By Incorporating the Education of Medical Students and Medical Trainees in Outpatient Clinics, is the Patient Experience Enhanced and Their Quality of Care Improved?

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Abstract

Background:

There is limited consensus on whether medical trainees in secondary care outpatient departments affect patient care that is delivered, despite the increasing momentum to provide more clinical education in this setting.

Objectives:

The aim of this thesis was to explore the experiences of patients attending local teaching hospitals, before conducting a review of the literature, to ascertain whether medical training impacts on the quality of care delivered in secondary care outpatient clinics.

Methods:

Twenty-nine patients attending teaching clinics in a local hospital trust were interviewed. Thematic analysis was applied to reports on their experiences and their opinions on the relationship between trainees and quality of care, which provided a base for the search strategy of the scoping review and also a means to triangulate the evidence in the discussion.

A broad range of English-language studies from 1994-2014 were then searched using a variety of electronic databases alongside the hand-searching of key medical education journals. Two researchers made the final decisions on paper inclusion according to predetermined inclusion and exclusion criteria.

Results:

Patients who were interviewed were happy to participate in teaching clinics, but none believed that their clinical outcome was altered by having a trainee present. In the scoping review, fifty-four papers met the inclusion criteria. Patient satisfaction was variable. Issues of concern included consent, quality of the research undertaken, discrepancies regarding whether teaching clinics afforded a higher quality of care and global patient satisfaction scores failing to provide the whole picture on patient experience.

Conclusion

Patients appear less satisfied with their experience of teaching clinics in secondary care compared to other health care settings. Future research should include robust studies on how the patient experience can be improved and clinical outcomes measured to enable safe and effective care for patients and a valuable learning experience for trainees.
Contents

Abstract ............................................. Page 2

Contents ............................................. Page 3

List of Tables/Figures ............................. Page 4

Acknowledgements ................................ Page 5

Author’s Declaration .............................. Page 6

Chapter 1: Introduction ........................... Page 7

Chapter 2: The Patient Perception of Training Clinics in a Local NHS Trust Page 29

Chapter 3: Scoping Review Methodology .... Page 59

Chapter 4: Scoping Review Results .......... Page 84

Chapter 5: Discussion ............................ Page 110

Chapter 6: Conclusion ........................... Page 135

References .......................................... Page 138

Appendices .......................................... Page 150

Glossary ............................................. Page 190
Tables and Figures

Table 1 Definitions of Quality of Care
Page 30
Table 2 Inclusion and Exclusion Criteria for Recruitment to Patient Interviews
Page 35
Table 3 Patient Interview Schedule
Page 39
Table 4 Sociodemographic Details of Interviewed Patients
Page 45
Table 5 Type of Teaching Clinic According to Grade of Trainee
Page 46
Table 6 Proposed Frameworks for Conducting a Scoping Study
Page 63
Table 7 Inclusion and Exclusion Criteria for Abstract and Paper Vetting
Page 77
Table 8 Suggested Method for Narrative Synthesis
Page 81
Table 9 Results of Hand Searching Key Medical Education Journals
Page 85
Table 10 Breakdown of the Journal of Origin of Included Papers from Hand Searching and Search Engine Results
Page 89

Figure 1 Graph of Hospital Activity
Page 10
Figure 2 Average Length of Medical Training
Page 11
Figure 3 Age Spread of Patients Interviewed
Page 43
Figure 4 PRISMA Diagram Example
Page 78
Figure 5 Logic Model, Suggesting Theoretical Ways in Which Teaching Clinics may Impact on Quality of Care
Page 82
Figure 6 PRISMA Diagram Illustrating Results of Literature Search
Page 88
Figure 7 Number of Papers Included in Final Data Analysis According to Country of Origin
Page 90
Figure 8 Breakdown of the Number of Papers Including Certain Specialties in Their Evaluation
Page 92
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Author’s Declaration

I confirm that this work is original and that if any passage(s) or diagram(s) have been copied from academic papers, books, the internet or any other sources these are clearly identified by the use of quotation marks and the reference(s) is fully cited. I certify that, other than where indicated, this is my own work and does not breach the regulations of HYMS, the University of Hull or the University of York regarding plagiarism or academic conduct in examinations. I have read the HYMS Code of Practice on Academic Misconduct and state that this is my own and does not contain any unacknowledged work from any other sources. I confirm that any patient information obtained to produce this piece of work has been appropriately anonymised.
Chapter 1. Introduction

This thesis aims to provide a broad insight into the evidence available on medical education and quality of patient care within outpatient departments. Using a two-pronged approach, the relationship between the quality of patient care and medical education within the outpatient departments of secondary care providers has been examined. Specifically, the question of whether there is a direct effect on the quality of care a patient receives when they are exposed to the teaching of medical trainees during their attendance at an outpatient clinic will be addressed. The methods used were as follows:

1. A patient interview study, conducted at a local hospital trust, provides first-hand patient views and experience to draw on for two purposes; as a research project in its own right, giving a local perspective, but also to inform a subsequent scoping review.
2. A scoping review of the literature describes the type of literature available on this topic and summarizes the main themes that can be drawn from these papers.

Once both have been concluded, the discussion chapter will triangulate the findings and comment on similarities and differences between the two approaches, drawing a conclusion around the knowledge base and what lessons can be learned for future healthcare within our region.

This chapter explains the rationale behind this thesis. In order to do this, a background on different healthcare services and medical education programmes in a number of countries will be presented, followed by a discussion regarding definitions of quality of care, before evidence available from primary care and inpatient studies is outlined.
Whilst the scope of the thesis sets out to examine worldwide data on the topic, there will be a particular focus on western healthcare provision; not only because of its pertinence to the place of research and practice of the author but also because of the origin of the bulk of research material available.

Rationale

Medical education is a unique system, comprising of a series of complex learning environments where the learner encounters patients during potentially intimate and vulnerable episodes, with the aim of increasing their own knowledge and skill base. As a student progresses through undergraduate and then postgraduate training, their levels of involvement in care provision, and responsibility for patients, increases whilst training is ongoing.

Meanwhile, the quality of care provided to patients is becoming increasingly scrutinised meaning the education and training of independent clinical practitioners has been brought under the spotlight for its more immediate impact on patient care, rather than being accepted simply as a means to train the new workforce and benefit future patient populations.

By discussing the changing environment of healthcare provision, medical education, governmental policy and findings from other health care arenas, the rationale for conducting a review into the relationship between medical training and quality of care in the lesser examined outpatient system will become clear.

On the 28th February 2014, 2943 records in PROSPERO and 1000 in BEME were searched to ensure that there are no registered literature reviews about the impact of hospital outpatient teaching clinics on quality of patient care. Similarly, a search of OVID/Medline identified no existing reviews on this topic.
Healthcare Provision

It is estimated that there are one million patient contacts every 36 hours within primary and secondary care in the UK. There are almost 16 million hospital admissions per year and 86 million outpatient attendances, with an overall net expenditure of more than £116 billion per annum (1).

The National Health Service (NHS) is the health service in the UK, free at the point of use, and employs around 1.3 million people including 55,000 junior doctors and is involved in the training of 41,000 medical students (2).

During the past twenty years or so, there has been a large shift within healthcare to reducing the length of inpatient stay due to technological advances and a focus on more rapid rehabilitation. Despite the average patient now living longer with co-morbidities and poly-pharmacy, the number of hospital beds has been reduced by 50% in the last 25 years (3, 4). This is a pattern mirrored across North America and Europe (5, 6). In the United States, this has been despite a move towards encouraging longer stays for maternity and neonatal admissions in an effort to counteract insurance company policies aimed at reducing the cost of lengthy stays.

In the UK there is a firm divide between primary and secondary care with general practitioners (GPs) leading primary care, dealing with a wide range of problems and largely controlling access to specialist services. Secondary care meanwhile consists of mainly hospital based specialists that are accessed via GPs or emergency services. General practitioners in the UK make around 9 million referrals to secondary care for elective appointments (7). The graph on the next page is taken from the King’s Fund website and shows the growth in the number of hospital attendances. When both first and follow up outpatient attendances are added together, there is more growth in this hospital setting than elsewhere, including Accident and Emergency.
The aim of primary care is to act as a gatekeeper for specialist services whilst providing an easily accessible access point for generic healthcare. In the rest of Europe, a similar model largely prevails but access to secondary care occurs in different ways. For example, Italy and Spain have a referral process from primary to secondary care similar to that in the UK, whereas in Germany and Belgium, patients can self-refer to secondary services and have only been encouraged in more recent years to access primary care physicians in the first instance (8).

The distinction between primary and secondary care services in the United States is less formulaic. Whilst primary care providers do act as gatekeepers to secondary care, primary care itself can offer services in community settings that may be deemed secondary care in European countries. General paediatricians and internal medicine specialists can also provide a large proportion of primary care and hence, primary care providers are described by the American Academy of Family Physicians as “a specialist in family medicine, internal medicine or paediatrics who provides definitive
care to the undifferentiated patient at the point of first contact…..in both inpatient and outpatient settings” (9).

Though definitions may vary slightly in terms of who is providing the care, the trend in increasing outpatient services compared to inpatient admissions is consistent. As the location of the majority of patient encounters has changed, education of medical students and doctors has had to follow (10-12). The next section discusses medical training in terms of its structure and the changes occurring to ensure trainees have equivalent exposure to conditions that may no longer be available in the traditional inpatient learning environment.

**Medical training**

Medical training in the United Kingdom is a lengthy process, commencing in the first year of medical school and continuing to the point of final certification as a general practitioner (primary care) or as a consultant (secondary/tertiary care). The diagram below illustrates the average time taken for this training but it is generally between ten and fifteen years full time, not including any out of programme research activity.

![Figure 2. Average Length of Medical Training, published by the General Medical Council, 2015 (13)](image-url)
In Europe, there are multiple training models. In Germany, medical school consists of 6 years of undergraduate study, traditionally split between pre-clinical and clinical years. Following graduation, specialized training takes a further 4 to 6 years (14).

