Medical School. The challenges they encountered in their medical school journey could be categorised under the conceptual themes of challenges associated with the curriculum, challenges associated with their social role and generic life challenges. Medical students encountered three major transition periods, which included the transition into the degree programme, transition from phase one to phase two of the curriculum and on approaching qualification as FY1 doctors. Their transition experience in medical school was dominated by the themes of learning, professional identity development and managing coping strategies. Through observation of role models and active peripheral participation in patient care activities they gradually solidified their professional identity as doctors.

This study made an original sociological contribution to understanding the professionalism issue on how medical students managed health advice requests from their family and friends. The study findings also highlighted areas of disabled medical students' experience that needed educators' attention and support. The findings from this critical case study could be useful to prospective and current medical students, educationalists, doctors and student support services in understanding the challenging issues medical students could face during their graduate-entry medicine degree programme

so that medical students could be better prepared for the challenges to their transition through medical school.

6.1 Relevance of this study to tomorrow's medical students

The findings from this study are relevant to the understanding and analysis of tomorrow's medical student experience.

- Through understanding the potential range and complexity of challenging issues medical students could experience in the various transition periods within their degree programme, this could help individuals interested in medicine as a career to understand the realities of being a graduate-entry student. In turn, this could potentially ease their transition into their graduate-entry medicine degree programme.

- Through gaining awareness on how medical students developed their professional identity, this could help individuals interested in medicine as a career to develop a realistic understanding of medical students' role, professional values and limitations.

- Through understanding how medical students manage health advice requests in off-duty settings, this could facilitate educationalists and doctors in preparing tomorrow's medical students in understanding the limitations of their role, the professionalism and ethical issues

raised by these requests and the practical ways of handling these requests sensitively.

- Through understanding how medical students with disabilities experienced their degree programme and their perspectives on disclosure of their disability status, this could facilitate medical school admissions and disability support services in supporting applicants and medical students with disabilities in their pursuit of a fulfilling educational journey through their degree programme.

6.2 Recommendations and suggestions for further research

Generic recommendation

I recommend that all faculty and clinical staff involved in educating medical students should have a broad awareness of the challenging issues medical students could face during their degree programme, their transition experience and professional identity development. In turn, this could help staff to identify medical students potentially in need of support.

Specific recommendations

- Institutions could have clearer protocols in place to ensure relevant confidential disability-related information could be cascaded to relevant individuals to minimise the need for disabled persons to make repeated disclosure of their disability status. I was aware of the

University of Warwick regularly updating its disability policy and strengthened their support system since the completion of this study. For example, there was a clear point of contact for disabled medical students to discuss disability issues with the contact details of the designated disability coordinator clearly stated in the University of Warwick's webpage accessible to staff and students (University of Warwick, 2017). The webpage also provided regular updates on disability related events and support information (University of Warwick, 2017).

- Medical students with non-science first degrees could potentially benefit from targeted academic support to increase their baseline scientific knowledge to be on par with medical students with science or health-related first degrees. I was aware of the University of Warwick Medical School providing additional academic support to this group of medical students.

- Institutions should have an awareness that late diagnosis of disability status is not uncommon amongst graduate-entry students so that struggling students, if relevant, could be offered support and help.

- Institutions should raise medical students' awareness on their likelihood of receiving health advice requests in off-duty settings and offer them guidance on acceptable and inappropriate

professional behaviours. This could potentially be taught within the medical ethics module of the curriculum.

I recommend future research into the following areas:

- To explore the experience of medical students with carer responsibilities and students who repeated an academic year.

- To examine if 'non-science' student status was associated with an increased likelihood to be classified as pre-clinical strugglers as compared to science students.

- To examine if graduate-entry students were less likely to encounter undermining behaviour during their degree programme as compared to undergraduate-entry students.

- To explore medical students' experience in managing ad-hoc learning opportunities in clinical placements.

- To explore the motives and expectations of individuals seeking health advice from medical students.

- To explore if undergraduate-entry students handled health advice requests differently from graduate-entry students.

- To explore the impact of curriculum changes to the experience of medical students before and after its implementation.

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APPENDICES

Appendix 1

Results from the 2012 National Student Survey highlighted there was wide

variability in medical students' overall level of satisfaction of the quality of

their undergraduate medicine academic programme in the United Kingdom.

Data adapted from UNISTATS (2013).

Institution	Undergraduate-entry medicine programme	Graduate-entry medicine programme
Cardiff University	86%	-
University of Exeter	96%	-
Hull York Medical School	88%	-
Imperial College London	84%	-
Keele University	97%	-
King's College London	57%	47%
University of Liverpool	76%	75%
Newcastle University	95%	-
University of Nottingham	94%	96%
University of Oxford	99%	100%
Queen Mary, University of London	96%	-
Queen's University Belfast	93%	-
University of Southampton	87%	79%
St George's University of London	66%	73%
University College London	93%	-
University of Aberdeen	94%	-
University of Birmingham	92%	79%
University of Bristol	83%	83%
University of Cambridge	78%	79%
University of Dundee	94%	-

University of East Anglia	95%	-
University of Edinburgh	86%	-
University of Glasgow	84%	-
University of Leeds	95%	-
University of Leicester	90%	-
University of Manchester	85%	-
University of Plymouth	92%	-
University of Sheffield	91%	-
University of St Andrews	97%	-

Appendix 2

Summary of the challenging issues that medical students could encounter in their journey through an undergraduate medicine academic programme.