In the USA, medical students have usually gained a bachelor’s degree prior to entering a four-year medical school course. They then enter a graduate medical education programme which lasts from 3 to 7 years, depending on the speciality (15). This postgraduate training is called “residency” although the first year can be called “internship”. Fellowships are available for sub-specialisation whereas the term “housestaff” is used to cover any doctor from first year of residency up until completion of postgraduate training. The glossary section at the end of the thesis contains some of the commonly used terms for medical trainees and trainers across the literature.

Despite an impetus to offer more primary care placements to medical students and foundation trainees, the majority of basic medical training in the United Kingdom currently takes place in hospital settings within the NHS (16, 17) and in teaching hospitals in the USA (15). Such hospital environments tend to be either district general hospitals or larger teaching hospitals i.e. secondary and tertiary care. Hospital inpatient units tend to be the major site of medical training worldwide, although a shift in education to community and outpatient care is actively encouraged (18, 19). The Royal College of Physicians, among other training bodies, now stipulate the number of clinics trainees must attend in order to satisfy minimum requirements of the curriculum in an effort to ensure the change of educational policy is adhered to by local education providers (20).

**Governmental Policy**

Medical training, particularly the postgraduate period, is currently facing enormous change under the scrutiny of Governmental bodies, the regulator and the public in the UK. There is an increasing dichotomy between training and service provision; the implementation of the European Working Time Directive, which limits the working
hours of doctors, has forced a rethink of the postgraduate training journey, as described by Temple (21, 22).

Meanwhile, recent scandals have questioned the assumption of provision of quality care within the NHS, and brought quality of care issues to the forefront of health policy. In 2013, a public inquiry concluded that there had been significant failings in an NHS trust within mid-Staffordshire (23). Between 2005 and 2009, lack of basic care, a culture where staff were fearful to report concerns, and concentration on financial targets with poor clinical governance led to complaints from patients and their relatives, alongside worrying mortality statistics. The enquiry into the failings of care in mid-Staffordshire led to a series of recommendations including some that recognised the importance of education and training in improving quality of care.

This enquiry triggered a proactive review of hospitals in the UK. The Keogh Review reported on fourteen NHS Trusts that were deemed to be failing in England (24). This report also suggested that trainee doctors and nurses were vital in contributing to improvements in quality of care, and reporting failings in accepted standards.

There has been subsequent discussion regarding what changes need to be made in order to adapt the medical workforce to a changing population of patients, whilst prioritising patient safety and quality of care. The Shape of Training Review, led by David Greenaway, calls for a more flexible approach to medical training, suggesting that organisations should identify more ways of involving patients in educating and training doctors, a view supported by the Health Foundation, an independent charity (25, 26). Greenaway goes on to suggest the current training system is slow to adapt to service needs and that supervision and support need to be placed at the centre of training and service delivery. However, hospital consultants are struggling to prioritise educational activities because they are encouraged to perform clinical duties in the time previously allocated to teaching (27, 28).

In summary, medical education and training takes place in organisations that are becoming increasingly focussed on efficiency and quality. Some training providers are concerned that education of medical students and staff is being sidelined due to the pressures of meeting service demand, particularly if there is a sense that trainees
may be wasteful and inefficient providers of care themselves (28-30). Where students are concerned, some authors suggest that if patient altruism is the only reason for their participation with training, healthy simulation patients should be used instead of sick patients (31). With budgetary pressures, every sector has to vie for funding, and educational activities must therefore justify any claim for future investment. With patient satisfaction, safety and clinical effectiveness high on the agenda, it is imperative to know if education and training has any impact on these outcomes.

Before the discussion of the findings from primary care and inpatient studies, the definition of quality of care is discussed in more detail so that the outcome to be assessed is delineated.

**Quality of Care**

Quality is a complex and multi-factorial concept. A single measure is unlikely to adequately capture all elements and quantitative measurement is difficult. There are a number of definitions available and no consensus on which to use in healthcare analysis.

Within the Health and Social Care Act 2012, it is written that the UK Secretary of State has specific duties regarding improvement in quality of healthcare services (32). These are to “secure continuous improvement in the quality of services provided to individuals for or in connection with the prevention, diagnosis or treatment of illness, or the protection or improvement of public health.” Specific outcomes listed are:

- The effectiveness of the services
- The safety of the services
- The quality of the experience undergone by patients

In 2001, the Institute of Medicine in the USA proposed that there are six specific aims which address quality of care (33). These are:
1. Safe care – avoiding injuries to patients from the care that is supposed to help them
2. Effective care – providing services based on scientific knowledge to all who could benefit and refraining from providing services to those not likely to benefit (avoiding underuse and overuse)
3. Patient centred care – providing care that is respectful of and responsive to individual patient preferences, needs and values and ensuring that patients’ values guide all clinical decisions.
4. Timely care – reducing waits and sometimes harmful delays for both those who receive and those who give care
5. Efficient care – avoiding waste, in particular of equipment, supplies, ideas and energy
6. Equitable care – providing care that does not vary in quality because of personal characteristics such as gender, ethnicity, geographic location and socioeconomic status

These statements have some similarities in that they prioritise patient safety, patient satisfaction and clinical effectiveness. It is somewhat surprising that the UK has omitted the issue of equality in its statement on quality in healthcare whereas the USA does comment on equality of services, perhaps less achievable in a fee paying system.

However, once a definition is agreed upon, the problem of measuring outcomes remains. A report by Raleigh and Foot for the King’s Fund in 2010, which examined issues with tools to measure quality of care, states that “measurement often misses areas where an evidence base and/or data are not available, or aspects of quality that are not readily quantifiable” (34). The authors comment that data-related as well as population-related issues can all skew common measures of quality and this will be a key point to remember when interpreting how studies included in the scoping review have presented their outcomes.

Given these issues, making an association between a particular care quality outcome and a specific medium (e.g. medical education) is likely to be challenging. In the next section, I will present data from studies conducted in inpatient and primary care
settings in an effort to ascertain whether there are lessons that can be learned from findings here regarding the impact of medical training on patient care.

**Data from Primary Care and Inpatient Studies**

Looking at data from primary care and inpatient settings is relevant to both the local inpatient studies and the wider scoping review because both research environments share significant similarities with outpatient secondary care. Primary care usually involves consultations within a clinic room environment, not dissimilar to general practice. Indeed, as mentioned above, in the US, general paediatrics and internal medicine can occasionally come under the primary care umbrella because of this. Inpatient care has some crossover factors including leadership by secondary care specialists, involvement of a referral process and perceived seriousness of a patient’s condition.

An awareness of the findings from these settings informs topics of discussion in the patient interviews, the search strategy in the scoping review and in the discussion section to compare and contrast the outpatient experience.

**Primary Care**

The broad findings from studies into education in primary care can be broken down into the following key areas.

*Characteristics of Teaching Practices*

Evidence from the UK suggests GP practices associated with training are more likely to perform better when ranked by Quality and Outcomes Framework (QOF) Scores (35). This framework was introduced in 2004 as a way for the UK Government to incentivise practices to provide high quality care through a series of measures e.g. preventative treatment for diabetes, high blood pressure and obesity. Ashworth and Armstrong found that training practices performed better in terms of QOF scores than
non-training practices (35). However, these training practices were more likely to be concentrated in areas that were less socioeconomically deprived. The authors also suggest that the accreditation process to become a training practice encourages the meeting of certain standards, which correlate with QOF, and that practices willing to teach probably already had an ethos consistent with providing high quality care.

Gray et al. also found, prior to the introduction of QOF scores, that teaching practices provide high quality care by analysing performance measures including cancer screening and immunisation rates (36). Job vacancies were also fewer compared to practices who did not train students or GP registrars, and the authors suggest that the smaller patient list size and diversity of job planning within teaching practices can aid recruitment of physicians.

General practitioners self report that being involved in education can improve the quality of their practices as a whole. In 1999, Hartley et al. interviewed thirty GPs who were involved with teaching medical trainees (37). Physicians reported that their morale improved and their clinical knowledge was refreshed when involved in teaching. The image of their practice was also felt to have improved with the presence of trainees. However, there were provisos of having supportive peers and the time available to teach so that administrative duties did not end up being completed in personal time.

Greco, Brownlea and McGovern researched the impact of patient feedback on medical trainees in primary care and in doing so found that GPs themselves also gained personal constructive feedback from the patients (38). Benson et al., upon interviewing patients involved in teaching consultations, found that patients perceived their GP to be more up to date following a teaching consultation (39).

Despite some positive changes, largely reported from UK general practice, primary care in many countries has suffered from low recruitment due to a lack of desire amongst trainees to take up the discipline. This has been particularly the case in the US where Keirns and Bosk suggest that trainees often experience primary care in dysfunctional clinics where residents work in understaffed and under-supported conditions (40).
There are also concerns over the time taken by GPs to teach students and their subsequent productivity. Walters et al., in two articles, present their findings from GP practices in Australia (41, 42). In one, consultations with and without medical students were videotaped and the activity of GPs analysed. Whilst GPs spent more time clarifying a patient’s history in a teaching session, they spent less time on clinical examination and administrative tasks, although authors note that it was likely that some administrative duties were subsequently pushed into the GPs personal time (41). In a second paper, training GPs did not have significantly longer consultation times (42).

**Patient Satisfaction**

Patient satisfaction or experience is one of the most common quality outcomes measured across healthcare. In primary care, patients were generally satisfied with teaching and similar rates of satisfaction and benefits listed by patients are seen across several studies.

Most studies, when patients were asked how satisfied they were following a consultation, found no change in patients’ satisfaction levels in teaching versus non-teaching clinics (39, 43-45).