Citation	Study Aim	Study method	Challenging issues reported	Other study findings or comments reported
Transition from pre-clinical to clinical phase of the degree programme				
Prince *et al.*, 2000	To find what are students' perceptions and attitudes about the transition from theory to practice in undergraduate medical training.	20 fifth year students from 1 medical school in the Netherlands were interviewed as 3 groups. Data analysed using content analysis.	Difficulty bridging the gap between theoretical and clinical phase of curriculum; fatigue; long hours; feeling of insecurity; insufficient knowledge; professional socialisation challenges.	Early patient contact can facilitate transition from theory to practice.
Prince *et al.*, 2005	To seek quantitative verification of qualitative findings from an earlier focus group study (Prince *et al.*, 2000).	71 students from 1 medical school in the Netherlands completed a questionnaire.	Some respondents rated they found the following issues challenging: workload, patient contact, knowledge gap, learning and professional socialisation.	Study findings were in keeping with the results from Prince *et al* (2000).

Godefrooij et al., 2010	To study how students who have had preclinical patient contacts perceive the transition from preclinical to clinical training.	21 students from 1 medical school in the Netherlands were interviewed as 3 focus groups. Data analysed using content analysis.	Increasing working hours and workload; uncertainty as to what was expected; and self-perceived lack of knowledge.	Students did not experience a major gap between preclinical and clinical phase, they felt well prepared for clerkships and preclinical patient contacts can ease the transition.
Small et al., 2008	To identify the skills medical students perceived as essential and the skills areas students are most anxious about prior to starting clerkship rotations.	Open-ended question-naires administered to 93 preclinical students (second year) and 105 clinical students (third year) in a medical school in the United States of America.		Preclinical students rated the 3 most essential skills to be prepared for clerkships are history taking/physical examination, proficiency in oral case presentations and generation of differential diagnosis. Clinical students reported interpersonal skills, history taking/physical examinations and time management as most essential.

| van Hell *et al*., 2008 | To determine whether the perceived difficulty of transition influences student performance during the first 2 weeks of clerkships, whether it influences students' overall performance in their first clerkship and the degree to which the difficulty of transition is influenced by students' preclinical knowledge and skills level. | 81 students from 1 medical school in the Netherlands completed a questionnaire. | Workload. | Students were relatively content with their knowledge level, the skills they possessed, usefulness of the preclinical curriculum and their cognitive and emotional adaptation to clinical training.

Perceived difficulty of transition was neither predictive of student performance during the transition period, nor of their overall clerkship performance. |

Nevalainen *et al.*, 2010	To investigate how medical students experience uncertainty during their first clinical years and how their feelings develop with time as they progress form third to the fourth year.	22 students' (from 1 medical school in Finland) reflective learning diaries and writings were analysed using thematic content analysis	Key themes: insecurity of professional skills, own credibility, facing with the inexactness of medicine, fear of making mistakes, coping with responsibility, and tolerating oneself as incomplete and accepting oneself as a good-enough doctor-to-be.	Uncertainty is a major cause of mental strain for students, particularly fear of making mistakes. Common steps of development towards tolerance of uncertainty were found in diaries over a 1-year time period as students progressed in their clinical studies.
Kligler *et al.*, 2013	To understand the impact of the third year on medical student wellness and help educators improve approaches to promoting wellness.	173 third year medical students from 1 medical school.	4 themes emerged. Difficulty of making healthy choices in the face of time challenges, the effect of becoming a role model for patients, and the impact of information on their view of their own health and wellness.	The new responsibilities in the third year of medical school comprise a unique set of opportunities and challenges that affect how students make choices regarding health and wellness.

Transition from clinical phase of medical school to professional practice as doctors			
Brennan *et al*., 2010	To explore the experiences of junior doctors during their first year of clinical practice. To gain an understanding of how junior doctors experienced the transition from the role of student to that of practising doctor and how well their medical school education had prepared them.	31 newly qualified doctors from Peninsula Foundation School in the UK were interviewed once, and 17 were interviewed twice. 10 subjects also kept audio diaries. Data was analysed thematically.	Dealing with their newly gained responsibility, managing uncertainty, working in multi-professional teams, experiencing the sudden death of patients and feeling unsupported were important themes.	The stress of transition was reduced by the level of clinical experience gained in the undergraduate years.

Tweed *et al.*, 2010	A paper discussing how trainee intern year can ease the transition from undergraduate education to postgraduate practice.	Literature review and discussion of the New Zealand trainee intern year.		Transition shock, related to movement between contexts or levels of responsibility, is not unique to medicine. The themes for easing the transition included: educational framework, socialisation, critical incident discussion, specific courses, simulation-based clinical skills training and authentic assessment.
Prince *et al.*, 2004	To explore junior doctors' opinions about the transition from student to doctor.	17 recent graduates from 1 medical school in the Netherlands were interviewed in 4 focus groups.	Preparation during undergraduate training was not adequate for pharmacological knowledge and patient management skills. Problems were connected with practice procedures and feelings of uncertainty.	Transition was perceived as a major change, particularly increased responsibility and workload and contacts with other health care workers and patients.

Transition through a specific module				
Lamdin *et al.*, 2011	To explore medical students' experiences of the anatomy orientation and their subsequent experiences in cadaveric dissection.	21 students from 1 medical school in New Zealand took part in one-to-one semi-structured interviews.	Even one year after beginning dissection, students may emotionally struggle with their work and may require further support.	Emerging themes included: orientation, student anticipation, psychological approach to the body, normalizing-continuing disquiet, and social reference.
Student experience of clinical phase of medical school training				
Sarikaya *et al.*, 2006	To compare the anxieties of clerkships of two medical schools that apply two different preclinical curricular.	201 students from 2 medical schools in Turkey took part in this questionnaire-based study.	Fear of making mistakes that could harm the patients was at the top of the list of sources of anxiety for both groups of students.	Sources of anxiety may vary among students exposed to different preclinical curricula and different educational environment.
Medical students' experience of medical school training				
Radcliffe and Lester, 2003	To explore the views of students nearing the end of their course on causes	21 fifth year medical students from one medical school in the	4 main themes of stress: stress secondary to pressure of work; stress associated with the pressures	Stress increased their motivation and performance and focused their minds. It prepared them for

| | of stress throughout their undergraduate medical training. | UK took part in one-to-one semi-structured interviews. Data analysed using a grounded theory approach. | of professional socialisation; stress due to a lack of guidance, and additional stress occurring and provoked by transition points in the course. The transition between education at school and the first undergraduate year: have to cope with the lifestyle changes inherent in starting university; transition to less didactic teaching methods. The transition form being a predominantly preclinical science student to being an apprentice doctor on the ward: changes in learning environment, teaching styles and expectations cited as particularly causes of stress. | the future stresses of what was perceived to be a difficult and stressful career, and enabled them to develop methods of coping with stress. The transition from fourth to fifth year: they were no longer merely in order to pass examinations, but for the future health of their patients. They found themselves in direct competition with their friends for the first job. Some of this stress appeared to be counterbalanced by a growing knowledge base and expanding repertoire of practical skills as the transition to doctorhood approached. |

Guthrie *et al.*, 1998	To assess psychological morbidity and symptoms of burnout in medical students during their undergraduate training, and to identify baseline factors that predict psychological morbidity in students in the final year of the course.	172 students from 1 medical school in the UK took part in this 5-year prospective longitudinal cohort study.		A small percentage of medical students experience psychological distress throughout their medical undergraduate training. Although these students found their first year of the medical course more stressful than did their fellow students, this was not true of subsequent years.
Dahlin *et al.*, 2007	To examine clinically significant psychiatric morbidity and burnout at third year, considering personality and study conditions measured at first year.	127 students from 1 Swedish medical school took part in this 3-year prospective question-naire and interview-based study.	Students were increasingly worried about future endurance and capacity, and financial concerns as they progressed from first to third year of a medical course, while workload decreased significantly.	High burnout was predicted by Impulsivity trait, depressive symptoms at first year and financial concerns at first year.

Shaikh *et al.*, 2004	To assess the perception of stress amongst medical students and their coping strategies.	264 students from 1 medical school in Pakistan responded to a semi-structured self administered questionnaire	Exams, academics, relationship problems, family problems and homesickness are the most common reasons for stress quoted by respondents. Coping strategies included spending time with friends, sleep, music, sports, isolation and study	The senior students of fourth and final year are more stressed (95% and 98% respectively). For the first and second year students, 80% showed eagerness to talk to somebody (about their stress) but in the fourth and final year only 67% showed the desire to talk about their stress.
Kjeldstadli *et al.*, 2006	To examine the relationship between life satisfaction among medical students and a basic model of personality, stress and coping.	375 students from 4 Norwegian medical students participated in this questionnaire based study.	Medical students who sustained high levels of life satisfaction perceived medical school as interfering less with their social and personal life, and were less likely to use emotion focused coping, such as wishful thinking, than their peers.	Life satisfaction decreased during medical school. Medical students were as satisfied as other students in the first year of study, but reported less satisfaction in their graduation year.

| Park and Alder, 2003 | To explore the relationship between first year medical students' psychological wellbeing and coping style. | 71 students from 1 medical school in the United States of America. | | Students' physical health and psychological wellbeing declined over the course of the year. The greater the students' use of both problem-focused coping and approach emotion-focused coping, the less their physical health deteriorated. |

Appendix 3

The step-by-step management of potential ethical scenarios.