Haffling and Hakansson in Sweden, found that 92% of patients were happy with their consultation when seeing a senior medical student prior to their GP (43). Personal gain and altruism were the main reasons behind them consenting to and enjoying the consultation process. Emotional and intimate examinations could cause reluctance with consent and comfort levels. Patients reported being facilitators of teaching or exemplars of their conditions, a finding mirrored by a study in the UK where Stacy and Spencer recorded patients suggesting these benefits in interviews (46). Being able to talk more about their problems and learning about themselves and their conditions were quoted as well as gaining satisfaction from helping students progress in their studies. A sense of altruism and improved self esteem was also reported by patients involved in the study by Benson et al. (39).
Malcolm, Wong and Elwood-Martin conducted a questionnaire survey of patients attending family medicine clinics in Vancouver, Canada (44). Common reasons for patients participating in training clinics included them wanting to contribute to the training of future doctors and the potential of getting two opinions rather than one from the consultation. A lower percentage (11%) thought that residents were more up to date than their usual doctor. However, up to 60% did not understand the stage of the residents’ training and many thought they were students. Reasons for a reluctance to see residents include a wish to see their own doctor, avoiding a lengthy process whereby they would need to repeat their medical history and a perception that residents are less experienced.

Cooke et al. interviewed 278 patients in general practice surgeries in the UK in the early 1990s. The large majority (97%) of patients were positive or neutral about medical students being present in consultations, particularly if they had been exposed to teaching consultations before (47). Some felt that medical students positively impacted on their quality of care, commenting on benefiting from the discussion between the doctor and the student. Benson et al. reported that patients thought their GPs were more up to date after being involved in a teaching consultation, one way patients may perceive their quality of care being superior in a teaching practice (39).

Isaacson et al. surveyed patients who had seen first and second year medical students within primary care (45). Although patients who saw students with their normal doctor were generally satisfied (83%), this did increase to 91% when patients saw their doctor alone. A large majority (85%) said that they would be willing to see a student again, half commenting that a teaching consultation added value to their visit. Bentham et al. also assessed patients’ reactions to consultations where they saw a medical student prior to their GP (48). Although most were neutral about encounters with students, 35% did report an advantage in teaching consultations although the reasons for this were not detailed.

Whilst patient satisfactions studies have gleaned largely positive results for teaching clinics in primary care, those looking at factors of consent and participation suggest
that perhaps there are some concerns regarding informed consent and study design that should be addressed. This is discussed below.

Consent/willingness to participate

Whilst studies looking at patient satisfaction may not suggest any particular change when patients are exposed to teaching of medical trainees, papers that delve deeper into why patients do or do not consent to teaching clinics reveal some alternative views.

Whilst Benson et al. found patients assumed they had more control over seeing trainees in a primary care setting compared to secondary care hospital environments, Rees and Knight found that nearly a quarter of patients agreeing to have a student present during their consultation would have rather seen their GP alone and raise issues of how consent is gained (39, 49).

Heathcote reports that patients attending primary care for family planning advice found it easier to refuse medical trainees when asked by a receptionist yet the commonest person to recruit patients is the training doctor, the one that patients find it hardest to refuse (50).

Devera-Sales, Paden and Vinson conducted semi-structured interviews with patients as well as distributing questionnaires in a study conducted in the US (51). Whilst most patients were willing to have a student involved in their health care, privacy concerns were a barrier to consent and comfort levels for teaching clinics.

Nakar et al. surveyed patients to ascertain their opinion of residents compared to their usual primary care practitioner (52). Whilst 78.9% thought residents were as skilled as senior doctors, 40% were unhappy with the frequent change of residents. This was particularly the case for more regular attenders who would rather see their own doctor rather than a different resident each time, affecting their willingness for future participation.
Inpatient Care

Inpatient care is quite distinct from primary and secondary care clinics due to the potential residential status of the patient and perceived vulnerability of the patient and severity of illness involved, among many factors. However, research into education and quality of care in the inpatient setting can provide insight into issues that may be relevant for all healthcare settings. Papers from the inpatient setting include those looking at teaching versus non-teaching hospitals, cost implications of teaching, issues surrounding consent, patient satisfaction and trainee impact on patient outcomes.

Teaching Hospitals versus Non-Teaching Hospitals

Some commentators believe that teaching hospitals may be perceived to provide a higher quality of care compared to non-teaching hospitals due to their status, reflected in patient surveys in the United States (53). In their review into quality of care provided by teaching hospitals versus non teaching hospitals in the US in 2002, Ayanian and Weissman were concerned that medical staff and patients alike may be swayed by the ability of teaching hospitals to treat complex medical problems whilst being at the forefront of research (54). Thus the risks of substantial involvement of inexperienced trainees, leading to possibly substandard care with fragmented overview by senior physicians, could be overlooked. The need for teaching hospitals to prove their ability to provide high quality care is paramount when research and teaching costs were recouped partly by increased charges for treatments relative to non-teaching hospitals (55, 56). Twenty studies were analysed, in the review by Ayanian and Weissman, and the largest of the studies did support the assumption that large teaching hospitals provide better care, however this varied according to the condition studied (54). There was less difference between smaller teaching hospitals compared to non-teaching hospitals. Differences in short term mortality rates for conditions were not found to be significant. The authors did suggest that shortcomings of the review included a lack of obstetric and neonatal data, functional outcomes as well as studies from ambulatory (outpatient clinic) settings.
In 2005, a review by Kupersmith included 23, mainly US based studies comparing the performance of teaching and non-teaching hospitals (57). Kupersmith’s literature review included 19 papers that were also analysed by Ayanian and Weissman. His conclusion was that risk-adjusted mortality was lower in teaching hospitals in 9 out of 15 studies, and teaching hospitals also had more favourable process measures for quality of care outcomes. However, Ayanian and Weissman had come to different conclusions regarding at least five of the papers concerning overall effect on mortality suggesting there is difficulty in making an overall judgement for hospital performance over a spectrum of conditions.

A systematic review in 2006 by Papanikolaou, Christidi and Ioannidis found mortality to be no better or worse in teaching hospitals versus non-teaching hospitals (58). A strength of this review was that it was cross-departmental and consisted of 132 studies, but a weakness is that it focused mainly on mortality due to 93 of the included papers concentrating on this outcome. Out of all mortality figures, only three were significant; breast cancer and cerebrovascular accident survival rates were superior at teaching hospitals but survival rates post-cholecystectomy were better in non-teaching hospitals. Authors were not able to rigorously examine other outcomes.

Navathe et al. conducted a more recent and specific study into mortality rates following acute myocardial infarction in 2013 (59). They compared teaching and non-teaching hospitals adjusting for patient risk level within cohorts. No survival benefit was found for low or high risk patients admitted directly to teaching hospitals.

Shahian et al., in 2012, used publicly available quality metrics from hospitals across the United States to compare the performance of teaching and non-teaching hospitals (60). They found that processes associated with cardiovascular scores and pneumonia demonstrated a positive correlation with teaching intensity, suggesting treatment was better with increased teaching activity. However, when Mourad and Redelmeier looked for a connection between teaching and clinical outcomes, there was not a link (61). They asked trainees to rate forty general medical trainers according to their teaching capabilities. Then they analysed the clinical outcomes of patients they had cared for with conditions including pneumonia, heart failure and gastrointestinal
bleeding. Short-term outcomes, length of stay and readmission rates did not correlate with teaching effectiveness.

Pingleton et al. reasoned that educating residents about quality of care in teaching hospitals would improve the quality performance of that hospital (62). However, examining the curricula of residents in different hospitals and the performance of hospitals did not show any relationship.

Cost Implications of Teaching

The cost of educating medical trainees has been particularly examined in American systems. The fear that postgraduate trainees may be wasteful and inefficient has been something that educationalists have strived to allay through adjusting for demographic factors and potential benefits trainees may bring to overall quality of care (30).

Clinical productivity has a knock on effect on the effectiveness of a service and its ability to provide better care for a larger number of patients. Hiller et al. found that teaching students in an Accident and Emergency department did not detract from the normal flow of patients or billing produced by the department on teaching days (63).

Khaliq et al. meanwhile examined inpatient ward outcomes when trainees were or were not directly involved in patient care (64). Outcomes assessed included length of stay and costs for laboratory and radiology investigations. There were no increased costs for patients admitted to a service where trainees were involved with care.

Trainee Impact on Patient Outcomes

Whether trainees can affect the outcome of patients admitted to hospital through their direct responsibility for care has also been studied as a route to address quality of care performance.
In 1995, Mattana, Patel, Wagner and Singhal analysed records of 115 patients who were treated for end stage renal failure. The group care for by supervised fellows showed superior dialysis efficacy and biochemical results than those cared for by private physicians (65). The issue of appropriate supervision could be key. In a systematic literature review, Farnan et al. examined the effect of clinical supervision on both patient and educational outcomes. They found that enhanced supervision was associated with improved patient outcomes. This was usually due to the teaching physician altering the assessment of or management plan for a patient after a personal assessment (66).

Peets, Boiteau and Doig conducted a study in Canada to assess the outcomes (length of stay and mortality) of patients admitted to intensive care units when trainees (fellows) were or were not present (67). Although previous studies had suggested the presence of trainees was a boost to departments, the authors did not find any significant difference.

A common reason for patients to accept trainee involvement in their care is to educate the next generation of physicians, thereby benefiting future patients. A study in Japan by Hayashino et al. in 2006 asked trainees in internal medicine to complete an examination on five case studies (68). They also asked them for details of their clinical exposure (number of cases seen) and type of institution. Greater clinical exposure and training at specific teaching institutions indicated a better performance by trainees, suggesting they would provide a higher quality of care to future patients.

There are some studies concerning the training of non-medical health care professionals in secondary care. Dalal et al. found patient care was equivalent in an anticoagulation clinic when cared for by pharmacy students or qualified pharmacists (69). Gradwell et al., meanwhile, suggest specialist nurses in dermatology can provide effective patient care in terms of education and support to allow a dermatology consultant more time to see new patients (70).
Patient Satisfaction

Unlike studies from primary care, patient satisfaction may not be as widely analysed an outcome for measuring the impact of medical education on inpatient care although it is recognised for its importance.