Scenario 1:

Distressed participant who experienced difficulties or inability to cope

↓

Researcher offer immediate guidance & support

↓

Direct the participant to the relevant support services

↓

Feedback to Medical School (if relevant) the participant must give permission

Scenario 2

Identified a participant with fitness to practice concerns

↓

Researcher offer immediate guidance

↓

Consider escalating concerns to participants' educational supervisor – participant must be informed as breach of confidentiality

Appendix 4

Student Collaborator Recruitment Letter

Dear Warwick Medical Students,

Project title: The Graduate-entry medical student: challenges to transition through Medical School

We are seeking for medical students to join our research project team in carrying out a qualitative research project exploring the challenges to transition faced by Warwick medical students as they progress through medical school training. The study findings can help enhance the graduate-entry medical student learning experience and find ways to ease the stress of transition through medical school. This study has received full approval from the University of Warwick Biomedical Research Ethics Sub-Committee.

This is an excellent opportunity for those who wish to build research experiences in medical education. Prior qualitative research experiences will be an advantage but not essential. The project will start in April 2012 and completed by July 2014. You can choose to participate in the whole project or part of it. Please note this is an unpaid role but you will be supported and encouraged to participate in grant applications, develop research skills and co-authoring peer-reviewed manuscripts and conference abstracts.

If you are interested please contact Dr Simon Tso (email: s.tso@warwick.ac.uk) to discuss further details.

Yours faithfully,

Dr Simon Tso

Appendix 5

Medical Graduate Collaborator Recruitment Letter

Dear Warwick Medical Graduate,

Re: Recruiting graduate collaborators to join our research team

We are seeking for a Warwick medical graduate to join a dynamic team in the planning and conduction of a qualitative research project exploring the challenges to transition faced by graduate-entry medical students as they progress through their course.

This is an excellent opportunity for those who are interested in academic medicine and wish to build research experiences in medical education. The ideal collaborator will be a practising doctor who has recently graduated from Warwick Medical School. Prior qualitative research experiences will be an advantage but not essential. Your unique perspective as a recent graduate will help shaping the study design and data interpretation.

The project is anticipated to begin in March 2012 (pending on ethics approval) and complete by July 2014. You can choose to participate in the whole project or part of it. There will be opportunities for the collaborator to co-author on peer-reviewed manuscripts and conference abstracts.

If interested please contact Dr Simon Tso by email simontso@doctors.org.uk to arrange a convenient time to discuss further details.

Yours faithfully,

Dr Simon Tso

Appendix 6

Study protocol flow diagram

Stage one

```
                                    ┌──────────────────────────────┐
                                    │  Potential subjects responded │
                                    │       to advertisement        │
                                    └──────────────┬───────────────┘
                                                   │
                                                   ▼
┌──────────────────────────┐   No   ┌──────────────────────────────┐
│ Potential participant     │◄───────│ Potential subjects fulfilled  │
│ exits the study           │        │ eligibility criteria & agreed │
│                           │        │ to take part in stage one     │
└──────────────────────────┘        │ interview?                    │
                                     └──────────────┬───────────────┘
                                                    │ Yes
                                                    ▼
                                     ┌──────────────────────────────┐
                                     │      Set interview date       │
                                     └──────────────┬───────────────┘
                                                    │
                                                    ▼
┌──────────────────────────┐   No   ┌──────────────────────────────┐
│ Arrange a new interview   │◄───────│ Participant attended stage    │
│ date. If persistently no  │        │ one interview?                │
│ reply or participant      │        └──────────────┬───────────────┘
│ declined, the participant │                       │ Yes
│ exits the study.          │                       ▼
└──────────────────────────┘        ┌──────────────────────────────┐
                                     │  Complete stage one interview │
                                     └──────────────┬───────────────┘
                                                    │
                                                    ▼
                                     ┌──────────────────────────────┐
                                     │  Reimburse subjects for       │
                                     │  expenses                     │
                                     └──────────────┬───────────────┘
                                                    │
                                                    ▼
                                     ┌──────────────────────────────┐
                                     │ Send transcript to participant│
                                     │ for validation                │
                                     └──────────────┬───────────────┘
                                                    │
                                                    ▼
                                     ┌──────────────────────────────┐
                                     │     Stage one completed       │
                                     └──────────────────────────────┘
```