Eckardt et al. considered patient factors affecting satisfaction during a colonoscopy procedure (71). Despite this being an intimate and potentially uncomfortable procedure, the participation of trainees did not adversely affect patient satisfaction or pain scores.

An Australian study by Nair, Coughlan and Hensley into teacher, trainee and patient perspectives on bedside teaching on hospital wards found that 77% patients enjoyed the teaching process, however only 37% felt they had been appropriately forewarned and 12% felt it was a breach of confidentiality (72).

In Columbia, Esguerra et al. used patient questionnaires to ask patient perceptions on quality of care before and after the introduction of medical students into the general hospital setting (73). They found that patient satisfaction improved following the arrival of medical student and patients rated their physicians higher in terms of time spent with them, friendliness and perceived competence.

Scheffer et al. created a clinical education ward where medical students would care for patients under supervision in their final year of training (74). Compared to standard wards from the same hospital, patients and staff were more satisfied with patient care provided in this dedicated learning environment.

Consent/Willingness to Participate

Inpatient care could either be considered a setting where patients are less likely to consent to student and trainee involvement due to the potentially more intimate situations, or where patients feel more obliged to consent because of the teaching
environment. Postgraduate trainees, as opposed to medical students, are usually a more formal part of the healthcare team on wards and employed by the hospital to take on a certain level of responsibility for patient care.

There is evidence from inpatient studies which mirrors that found in primary care. One area is the issue of informed consent. Patients do not always understand the hierarchical structure of the medical team. This is suggested by Huynh et al. who found that surgical patients in Australia had a poor understanding of the term “registrar”. Nevertheless, patients were happy for trainees to play a role in their surgery under the supervision of a consultant, even in private hospitals. A second Australian study also found that patients were at least as receptive to the presence of medical students in private hospitals as they are in public hospitals (75), a finding reflected in a study conducted in Brazil (76). In the US, Bhansali et al. found parents of paediatric patients were confused about roles surrounding physicians and trainees on a paediatric ward. Whilst there was some understanding around the limited role of a student in direct care, the level of a resident’s training and responsibility was not clear (77).

Versluis and Van Der Linden, found patients in the Netherlands did not understand the training pathway of a resident but were happy for residents to conduct gynaecological surgery under supervision (78). Likewise, Wisner et al. found that patients would accept resident involvement in cataract surgery provided they were consented in advance by the attending surgeon (79). Santen et al. found most patients willing to allow medical students to perform minor procedures in an Accident and Emergency department, even if aware of the student’s inexperience (80). However, Moodie et al., found that while 70% of cataract surgery patients in London agreed that it was appropriate for a trainee to take part in surgery, only 57% were happy to be operated on themselves by trainees, even under consultant supervision (81).

A study in the US by Magrane, Gannon and Miller, found that patients in obstetric units allowed students to be present in their care episodes mainly due to a sense of duty in their education and training (82). Two years later, Nicum and Karoo reported on a questionnaire study within a UK obstetric unit. Women who already had children were more comfortable allowing the presence of medical students in
subsequent labour, but mainly out of a sense of responsibility to train the future workforce (83). In Kuwait, patients were more accepting of students when there was no direct contact despite the majority of patients feeling that the presence of students increased the quality of health care of the hospital as a whole (84).

Conclusions from Primary Care and Inpatient Data

Data from primary care and inpatient settings suggest patients largely see themselves as having a major role in medical education for the sake of training the future generation of doctors as opposed to experiencing any immediate benefit themselves. Issues of informed consent and the true level of satisfaction during these experiences do raise areas of concern.

There are also problems with the research itself. Two reviews looking at a broadly similar set of papers came to very different conclusions surrounding the superiority or otherwise of teaching hospitals. This may be partly because many of the quality measures do not enable a straightforward correlation to education being a factor in an institution performing well against quality standards.

In many of the papers, patient and clinician views are not directly compared to clinical outcomes; and evidence linking subjective views and quantitative measures of quality of care is lacking. We do not know whether education drives quality or whether those willing to participate in education are also more motivated in improving the quality of their own practice.

Whilst there are positive effects of training on patient satisfaction and clinician job satisfaction, outcomes on objective measures of quality of care performance are disputed from study to study, perhaps reflecting a difficulty in accurately capturing this data.

Outpatient clinics in secondary care are likely to face similar challenges but also specific ones relating to the unique environment of an outpatient service with the
associated perceptions of controlled access and anxieties over the suggested need for specialist care.

Authors have found pre-operative clinics useful environments for trainees to cover learning outcomes (85, 86) and, by attending outpatient clinics, trainees report they are more likely to choose a specialty with outpatient duties accordingly (87, 88).

There has been a subsequent building of momentum to assess the costs of outpatient teaching and devise methods to ensure adequate exposure of trainees to these environments without compromising the quality of patient care (89-91).

**Summary**

In this chapter, the rationale for the thesis has been discussed followed by an introduction to some key concepts surrounding quality of care and medical training pathways within rapidly changing healthcare systems. The literature from primary care and inpatient studies introduces the types of theme expected to emerge from a local patient interview study and a scoping review of secondary care outpatient clinics.

In the next chapter, the local project on patient interviews in secondary care outpatient clinics is presented. This is followed by a scoping review of the literature on the impact of medical training on patient quality of care in secondary care outpatient departments. Once completed the results are compared to inpatient and primary care data.

While training is necessary and fundamental to maintain a medical workforce, this review explores whether the process of such training can affect patient care more directly and immediately in the outpatient department. If training is found to have a direct impact on the quality of patient care this would be useful evidence for local and national stakeholders involved in medical education, practice and policy.
Chapter 2: The Patient Perception of Training Clinics in a Local NHS Trust

Introduction

The main focus of my thesis is a scoping literature review into the effect of undergraduate and postgraduate medical education on the quality of care in outpatient clinics.

When constructing a search strategy, and considering search terms, I wanted to reduce bias in the a priori search protocol. It was possible that the search strategy may be too heavily weighted from the perspective of both the doctor and the trainee, without necessarily capturing that of the patient. Thus the language inputted into the database could skew the papers that are retrieved.

By interviewing a group of patients, I hoped to elucidate whether they had different opinions on what effect trainees had on their care. The findings could then be fed into the review protocol and, once the scoping review was completed, the results of this wider literature analysis are compared with the local results gained through interviews in the discussion chapter. Therefore there were two purposes to interviewing patients locally; to reduce bias in the search protocol, and to triangulate findings from the literature review in order to test relevance to a local population.

This chapter describes the rationale, objectives, methodology, findings and limitations of interviewing twenty-nine patients to inform a review protocol.

Rationale for the project

As discussed in the introductory chapter of this thesis, one aspect of quality of care, no matter which definition we use, is patient experience or patient satisfaction. Below, I have listed definitions of quality of care from three key organisations (32,
33, 92). All include patient experience or patient centred care as being integral to the overall markers of quality.

<table>
<thead>
<tr>
<th>Health and Social Care Act</th>
<th>Institute Of Medicine</th>
<th>World Health Organisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective</td>
<td>Safe</td>
<td>Effective</td>
</tr>
<tr>
<td>Safe</td>
<td>Effective</td>
<td>Efficient</td>
</tr>
<tr>
<td><strong>Patient experience</strong></td>
<td><strong>Patient centred</strong></td>
<td>Acceptable/patient centred</td>
</tr>
<tr>
<td>Timely</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Efficient</td>
<td></td>
<td>Equitable</td>
</tr>
<tr>
<td>Equitable</td>
<td></td>
<td>Safe</td>
</tr>
</tbody>
</table>

Table 1: Definitions of Quality of Care

The patient or lay perspective has become a popular one to capture in many organisations whether private or public, healthcare or non-healthcare related. Patients are becoming recognised as stakeholders in the health service rather than mere recipients of paternalistic delivered healthcare. In the UK, the outpatient experience has been reported on less frequently than in inpatient and primary care settings (93).

Patient satisfaction or experience is difficult to conceptualise because of the multi-dimensional nature of this subjective variable. Measures of “satisfaction” have been said to reflect combinations of the patient’s personal preference, expectations and the realities of care received (93-97). Influences upon these variables are also multiple, for example media reports, cultural background, health status to name just a few (94). Because of this, there has been an effort to re-focus on areas of patient experience rather than purely asking whether a patient is satisfied or not with their care. This has the aim of finding out what elements of a care episode correlates with whether a patient is satisfied or dissatisfied with their care which can afford realistic targets for improvement (94, 98).
Research in 2010 by the Picker Institute determined key factors influencing patient experience in the outpatient department (93). By identifying which individual questions from the 2009 National Survey of Outpatients in England most predicted the overall satisfaction rating, five areas were suggested as reliable, strong predictors of patient experience:

1. Dealing with the issue (for which patients presented themselves)
2. Doctors
   a. Enough time spent with the doctor
   b. Whether the doctor adequately explained treatment
   c. Whether the doctor listened
   d. Whether the doctor answered questions appropriately
   e. Whether the patient had confidence in the doctor
   f. Whether the doctor was aware of their medical history
3. Cleanliness
4. Other professionals
5. Information about discharge (from clinic)
6. Information about treatment

When the training of medical students and junior doctors is incorporated into the outpatient clinic, this may impact on many of these domains, depending on their level of involvement with the patient. Therefore it is imperative that the patient’s experience with trainees is considered when developing patient-centred services, particularly when the recognition of patient’s views can lead to tangible benefits (99).

The main findings from research in primary care suggest that patients are, on the whole, very happy to help with the training of the future NHS workforce and there are some benefits to their quality of care (35, 36, 39). However, potential differences in the hospital environment that could challenge the provision of a satisfactory patient experience could be:

1. Patients are expecting to see a specialist upon referral by their general practitioner and therefore may not be as willing to see a training grade doctor
2. Patients may be more willing to see a medical student with a consultant than registrar alone (with no consultant input) for example

3. Once referred to secondary care, the patient may be more anxious owing to the perceived seriousness of their condition and less open to taking part in teaching clinics

Therefore relying on results from the primary care data to inform a scoping review may be presumptuous. Additionally, the Picker Institute found there were differences between inpatient care, primary care and outpatient care in terms of what patients most valued (93).