Stage two

```
                                    ┌─────────────────────────┐
                                    │  Stage one subjects are  │
                                    │      re-approached       │
                                    └─────────────────────────┘
                                                │
┌─────────────────────────┐     No             ▼
│ Participant exits the    │◄───────  ┌─────────────────────────┐
│        study             │          │ Agreed to participate in │
└─────────────────────────┘          │  stage two interview?    │
                                      └─────────────────────────┘
                                                │ Yes
                                                ▼
                                      ┌─────────────────────────┐
                                      │    Set interview date    │
                                      └─────────────────────────┘
                                                │
┌─────────────────────────┐     No             ▼
│ Arrange a new interview  │          ┌─────────────────────────┐
│ date. If persistently no │◄───────  │ Participant attended     │
│ reply or participant     │          │  stage two interview?    │
│ declined, the participant│          └─────────────────────────┘
│ exits the study.         │                    │ Yes
└─────────────────────────┘                    ▼
                                      ┌─────────────────────────┐
                                      │ Complete stage two       │
                                      │       interview          │
                                      └─────────────────────────┘
                                                │
                                                ▼
                                      ┌─────────────────────────┐
                                      │ Reimburse subjects for   │
                                      │        expenses          │
                                      └─────────────────────────┘
                                                │
                                                ▼
                                      ┌─────────────────────────┐
                                      │ Send transcript to       │
                                      │ participant for validation│
                                      └─────────────────────────┘
                                                │
                                                ▼
                                      ┌─────────────────────────┐
                                      │  Stage two completed     │
                                      └─────────────────────────┘
```

Appendix 7

An overview of the original University of Warwick Medical School MB ChB curriculum. The 4-year graduate-entry medicine degree programme was divided into phase one and phase two. (Warwick Medical School, 2011)

Phase I

Semester One

The modules in this semester include:

- Clinical Skills
- Essentials of Clinical Medicine
- Gastrointestinal System
- Health and Disease in Populations
- Health in the Community
- Interprofessional Learning Pathway
- Molecules and the Human Body

Semester Two

The modules in this semester include:

- Cardiovascular System
- Clinical Skills
- Developing Interviewing Skills for the Consultation
- Health Psychology
- Infection and the Immune System
- Mechanisms of Disease
- Musculoskeletal System
- Reproductive System

Semester Three

In the third semester, you will continue to study systems of the body. Other modules introduce you to contemporary policy issue in the delivery of health services and consideration of values in medical practice.

You will also undertake a special study module of your choice. Some of these are designed to enable you to develop further a range of skills that will be helpful in your future career.

Examples of modules on offer in 2011 include:

- British Sign Language
- Diagnostic Imaging
- Introduction to Research
- Sleep Medicine
- Clinical Anatomy of Practical Procedures

MB ChB: Sample Phase I Timetable

Semester 1

Teaching: 6 September – 3 December 2010
Exams: 4–14 January 2011

	Monday	Tuesday	Wednesday	Thursday	Friday
9:00am–12:15pm	Health in the Community	Gastrointestinal System	Clinical Skills Various	Health and Disease in Populations	Molecules and the Human Body
12:45–1:30pm					Integrated Learning Session
1:45–5:00pm	Health in the Community	Essentials of Clinical Medicine	Clinical Skills Various	Clinical Skills Various	Clinical Skills Clinical Skills 1

Semester 2

Teaching: 17 January–18 March 2011 and 2–13 May 2011 (nine weeks plus two weeks)
CASSM Protected Time: 21-25 March and 25–29 April 2011
Exams: 31 May–20 June 2011

	Monday	Tuesday	Wednesday	Thursday	Friday
8:00–9:00am			CS2 Lecture		
9:00am–12:15pm	Clinical Skills Clinical Skills 2	Infection and the Immune System	Musculoskeletal System	Cardiovascular System	Mechanisms of Disease (UHCW)
12:45–1:30pm				Integrated Learning Session	
1:45–5:00pm	Health Psychology	Clinical Skills Clinical Skills 2	Clinical Skills DISC	Reproductive System	Musculoskeletal System (UHCW)

Semester 3

Teaching: 5 September–25 November 2011
SSM: 12 September-18 November 2011
Exams: TBC

|	Monday	Tuesday	Wednesday	Thursday	Friday
8:00–9:00am			CS2 Lecture		
9:00am–12:15pm	Clinical Skills Clinical Skills 2 (Trusts)	Mechanisms in Clinical Pharmacology	Urinary System	Neurobiology	Special Study Module
12:45–1:30pm			Integrated Learning Session		
1:45–5:00pm	Values in Medicine / Introduction to the NHS	Clinical Skills Clinical Skills 2 (Trusts)	Human Lifespan	Respiratory System	Special Study Module
5:00pm onwards	Special Study Module	Special Study Module	Special Study Module	Special Study Module	

Phase Two curriculum

You will cover specialist blocks in psychiatry, child health, obstetrics and gynaecology and general practice. Learning in other clinical areas is covered in a series of general clinical education blocks attached to partnerships of consultants drawn from a wide range of clinical specialities including:

- Cardiology
- Oncology
- Orthopaedics
- Rheumatology
- Respiratory
- ITU
- Anaesthetics
- Neurology
- Dermatology
- Ophthalmology
- Stroke
- Plastic surgery
- Renal
- Gastrointestinal
- Care of the elderly
- Urology

As part of the compulsory curriculum, you will complete an elective period in Phase II.

Appendix 8

An overview of the refreshed University of Warwick Medical School MB

ChB curriculum.

Refreshed MB ChB Course Outline
April 2013

The refreshed curriculum was implemented in September 2013 and it is divided into three phases (Warwick Medical School, 2016). Phase one consisted of six blocks with a student-selected component where students learn about clinical cases of different body systems during the first year of their degree programme. In phase two medical students were introduced to more complex cases and undertake three ten-week blocks of clinically based learning during their second year. Medical students learn about history taking, examination, investigation, diagnosis and basic management of cases. In phase three, medical students undertake seven six-week specialist clinical placements during their third and fourth year. They received one-to-one clinical supervision by senior doctors. Prior to graduation, medical students had to undertake a one-month assistantship to prepare them for actual clinical practice as newly qualified FY1 doctors (Warwick Medical School, 2016).

Appendix 9

Publicity: Electronic mail sent to the University of Warwick Medical School administrative team and Warwick Medical Society.

Dear Warwick Medical School administrative team OR Warwick Medical Society (delete as appropriate),

We would like to invite Warwick medical students (at any stage of training) to take part in our study entitled 'The graduate-entry medical student: challenges to transition through medical school' and we would be grateful if you can forward this email and attachment to the medical students.

This study explores Warwick medical students' perceived challenges during their medical school training. They will be invited to attend an initial interview between March - May 2012 and a follow-up interview around September 2013. We offer reimbursement of expenses for attending interviews. The findings from the study could help strengthen the student support system and enhance the student learning experience. To find out more please contact Dr Simon Tso (S.Tso@warwick.ac.uk).

Thank you for your help.

Yours faithfully,

Dr Simon Tso

Appendix 10

Recruitment letter

Invitation to participate in a research study entitled:

The graduate-entry medical student: challenges to transition through

medical school.

Dear Warwick Medical Student,

You are invited to take part in a research project exploring graduate-entry medical students' perception of the challenges they would encounter during medical school training. This study is carried out by Dr Simon Tso (Academic Clinical Fellow in Medical Education and Associate Clinical Teacher) at the University of Warwick. It is anticipated that the outcome of the study could help enhance medical student learning experience, the learning environment and the student support services.

Participation involves attending an initial interview talking about the challenges you anticipate you will encounter in the next academic year. You will be interviewed again about 1 year later talking about the challenges you actually experienced during the academic year. Each interview will last about 20-45 minutes. Interviews take place at University of Warwick. You will be reimbursed £5 for transportation and refreshment costs for attending an interview. The interviews will be recorded using audio device. You will be given a copy of the transcripts to comment on their accuracy.

All the data collected will be kept securely in an encrypted USB stick which is kept in a locked filing cabinet. To preserve your anonymity, the audio recordings will be destroyed after the data has been transcribed. The transcripts will not contain your name. Your name will not appear in the research report or publication. All your personal details will be destroyed when the research has been completed by 2014. The interview transcripts will be kept securely for 10 years after the research is completed and then destroyed.

Participation in this study is voluntary. If you are interested to take part and would like further information, please contact Dr Simon Tso (e-mail: S.Tso@warwick.ac.uk).

This study has received full approval from the University of Warwick Biomedical Research Ethics Sub-committee (Reference: 169-01-2012).

Thank you for considering taking part in this research.

Dr Simon Tso

Appendix 11

Participant information sheet

<u>Information Sheet for Potential Subjects</u>

Project Title: The graduate-entry medical student: Challenges to transition through medical school.

We would like to invite you to take part in our research study. Before deciding whether you wish to participate, it is important that you understand the nature of the research and your expected role in the study. Please take time to read this information sheet which will help you make an informed decision on whether to take part in this research.

What is the purpose of this study?

The purpose of this study is to understand the challenges to transition experienced by Warwick Medical School graduate-entry medical students during medical school training.

The objectives of this study are: -

1) To explore what are the challenges anticipated and experienced by graduate-entry medical students as they progress through medical school training.

2) To find whether or not these challenges anticipated by graduate-entry medical students are different from the challenges they later experienced.

3) To explore graduate-entry medical students' understanding and attitudes towards 'transition' and 'changing role and responsibilities' in the context of medical school training.

Will I benefit from participating in the study?

The outcome from this study can help medical educators to develop more effective ways to enhance Warwick medical students' learning experiences, the learning environment and the student support system.

What are the risks involved?

There are no known risks to individuals who participated in this research. If you tell the researcher you have encountered academic or emotional difficulties and would like to get help, with your permission the researcher can provide you with guidance and refer you to the University of Warwick Student Support Service.

What will I be asked to do?

This research study will take place in 2 stages. In stage 1, you will attend an initial interview lasting 30 – 45 minutes. You will be asked about the challenges you anticipate you will encounter in the next academic year.

About one year later, you will attend a follow-up interview lasting 20 – 30 minutes. You will be asked about the challenges you have experienced during the past academic year. All interviews will take place at University of Warwick and they will be recorded using audio tape. You will receive a

summary of the interview transcripts and you can comment on their accuracy.

How will the researcher use the information I have provided?