*Rationale for the process*

Semi-structured interviews were chosen as they afforded the ability to ask open questions whilst keeping the focus on topics relevant to the literature review. The negative aspect of this technique is that the interviews may vary from one to the next in terms of exact topics covered (100).

Thematic analysis will be applied to the interview notes to provide a descriptive and exploratory report rather than aiming to prove or disprove the researcher’s preconceptions (101).

In 1929, Odum and Jocher wrote in one of the first textbooks on qualitative research: “an interview is made for the purpose of securing information…about the informant himself, or about other persons or undertakings that he knows or is interested in. The purpose may be to secure a life history, to corroborate evidence got from other sources, to secure…data which the informant possesses” (100, 102).

Although the interview process has evolved to become more robust, the objectives remain the same. By reflecting on themes discovered by the interviews results and those from the scoping review, I hope to both imbed the patient centred view within the protocol and to corroborate findings from the interviews with the wider research field.
Once both the interviews and the literature review have been completed, there will be a reflection on the similarities and differences identified by both projects within the discussion chapter. By doing so there is triangulation between the wide geographical net of knowledge offered by the scoping review and the narrow focus of the local interviews.

Other possible approaches for this research included focus groups or videoing of interviews. These were not chosen here due to the limited resources for such methods.

**Aims and Objectives of the Patient Interviews**

**Aims**

(1) To conduct of patient interviews within hospital outpatient departments in order to gain insight into their experiences
(2) To find themes on quality of care relating to the teaching environment and feed these back into the search protocol

**Objectives**

(3) To conduct short interviews with patients who have attended an outpatient appointment where either a medical student or a doctor in training of any grade were present.
(4) To ask open questions regarding their experience but also some specific questions regarding their opinion on quality of care in a teaching clinic
(5) To analyse the interview findings through qualitative methods
(6) To use the findings to inform the scoping review, in order to reduce bias
(7) To compare the results of the scoping review with the results from the patient interviews to see if there are correlations or discrepancies i.e. provide triangulation.
Method

The research questions

(1) Do patients perceive that their quality of care is improved when they are treated in hospitals which are actively involved in the training of junior doctors?

This question aims to elucidate the overall impression that a patient may have when attending a teaching hospital i.e. if they have a sense that a teaching hospital is superior or not in terms of quality of care.

(2) Do patients enjoy the experience of participating in teaching and if so, why?

Patients may enjoy the experience of participating in a teaching clinic, for example because the consultant takes more time with them, or because they learn more about their condition. This would reflect a common ground with primary care (39).

(3) Are there differences in patient satisfaction during outpatient consultations, depending on the grade of doctor in training?

Because the interviews will recruit patients who have been into a teaching clinic with any grade of medical trainee (from medical students through to senior registrars) it may be that they are less satisfied with more senior trainees because this will lead to increasingly less input from the consultant.

Ethical Approval

On the 6th June 2013, the study was approved by the West of Scotland Research Ethics Service after proportionate review, REC reference 13/WS/0152 (see Appendix 1).
Participant Recruitment

Patients were recruited from outpatient departments in two sites within a large teaching hospital in the North of England.

Over six days, six medical specialty clinics were attended by one researcher (MS), where thirty patients were invited to take part in an interview. A variety of specialties were chosen to try to widen the representation of the cohort of patients approached. Consultants running clinics were approached in person or via email, by MS, in order to gain their consent to interview patients attending their clinics. However, often trainees were not always guaranteed to be present so sometimes this was discussed on the day when teaching clinics had been identified.

The criteria outlined in Table 2 was used to identify appropriate patients:

<table>
<thead>
<tr>
<th>Inclusion Criteria</th>
<th>Exclusion Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outpatient clinic attenders</td>
<td>Those who cannot or do not wish to give consent</td>
</tr>
<tr>
<td>Those able to give consent</td>
<td>Those who have not attended a teaching clinic</td>
</tr>
<tr>
<td>Those who have attended a clinic where a medical trainee was present</td>
<td>Non-English speaking with no translator present</td>
</tr>
<tr>
<td>English speaking or translator already present</td>
<td></td>
</tr>
</tbody>
</table>

Table 2: Inclusion and Exclusion Criteria for Recruitment to Patient Interviews

Patients were approached in person by MS with a brief explanation of the project and asked if they would be willing to answer some questions. If they agreed, they were taken to a room with only themselves, plus relatives or carers in some cases, and the
researcher present. An information sheet was provided and a more detailed verbal explanation about the project was given. If they were happy to go ahead with the interview, they were asked to sign a consent form. They kept the information sheet which contained contact details for the project. As patients were approached on the day at various locations, there was no opportunity to forewarn patients about the project via letter or poster. No further contact with the patients was necessary following the interviews.

The consent form and patient information sheet are enclosed in Appendices 2 and 3.

Ethical Considerations

No coercion or incentives were used to aid recruitment. It was made clear to patients that the researcher was not clinically linked to their care and comments were confidential. However, patients were informed that confidentiality would be broken if any comments suggested a patient safety concern.

However, potential burdens for participants were identified such as time taken for the interview and delay in leaving the hospital, even though the interviews were likely to be short in length. Any delay could lead to a financial penalty in terms of increased cost of car parking or they may miss public transport. Despite this, it was decided not to offer financial incentive to take part in the research, which was important to keep the study financially neutral.

It was appreciated that the patients may feel unable to express negative comments about teaching clinics when they were aware that the researcher was a medical trainee. However, it was felt that it was more important to fully disclose the identity of the researcher to the patients involved. No patients were interviewed from clinical areas in which the trainee was working.

To comply with legal and ethical duties of research, a consent form and information sheet was used to promote and document informed consent. Confidentiality was ensured by anonymising data. Any patient sensitive data was stored on trust
computers, unlinked from the interview transcripts, and destroyed within three months of the study.

Data Collection

The interviews were intended to be based on a structured discussion rather than prescribed questions to enable the patient to put forward their own ideas and thoughts rather than being guided by the researcher. In order to cover salient points and to direct patients on to the topic of conversation that information was required on, headline questions were used and are listed below as part of the interview schedule, outlined in Table 3.

- Background of patient (demographics)
- What grade they perceived trainee to be
- What role the trainee played in their consultation
- Whether consent was sought for trainee being present if applicable
- How happy they were to participate in teaching consultation
- Positive factors regarding consultation
- Negative factors regarding consultation
- Comparison of teaching and non-teaching consultations (if they have experienced both)
- When a trainee is present, do you think, overall, this has an impact on the care you have received?
- Has being cared for in a teaching hospital had an impact on the care you receive?
- Why did you agree to be part of a teaching consultation?
- Do you think the hospital makes the extent of teaching/training adequately clear
- Any experience of better teaching experiences that the hospital could learn from?
These questions were constructed to remain as clear and neutral where possible and were subjected to ethical review. They also acted as a prompt to keep the interview focused on the topic. However, efforts were made not to allow the question set to restrict any discussions on related topics.

Responses to patients’ comments were minimal other than to encourage flow of conversation and no interruptions were made other than to check understanding or move on to another area of questioning. Patton’s model of interviewing style was adopted to guide patients from basic demographic details to the clinic environment they had experienced and on to their thoughts and feelings surrounding teaching clinics (103).

Handwritten notes were taken during the interview at a minimal rate so as to not interrupt the flow of the interview. Once the interview was concluded, time was available to expand these notes immediately afterwards. Recordings of the interviews were not taken. This allowed a more relaxed setting for a scoping style interview but proved disadvantageous in the analysis subsequently.

The main pitfalls that were pre-identified were interruptions in a busy hospital setting and maintaining interviewer neutrality should patients ask for advice or make a statement that the interviewer may be tempted to correct (104). In order to address these, nursing staff were always approached to find a quiet room for the interviews to take place to minimise interruptions whilst the interviewer remained mindful of their role as a researcher as opposed to a clinician.

Patients were offered time to ask questions at the end of the interview and asked to contact the researcher if they required further information at a later date.
<table>
<thead>
<tr>
<th>Area covered</th>
<th>Questions to include</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explanation of study and consent form to sign</td>
<td></td>
</tr>
<tr>
<td>Demographics and location</td>
<td>Age, gender, clinic type, occupation</td>
</tr>
<tr>
<td>Patient consent to teaching clinic</td>
<td>Explanation by consultant or trainee</td>
</tr>
<tr>
<td></td>
<td>Was consent asked or presumed?</td>
</tr>
<tr>
<td>Knowledge of trainee background</td>
<td>Awareness of grade, presumed seniority</td>
</tr>
<tr>
<td></td>
<td>or expectation of role</td>
</tr>
<tr>
<td>Experience and Perceptions of teaching clinics</td>
<td>Expectation of trainee involvement</td>
</tr>
<tr>
<td></td>
<td>Patient reports of advantages and</td>
</tr>
<tr>
<td></td>
<td>disadvantages of teaching clinics for</td>
</tr>
<tr>
<td></td>
<td>themselves and the trainee</td>
</tr>
<tr>
<td>Experience and Perceptions of teaching hospitals</td>
<td>Pros and cons of attending teaching</td>
</tr>
<tr>
<td></td>
<td>establishment according to the patient</td>
</tr>
</tbody>
</table>

Table 3: Interview Schedule

**Analysis**

Demographic data was used to document age and gender spread among the participants. Where themes were identified that seemed to correlate with a particular patient demographic, this is mentioned in the results section.