The information you have provided will be kept confidential. The interview recordings will be transcribed anonymously. The data from the anonymised interview transcript will be interpreted by the research team. Only Dr Tso will be able to link your name to the original interview transcript. The study findings will be reported anonymously (i.e. subjects' name will not be shown alongside any quotations). Subjects' demographics (i.e. year group, age group, gender, ethnicity, number of years since completion of first degree) will be reported alongside the quotations to help illustrate the context in which these comments were made.

All the research data will be kept securely in an encrypted USB stick in Dr Tso's locked cabinet and will then be destroyed 10 years after completion of the research. With your consent, the study findings will be published in a thesis, peer-reviewed journals and conference abstracts. In the exceptional circumstances where you have disclosed serious fitness to practice issues to the researchers, then the researcher will be obliged to inform the Medical School.

Will I be reimbursed for my expenses to participate in this study?

We will reimburse £5 to a participant to cover transportation and refreshment costs for attending an interview.

What if I do not want to take part in the study?

Participation in this study is entirely voluntary. Your decision not to take part in the study will not affect your progress as a medical student.

Can I withdraw from the study at any time?

Yes, you can withdraw from the study at any time without providing any explanation.

Who can I contact if I have further questions about the research?

If you have any queries please contact the Dr Simon Tso (Principle Investigator) on mobile: 07432140552 or email (S.Tso@warwick.ac.uk)

Who can I contact if I have concerns or complaints?

You can contact Ms Nicola Owen (Research Support Service, University of Warwick) on telephone: 02476522785 or email:

Nicola.Owen@warwick.ac.uk

Appendix 12

Consent Form

<u>Consent Form</u>

Chief Investigator: Dr Jane Kidd   **Principle Investigator:** Dr Simon Tso

Project Title: The graduate-entry medical student: Challenges to transition through medical school.

☐ **I consent to join in with this study**

1) I confirm I have read and understand the information sheet for the above study. I have had the opportunity to consider the information, ask questions of a member of the research team and have had these answered satisfactorily.

2) I understand that my participation is voluntary and that I am free to withdraw at any time without providing any reason.

3) I understand that the relevant sections of my data collected during the study, may be looked at by individuals from the research team where it is relevant to my taking part in this research. I give permission for these individuals to have access to my records.

4) I agree to interview being audio taped.

5) I agree to the use of direct quotations in publications provided that anonymity is preserved. I understand that every attempt will be made by the researcher team to ensure my anonymity, however, complete anonymity cannot be guaranteed.

_____   _____   _____

Subjects Name   Date   Signature

_____   _____   _____

Researchers   Date   Signature

OR

☐ **I do not consent to join in with this study**

Optional: please circle the statement which applies to you

1. No interest

2. Lack of time

3. The study is too intrusive

4. Others (please specify)

    _____

Appendix 13

Interview question guide

Below are the sample questions that could be asked to medical students regarding their medical school experience.

Stage one interview guide

Question: What does the term '*transition*' means to you?

    Potential follow up questions:

- How about transition in the context of medical school training?

- How does it make you feel?

Question: What has happened in the degree programme?

    Potential follow up questions:

- Work?

- Relationships?

- Finance?

- Any other major event you think will happen?

Question: What will happen over the next 1 year?

Question: Which issues are going to be challenging?

    Potential follow up questions:

- Why?

- How will you cope with this?

- How will your prioritise these conflicting demands?

Question: Will you be interested to participate in our follow-up interview?

Stage two interview guide

Question: Can you describe what has happened during your last academic year?

Potential follow up questions:

- What did you find particularly challenging?

- What could have been done to make you better prepared for these challenges?

Question: During stage one interview, you mentioned (provide an example of an issue the participant raised during stage one interview). What do you think about it now?

Appendix 14

Proposed Interview Schedule

Group	Student population	Subjects numbers (target)	Planned phase one interviews (approximately)	Planned phase two interviews (approximately)	Purpose
1	First year students	5-8	Spring 2013 (first year)	Autumn 2013 (early second year)	To understand the their experience through first and second year
2	Second year students	5-8	Spring 2013 (second year)	Autumn 2013 (early third year)	To understand their experience through first, second and third year
3	Third year students	5-8	Spring 2012 (third year)	Autumn 2012 (early fourth year)	To understand their experience through first, second, third and fourth year
4	Fourth year students	5-8	Spring 2012 (fourth year)	Autumn 2012 (early FY1)	To understand their experience through first, second, third and fourth year

Appendix 15

Approval letter from the University of Warwick Biomedical Research

Ethics Sub-committee

6 March 2012

**Warwick
Medical School**

PRIVATE
Dr. Simon Ho Yuen Tso
57 Heronbank Apartment
Scarman Road
University of Warwick
Coventry CV4 7AL

Dear Simon,

Study Title and BREC Reference: *The Graduate-Entry Medicine Student: challenges to transition through Medical School 169-01-2012*

Thank you for submitting your revisions to the above-named project to the University of Warwick Biomedical Research Ethics Sub-Committee for Chair's Approval.

I am pleased to confirm that I am satisfied that you have met all of the conditions and your application meets the required standard, which means that full approval is granted and your study may commence.