A thematic approach was used to analyse the data (105). The interview notes were read through several times in order to familiarise the data and start to identify themes. This was an inductive and inclusive process where categories were added until all themes were satisfactorily covered. Themes came from the data rather than using pre-existing labels from hypotheses generated beforehand (105). Labelling was applied to the notes once themes had been identified and notes re-read to see if the themes applied elsewhere. Themes were further refined and grouped together where this was appropriate.
The themes will be addressed primarily as a descriptive account as the analysis is exploratory, or content, driven (105).

**Quality Assessment**

For the purpose of this project, Guba’s constructs for a trustworthy study will be followed (106). Well described by Shenton in his paper in 2004 (107), the four elements can be addressed as follows:

1. **Credibility** (described as internal validity by positivist researchers)
   - Are the findings true?
   - This has been addressed in a number of ways e.g.
     - Using recognised methodology to conduct the research
     - Participants were not pre-selected (because the researcher did not know which patients were going to be taken into a consultation room which had a trainee or did not have a trainee, they were unable to preselect patients)
     - Peer scrutiny of methods (in this case by presenting findings at a conference)
   Other methods for increasing credibility would have included going back to the patients interviewed and checking that they agreed that notes taken represented their actual views and statements. This was not feasible due to time constraints.

2. **Transferability**
   - This has been partly addressed by providing context to the project and by detailing information regarding methodology and limitations. However, transferability, or external validity, is not fully possible due to the local and contextual nature of the project. Comparing results with the literature review may indicate how transferable the results are.

3. **Dependability**
This concerns how feasible it would be to repeat the study using the same participants and methods. This is a very difficult concept to prove but thorough explanation of methods and a reflection on the scope of the project are included in both the methods and the discussion section to aid critique.

4. Confirmability
   Or objectivity is extremely difficult to achieve due to the human nature of the researcher. Again, recognising the researcher’s own opinions and the limitations of the study are of paramount importance. A paragraph on reflexivity therefore follows.

Reflexivity

When considering reflexivity in my research, I have to acknowledge my roles as both a researcher and a medical trainee, who has an active self-interest in the promotion of medical education. It has been commented on that, within the field of medical education research, reflexivity is not commonly employed and this could be a global area for improvement (108).

When patients were asked about their experience in training consultations (and have therefore been seen in a clinical setting by a medical student or trainee doctor) they may feel they should answer questions in a certain way. Speaking about their experiences to a NHS doctor in training may prove difficult for them; they may be unwilling to be honest about negative aspects of a consultation.

I may also be at risk of introducing bias in the questions that I ask, how I ask them and in the analysis by putting more weight on positive aspects of patient encounters with trainees or minimising the negative effects. During the interviewing, open-ended questions were used in order to reduce bias and during the analysis, vigilance was taken to not over or under interpret any statements made.
Results

In this section the process of the interviews will be described, including a basic quantitative description of the participants and clinic type, followed by a description of the themes that have emerged. Although the focus is on a qualitative and descriptive account of themes, there will be a quantitative element regarding the frequency of themes and, where pertinent, a comparison of demographic background associated with certain themes.

The Interview Process

Where possible, contact was made with Consultants or their administrators to identify when teaching clinics would be taken place. However, often the attendance of doctors in training at clinics could change at short notice, particularly postgraduate trainees who have service provision duties. Therefore, if the researcher arrived at a clinic to find that trainees were not present, they would leave and find another clinic ad hoc that did have trainees present. This would then require a brief explanation to the consultant and nursing staff in charge, along with gaining their consent for their patients to be approached. A vacant room would be acquired to use for interviewing patients following their appointments. This generally did not cause any problems and turned out to be a more efficient way to recruit patients as the researcher could move from one clinic to another within the outpatient setting.

To facilitate recruitment it had been planned to pre-consent the patients prior to their clinic appointments in order to reduce their time commitment to the interviews post consultation. However, as there were usually more than one clinic room calling patients from the waiting room in an unpredictable fashion, patients were approached once it was clear that they had been in a teaching clinic. This also helped ensure that the researcher had no control over who would be called in to the clinic rooms where trainees were present.
Thirty patients were approached in the outpatient departments of the hospital trust in June 2013. Twenty-nine consented to take part in the interview. Only one patient declined to take part, due to a shortage of time to make public transport after the clinic appointment.

Interviews were of variable length. The shortest interview was around five minutes long and the longest interview was around fifteen minutes long. Interview length varied according to how much exposure patients had to training clinics both immediately and in the past and how much they expanded on their answers.

The Patient Sample

Of the patients who did take part in the interviews, eighteen were female, eleven were male. The clinic specialties that patients were recruited from were Ophthalmology, Cardiology, Dermatology, Respiratory, Gastroenterology and Rheumatology; all medical specialties. No paediatric or surgical specialty clinics were recruited from. The mean age of patients interviewed was 52 years old with an age range of 16-84 years. The bulk of the patient group, twenty-two patients, were above the age of 40.

![Age spread of patients](image)

**Figure 3: Age spread of patients interviewed**
Sociodemographic details are listed in more detail in the table on the next page. Occupation group was assigned based on the Office for National Statistics Socioeconomic Classification (NS-SEC) template (109). I have used their simplified template but included separate definitions for those in full time education or long term unemployment to distinguish further. Of note, the patient sample is, bar one patient, exclusively of a white British background. The only patient that declined interview was of white British background also.
<table>
<thead>
<tr>
<th>Patient No.</th>
<th>Age</th>
<th>Gender</th>
<th>Race</th>
<th>Social Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>59</td>
<td>Female</td>
<td>White British</td>
<td>Routine/Manual Occupation</td>
</tr>
<tr>
<td>2</td>
<td>49</td>
<td>Female</td>
<td>White British</td>
<td>Intermediate Occupation</td>
</tr>
<tr>
<td>3</td>
<td>71</td>
<td>Male</td>
<td>White British</td>
<td>Routine/Manual Occupation</td>
</tr>
<tr>
<td>4</td>
<td>66</td>
<td>Female</td>
<td>White British</td>
<td>Intermediate Occupation</td>
</tr>
<tr>
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</tr>
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<td>6</td>
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</tr>
<tr>
<td>7</td>
<td>71</td>
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<td>White British</td>
<td>Routine/Manual Occupation</td>
</tr>
<tr>
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<td>Unemployed</td>
</tr>
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<td>16</td>
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<td>White British</td>
<td>Full time education</td>
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<td>Routine/Manual Occupation</td>
</tr>
<tr>
<td>23</td>
<td>62</td>
<td>Male</td>
<td>White British</td>
<td>Intermediate Occupation</td>
</tr>
<tr>
<td>24</td>
<td>43</td>
<td>Female</td>
<td>White British</td>
<td>Intermediate Occupation</td>
</tr>
<tr>
<td>25</td>
<td>75</td>
<td>Female</td>
<td>White British</td>
<td>Routine/Manual Occupation</td>
</tr>
<tr>
<td>26</td>
<td>20</td>
<td>Female</td>
<td>White British</td>
<td>Routine/Manual Occupation</td>
</tr>
<tr>
<td>27</td>
<td>48</td>
<td>Female</td>
<td>White British</td>
<td>Intermediate Occupation</td>
</tr>
<tr>
<td>28</td>
<td>42</td>
<td>Female</td>
<td>White British</td>
<td>Routine/Manual Occupation</td>
</tr>
<tr>
<td>29</td>
<td>60</td>
<td>Female</td>
<td>White British</td>
<td>Intermediate Occupation</td>
</tr>
</tbody>
</table>

Table 4: Sociodemographic details of interviewed patients
The area patients were recruited is known to face health inequalities. A recent report on the health profile of this area reported people living here had lower than average health, lower than average life expectancy and increased smoking and inactivity levels when compared to the rest of England (110).

The Type of Teaching Clinic

There was variability in the training grade of the trainee doctor; from medical students sitting in with a consultant, to senior registrars consulting patients independently with distant consultant support. There were also times when the senior doctor in training took on the role of teacher and had a medical student or a junior doctor in training sitting in with them. The frequency of clinic types is illustrated below:

<table>
<thead>
<tr>
<th>Doctors present</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical Student with Consultant</td>
<td>9</td>
</tr>
<tr>
<td>Junior or senior doctor in training,</td>
<td>3</td>
</tr>
<tr>
<td>followed by Consultant review</td>
<td></td>
</tr>
<tr>
<td>Senior doctor in training alone</td>
<td>6</td>
</tr>
<tr>
<td>Senior and junior doctor in training</td>
<td>1</td>
</tr>
<tr>
<td>Senior doctor in training with medical student</td>
<td>3</td>
</tr>
<tr>
<td>Junior doctor in training alone</td>
<td>7</td>
</tr>
</tbody>
</table>

Table 5: Type of teaching clinic according to grade of trainee

Where the doctors in training had seen patients alone, they had often gone to discuss patients with the consultant but the patient had not seen the consultant themselves.
**Overall Impression**

A table containing basic patient details, the clinic attended and the themes labelled from each interview is included in Appendix number 4.

Most patients, from all clinics, commented that they had appropriate introductions, consent was taken when medical students were present, and several commented that they expected to see trainees when they attended hospital. Many had also seen trainees at their GP surgery or on previous hospital visits. Two patients mentioned that it had been explicit in their appointment letters that they could expect to see a member of the consultant’s team, not necessarily the consultant themselves.

One patient suggested that should be made clearer if they have a choice regarding seeing trainees as they believed others may not be so happy to see them, whilst one patient suggested patients shouldn’t be told who they were seeing to give trainees more exposure.

The largest cohort of interview participants, nine, were recruited from a cardiology clinic where medical students were sitting in with a consultant. Here the patients were receiving consultant care with teaching being simultaneously provided to the medical students. The main comments focused around the sense of giving something back and training the next generation, which forms our first, and most common theme.

**Main themes**

*Educating the future medical workforce*

Nineteen of the twenty-nine patients said that they were happy to be involved in a teaching clinic to help the trainee learn. Most patients felt that they were contributing to the trainee’s development and equipping the NHS for the future.