I take this opportunity to wish you success with the study and to remind you any substantial amendments require approval from the committee before they can be made. Please keep a copy of the signed version of this letter with your study documentation. The committee also requires you to complete an End of Study Declaration Form when you reach the end of your study; this form has been e-mailed to you.

Yours sincerely,

Deborah Biggerstaff
Deputy-Chair
Biomedical Research
Ethics Sub-Committee

Copy:
File
Dr Jane Kidd

**Biomedical Research Ethics
Subcommittee**
Enquiries: Clair Henrywood
Tel: 02476-528207
Email: brec@warwick.ac.uk

THE UNIVERSITY OF
WARWICK

Appendix 16

Table shows the date of interview, gender and year group of study participants.

Participant number	Gender	Date of stage one interview	Year group at stage one interview	Date of stage two interview	Year group at stage two interview
Y1-01	F	5/5/2013	Year 1	24/9/2013	Year 1
Y1-02	M	31/1/2013	Year 1	23/9/2013	Year 2
Y1-03	M	30/1/3013	Year 1	Not applicable	Not applicable
Y1-04	M	1/2/2013	Year 1	20/9/2013	Year 2
Y1-05	F	4/2/2013	Year 1	2/10/2013	Year 2
Y1-06	M	6/2/2013	Year 1	23/9/2013	Year 2
Y2-01	F	6/3/2013	Year 2	25/9/2013	Year 3
Y2-02	M	20/3/2013	Year 2	Not applicable	Not applicable
Y2-03	M	16/5/2013	Year 2	23/9/2013	Year 3
Y2-04	F	23/5/2013	Year 2	Not applicable	Not applicable
Y3-01	F	2/4/2012	Year 3	10/10/2012	Year 4
Y3-02	F	24/4/2012	Year 3	10/10/2012	Year 4
Y3-03	M	25/4/2012	Year 3	14/10/2012	Year 4

Y3-04	F	2/5/2012	Year 3	11/10/2012	Year 4
Y3-05	F	8/5/2012	Year 3	Not applicable	Not applicable
Y3-06	M	27/9/2012	Year 3	Not applicable	Not applicable
Y3-07	F	27/9/2012	Year 3	11/10/2013	Year 4
Y3-08	M	27/9/2012	Year 3	11/10/2013	Year 4
Y3-09	M	1/5/2013	Year 3	Not applicable	Not applicable
Y4-01	M	11/5/2012	Year 4	11/10/2012	FY1 doctor
Y4-02	M	14/6/2012	Year 4	Not applicable	Not applicable

Appendix 17

My published work: Student giving health advice to family and friends

(Please refer to Tso, S. and Yousuf, A. (2016) Student giving health advice to family and friends. *The Clinical Teacher*. 13(3): 219-222. doi: 10.1111/tct.12413 for page 1 of 4 of this paper.)

(Please refer to Tso, S. and Yousuf, A. (2016) Student giving health advice to family and friends. *The Clinical Teacher*. 13(3): 219-222. doi: 10.1111/tct.12413 for page 4 of 4 of this paper.)

Appendix 18

My published work: Disabled graduate-entry medical student experience

(Please refer to Tso, S. (2017) Disabled graduate-entry medical

student. *The Clinical Teacher*. (in press). Doi: 10.1111/tct.12653.

for page 1 of 5 of this paper.)

(Please refer to Tso, S. (2017) Disabled graduate-entry medical
student. *The Clinical Teacher*. (in press). Doi: 10.1111/tct.12653.
for page 2 of 5 of this paper.)

(Please refer to Tso, S. (2017) Disabled graduate-entry medical

student. *The Clinical Teacher*. (in press). Doi: 10.1111/tct.12653.

for page 3 of 5 of this paper.)

(Please refer to Tso, S. (2017) Disabled graduate-entry medical

student. *The Clinical Teacher*. (in press). Doi: 10.1111/tct.12653.

for page 4 of 5 of this paper.)

(Please refer to Tso, S. (2017) Disabled graduate-entry medical

student. *The Clinical Teacher*. (in press). Doi: 10.1111/tct.12653.

for page 5 of 5 of this paper.)

Appendix 19

Examples of entry requirements into graduate-entry medicine degree programmes in the United Kingdom in 2016.

Medical School	Sample entry criteria
*Imperial College London	2:1 in a science subject
Kings College London	2:1 undergraduate degree in a science subject, or a 2:2 undergraduate degree with a postgraduate subject in a science subject, or a nursing qualification
+University of Nottingham	2:2 degree in any discipline
*Queen Mary, University of London	2:1 honours degree in a science/health related subject
+University of Southampton	2:1 honours degree in any subject
+St George's, University of London	2:1 honours in any subject
+University of Cambridge	2:1 honours degree in any discipline
+Swansea University	2:1 honours degree in any subject
+University of Warwick	2:1 honours degree in any subject

* Medical schools that accepted graduates from science and/or health related degree subjects

+ Medical schools that accepted graduates from any degree subjects

(Source from Universities and Colleges Admissions Service, 2016)