The sense of giving something back to the NHS was a particularly prevalent stance from older patients, those who had seen the consultant either in the presence of medical students or
after they had seen a more senior trainee. It was less likely to be a comment made by those patients who had seen a mid-grade trainee without a subsequent in person review by the consultant.

Comments were made such as:

“…training people who are going to be life-savers…” (62 year old male cardiology patient).
“…need to learn for future…” (60 year old female rheumatology patient).
“Need to learn about rare conditions” (father of 16 year old dermatology patient).

The majority of these patients were returning patients to the clinic and evidently had an established relationship with the consultant. It is possible that they also felt that the “giving back” was more personal to him.

However, the opinion that the training of students and doctors was a necessity for the health service could, on occasion, come across like the patients did not feel like they would always have a choice with participating, that it was an expected role of the patient. For example, when patients commonly reported that the training of medical students and junior doctors was essential, not one patient commented on the possibility of this being contested.

Discussion between consultant and trainee/senior trainee and junior trainee

Patients who had seen the consultant with a medical student were most likely to say that they had benefited from the education delivered primarily to the medical student. They had learnt about their condition or understood the rationale for their treatment plan in more detail.

By overhearing the conversation between a senior and more junior trainee, patients commented that they learnt, that the trainee asked questions that they wanted answering themselves.

“Nice when the consultant asked “and would this cause a problem?”…students said “no” and the consultant agreed” (74 year old male cardiology patient)
“I enjoy listening to them talk because I hear their thought processes”  (78 year old female cardiology patient)
“I learn when they are examining me”  (48 year old male cardiology patient)
“He [the registrar] put questions to the consultant that I had been thinking myself but wasn’t sure how to ask”  (49 year old female ophthalmology patient)
“They verbalise what they are thinking”  (49 year old female ophthalmology patient)

Although patients sometimes described an advocacy role for the junior, in one interview, the patient described the nursing staff as being more of an advocate by “explaining jargon” or to reiterate points lost in accent differences.

In one clinic in particular, when medical students were involved, there appeared to be a sense of camaraderie between the consultant and the patient in testing the students which the patients seemed entertained by. One man was jovial describing an interaction between the consultant and the medical students:

“He [the consultant] threw a book at one of them [medical student] and told them to look up my tablets and tell me why I was taking them”  (62 year old male cardiology patient)

Previous negative experiences

Four patients commented on past experiences within the NHS that were negative. Three patients mentioned negative experiences when they were inpatients in the past.

- One patient said that he had been visited during a teaching ward round where the consultant criticised a member of the team. He felt that that should have been done in private rather than by his bedside.
- One commented that they had had a negative prior experience with an FY1 trainee at their GP surgery where she had been prescribed ear drops for a chest infection and seemed subsequently somewhat more critical of the treatment plans offered to her by junior doctors.
- One gentleman described a particular admission when he found it “off-putting and embarrassing” to be surrounded by a number of doctors around his bedside.
A fourth patient reported that, whilst an inpatient on a gynaecology ward 20 years ago, she was expected to be examined intimately by students on a teaching ward round and feels the consent process is much more robust now.

Only one of these patients said that the experience had made her less likely to want to see trainees again, perhaps because her encounter had been described as a lack of confidence in the trainee’s clinical ability.

Advantages of seeing a trainee

When interviewees were asked directly whether there was any advantages to seeing a trainee, some of the comments were:

- More perceptive of the patient’s mood
- Less patronising and blasé “They [the trainee] Don’t pat you on the knee and go ‘there, there dear’” (66 year old female ophthalmology patient)
- Getting to hear different opinions on their condition (The youngest patient interviewed from this clinic, a twenty-two year old female, gave the students more of a professional status and suggested that a benefit of teaching clinics for her was that she got to hear different opinions on her condition)
- Give a “fresh approach” (16 year old female dermatology patient)
- Listen more
- Give longer consultations
- Provide more detailed explanations (than consultant)

Preference to see the consultant

Five patients said that they would always prefer to see a consultant. All patients were female and in their forties. Three were recruited from the rheumatology clinic, one from the gastroenterology clinic and one from the ophthalmology clinic. Reasons included:

- Trainees are “less experienced”
• “It may be a better experience with the consultant”
• Would go and see “proper doctor” if had the choice
• “OK experience but would rather go and see the consultant”
• Consultant much faster “…you’re in and out…”
• Trainee “always has to ask consultant anyway”

Possible explanations from the data for why this group of patients commented this way could be
-One patient was a GP receptionist so perhaps had professional knowledge of trainees and their limitations or had witnessed negative experiences.
-One patient was Chinese and had to book an interpreter so perhaps felt that she had limited time with the interpreter to speak to several different doctors. Or there may have been a cultural aspect to this view.
-One commented that she had seen numerous trainees in the past so may have been fatigued by the process
-One had described a previous negative experience with a junior trainee in her GP surgery
-The rheumatology clinic had several trainees consulting that were in the mid point of their training i.e. not junior enough to be closely supervised by a consultant but not senior enough to appear confident and be knowledgeable.

Helping the next patient

Two patients with rare conditions said that, by their participation, they hoped to help patients with similar conditions. By more trainee doctors learning about the condition, they may prevent some of the misunderstandings that they had experienced.

Impact of teaching clinics on quality of patient care

None of the participants volunteered information on whether they felt that teaching clinics affected their quality of care.
When directly asked,

“When a trainee is present, do you think, overall, this has an impact on the care you have received? and,

“Has being cared for in a teaching hospital had an impact on the care you receive?”

The answers were variable. Eleven were certain that there was no difference. Four patients felt that there was a negative impact to them; one person thought that it took up their time and three patients felt that the quality of care provided would always be better from a consultant.

Fourteen patients said that they thought there was a positive impact on quality of care but nine of these patients suggested that the benefit would be felt by future patients. Two said that they thought the quality of care was better at a teaching hospital, one of these patients liked the ties to the University that the hospital had and said you expect a “higher level of care” and “more experts” at a teaching hospital.

Other patients were less sure about the impact attending a teaching hospital per say had upon their quality of care. Three patients mentioned the time taken and attitude of the trainee as being beneficial.

Discussion

In this section, the themes will be summarised in their context and the limitations of the study will be discussed. Reflexivity will be commented upon and the implications for the scoping review will be highlighted.

Summary of Themes

Through these short interviews several conclusions can be drawn. Overall, the patients interviewed expected to be and were happy to be involved in teaching clinics. The level of their satisfaction with teaching clinics did seem to be linked to whether they saw the consultant in person and, if not, how senior the trainee was. This could be due to a senior
trainee being more knowledgeable and perhaps confident, emulating the persona of a consultant. For patients who saw junior doctors in training with only distant consultant supervision, their experience will have perhaps been less reassuring. There will also have been more of a wait for them alone whilst the trainee went to discuss their case with the consultant.

Whether a patient values being seen by a trainee may depend on the preference of consulting style. Consultation style naturally varies amongst medical practitioners and it is hard to decipher whether it is a purely individual relationship or whether consultants, as a group of practitioners, may have particular traits that patients prefer. It is unknown from these interviews whether the consultants involved tend to adopt a paternalistic or patient-centred style, or indeed what style the trainees favoured. The patients themselves may have different preferences about how they wish the practitioners to engage with them and what aspects they value, which was described earlier as the multidimensional nature of patient experience.

Often, the patients’ relationship with the consultant also seemed to be positively influenced by having trainees present. It may be because the patient sees there is a hierarchy of experience or observes the imparting of knowledge, and may therefore have additional respect for the senior doctor. Alternatively, feeling part of the training process may have made them feel included in a process rather than a product of one.

However, it is difficult to prove that a patient respects a consultant more after seeing them in a teaching clinic than non-teaching clinic due to the lack of comparator interviews.

Patients were clear that the quality of care will be improved for future patients due to the education of trainees. By participating in teaching clinics, the benefits were perceived as training the consultants of the future as opposed to what the trainees could offer them themselves. This raises an interesting point about training of doctors and quality of care. It may be a valid point that long term quality of care is just as valid a measure to assess.

Patients were less sure about the immediate positive impact of attending training clinics but mostly do not find the process negative. Although some patients commented on the trainees being less patronising or taking more time with them, no-one suggested that their clinical outcome would be improved by having a trainee present.
The older generation were more likely to view the process as one that gives something back to the NHS and there seemed to be a generational shift in attitude towards teaching clinics. Possibly this is due to the older generation remembering that healthcare was not always free at the point of access in the United Kingdom, nor easily accessible. This could therefore be a viewpoint that shifts in time, as expectations change. The concept of giving something back to the health service would also be an interesting concept to compare with findings from health services that are not free at the point of access.

When discussing past experiences, more negative experiences were reported from inpatient admissions than outpatient care. There are several factors that could account for this. Once admitted, the patient has a longer period of contact with the health service and will interact with several members of the healthcare team. They are also more likely to be in a vulnerable state and possibly have less autonomy regarding trainee presence due to their service provision role. All of these stressors may impact on their satisfaction levels.

Existing literature suggests supports the findings of patients being willing to participate in outpatient teaching clinics, particularly when a more senior doctor is present or when the discussion about their condition takes place in front of them (111-114).

The interview results also echo literature from primary care although the organisation of the clinics can often be different in secondary care with teaching clinics occurring on a more ad hoc basis (35, 36, 39). Indeed, challenges to satisfaction for patients have been shown to include the efficiency of clinics and by addressing these issues, patient experience of teaching clinic can be improved (115).

The question over the impact on quality of care is a more difficult one when analysing secondary care outpatient departments. Some papers suggest that teaching hospitals overall outperform non-teaching hospitals in terms of quality of care but this is rarely broken down into describing outpatient events. Others have shown that, once mitigating factors are accounted for, non-teaching hospitals do not offer sub-standard care (57, 59, 60). These objective measures of quality of care will be important to elucidate from the scoping review.
The findings of these interviews will be correlated in more depth with literature from the scoping review in subsequent chapters.

Limitations of the Project

The main limitations of this study are discussed below in terms of process and quality.

Process

The interview process had weaknesses in areas of patient recruitment, recording of the interviews and the lack of comparator interviews.

The patients recruited to the interviews were only recruited from adult medicine specialties mainly due to ease of access to these patients and proximity of the clinics to each other. It would have been interesting to talk to patients from child health and specialties where physical examination in the context of a training clinic may have been more intrusive.

The patient sample was predominantly of a white British background. Therefore, particular cultural differences in perceptions of teaching clinics have not been captured.

The interviews were recorded by hand so key points and quotations were noted but some of the detail and nuance may have been lost by not recording interviews verbatim.

Although the purpose of the interviews was to aid the researcher to minimise bias in the search protocol and paper vetting, interviewing patients who had not been in a teaching clinic (i.e. those who had seen the consultant alone) and comparing experiences may have given additional insight into the project.

Quality

The objectives of increasing the quality of the study were achieved in terms of the selection of patients and peer scrutiny of methods. The peer scrutiny followed a presentation of the
findings at a medical education conference in 2013 where educationalists commented on the transferability of our findings to their local population and where analysis could focus.

With regards to selection of patients, whilst the researcher did not control which patients saw the trainees in clinic, it could be argued that patients may pre-select themselves by agreeing to be interviewed. In this study, only one patient out of thirty declined to be interviewed so this will not have caused a significant impact on the results.

Time and financial constraints meant that returning to interviewed patients and checking that their views had been accurately captured was not feasible. These constraints also meant that a second researcher was not used to screen for themes within the analysis or carry out interviews separately.

Reflexivity has been discussed as an approach to being transparent about conflicting interests of the researcher whilst dependability of the study has been encouraged by describing the process accurately.

Transferability will be discussed following the scoping review where there are papers that focus on patient experience in teaching clinics.

*The Implication for the Search Protocol*

These patient interviews have impacted on the scoping review protocol in three distinct areas:

1. In the paper vetting process where studies are screened for inclusion against the eligibility criteria:

   In the screening process, there will be increased awareness with regards to papers which describe long term impact on quality of care outcomes. This will be to assess for any evidence supporting the view of patients that their input is for the future benefit of other patients.
2. Identifying a strand of literature that may be identified in the data extraction and interpretation stages of the scoping review:

Again the long term affect of teaching clinics on quality of education which will, in turn, lead to higher quality of care will be considered. Also, where clinics are based in specialties where there are intimate examinations or where there may be a sense of increased vulnerability, aspects of patient safety will be closely scrutinised. These interviews provided examples where patients have not been happy with the care received in teaching hospitals, whether due to a sense of invasion of privacy or due to suboptimal clinical decision making.

3. In the analysis of findings:

The final analysis of the results of the scoping review will be broken down, where possible, into specialty concerned, grade of the trainee and whether there was consultant input. The interviews have highlighted that the grade of the trainee may be a significant factor on patient satisfaction and studies which focus on one particular grade may therefore have skewed data.
Future research

The patient interviews conducted had an aim of informing a search protocol for a scoping literature review. However, they have afforded useful data considering patient experiences in their own right. During the course of analysis, other areas have been identified which would be interesting to research further in subsequent interviews. These include:

- Paediatric clinics where parents are also another factor in the consultation, or talking to carers in geriatric clinics
- Clinical areas with intimate examinations e.g. urology, obstetrics and gynaecology, where the patients may be less comfortable with a trainee being present
- Comparing teaching versus non-teaching clinics with clinical outcomes alongside patient experience.

The third point would be particularly informative as this would provide some objective data on patient outcomes, which is often lacking in this field of research.

In the next chapter, the protocol for the scoping literature review will be illustrated.
Chapter 3: Scoping Review Methodology

Introduction

The introduction chapter has detailed the background literature and the rationale for this scoping review. The patient interview chapter presented the results of twenty-nine local interviews, which were conducted in order to provide a patient perspective to inform the review process and allow correlation of the results within a local setting.

This chapter describes the method used for conducting the literature review, which is the main focus of this thesis. The review question, search strategy and study selection criteria will be described. The procedures for data extraction and synthesis will then be discussed.

Initially, the general purpose and process for undertaking scoping studies will be presented in order to facilitate the readers’ understanding of the chosen methodology.

Scoping Review

The type of review chosen is a scoping review because the breadth and depth of available evidence on my chosen subject is not clear. A scoping study can create a picture of the underlying evidence base through a more systematic and rigorous process than simple background reading and preliminary literature searches, whilst providing a more universal spread of data compared to a systematic review (116). A scoping review is an umbrella term, which captures a wide range of research, ranging from a brief description of published studies to a more detailed exploration of the characteristics of literature on a specific topic. As such they can present the literature available on a subject to inform future research or to provide a preliminary conclusion to inform policy, depending on the strength of the evidence. These reviews are often not well defined, however they have important limitations compared to more detailed
systematic reviews (116). In their critique of scoping reviews, Armstrong et al. (117) suggest that scoping reviews differ from systematic reviews in the following main areas:

1. The research question can be broad
2. Inclusion and exclusion criteria can be developed throughout the process, rather than pre-formulated.
3. The quality of included studies is not made a priority
4. Data extraction is not necessary or is less detailed
5. Data synthesis is more qualitative than quantitative
6. A conclusion to answer the research question is not always reached i.e. sometimes only the scope of evidence is presented.

This may be interpreted as a suggestion that scoping studies are less useful than systematic reviews as more questions can be raised by the process than are formally addressed, and a stringent protocol isn’t necessarily followed. The heterogeneity and therefore ambiguity of scoping review methodology can cause some unease (118).

Scoping reviews, however, do have many uses and are becoming a more popular, flexible research tool particularly in health science (116). They can be used as a solid foundation for a systematic review by providing more definition to a review question and increasing awareness of the feasibility and magnitude of work involved which can help in the planning of the extended project (117). They are also useful in their own right depending on the depth the data synthesis is performed to. As well as providing a foundation for a subsequent systematic review, they can highlight gaps in knowledge, map areas of knowledge and they may stand as a research outcome in their own right, if the outcomes are adequately substantial (116).

A scoping review was chosen in this instance due to the anticipated strengths of an iterative process covering a breadth of material for a research project with time and resource limitations.

During the past decade, researchers have attempted to create a framework for the proper conduct of a scoping review. In the aims and objectives section, I will address
how the methodology for this scoping review will be formulated using a combination of suggested guidelines to increase transparency and robustness.

**Aim and Objectives**

In 2005, Arksey and O’Malley addressed the heterogeneity of scoping reviews and aimed to provide a model for others to follow in constructing a robust scoping review (116). In their paper, they suggest that there are four reasons, to conduct, or four possible outcomes produced from, scoping reviews:

1. A mapping exercise where the literature base available is described. No particular detail on research outcomes is provided in the data synthesis
2. To inform a systematic review with proposed preparation, team members and costs involved
3. As a stand alone review, to summarise research
4. A means of identifying gaps in the literature. However, Arskey and O’Malley point out that, without quality assessing the literature, true gaps aren’t necessarily found.

The framework they went on to propose was based mainly on addressing scoping studies which try to identify gaps in the literature, as this was familiar to the authors as researchers. However, the basic principles can be applied to a scoping review performed for any of the above reasons.

In 2010, Levac et al. proposed enhancements to the model published by Arksey and O’Malley (118). This followed their experiences in applying the framework to three scoping reviews. Their team favoured an iterative approach to study selection and data extraction whilst increasing the clarity of the process so that the reviews could be used to inform policy in a particular area.

Systematic reviews often involve the use of specific guidelines to ensure minimum standards are upheld. Two of these are ENTREQ (enhancing transparency in reporting the synthesis of qualitative research) and PRISMA (preferred reporting
items for systematic reviews and meta-analyses). The ENTREQ statement aims to guide researchers in reporting qualitative research and can be used as a tool that can be applied to different types of review in order to promote more comprehensive reporting (119). The PRISMA guidelines offer both a checklist and a diagram for researchers to follow when conducting a systematic review or meta-analysis (120). By using such tools, the author can be guided to producing a rigorous piece of research whilst the readership can have more confidence in its outcomes and reproducibility.

In order to meet the aims and objectives of this particular scoping review, I will propose a framework which incorporates the basic model proposed by Arksey and O’Malley, the majority of amendments suggested by Levac et al. in 2010 and also incorporates guidance from the PRISMA and ENTREQ statements, where they are applicable to a scoping study. Table 6 draws together the different elements of these documents pertinent to this review.
Table 6: Proposed frameworks for conducting a scoping study

<table>
<thead>
<tr>
<th>Stage</th>
<th>Arksey and O’Malley</th>
<th>Additions by Levac</th>
<th>Additional elements from ENTREQ</th>
<th>Additional elements from PRISMA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Identifying the research question</td>
<td>Articulate the research question considering the target population and health outcomes of interest</td>
<td>Envision the intended outcome of the study</td>
<td>Specify the study characteristics e.g. PICO and describe information sources used</td>
</tr>
<tr>
<td></td>
<td>Maintaining a wide approach</td>
<td>Consider rationale for conducting the scoping study</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Identifying relevant studies</td>
<td>Research question and purpose should guide the breadth and depth with feasibility</td>
<td>Indicate if search was pre-planned or iterative</td>
<td></td>
</tr>
<tr>
<td></td>
<td>This can include hand-searching and reference list searches.</td>
<td>Ideally use a team with suitable expertise</td>
<td>Describe information sources and describe the literature search terms</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>If limiting scope, acknowledge limitations</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>3</td>
<td>Study selection</td>
<td>Can be an iterative process&lt;br&gt;Two reviewers should independently review abstracts for inclusion&lt;br&gt;Reviewers should consider refining the search strategy&lt;br&gt;Two researchers should independently review full articles for inclusion&lt;br&gt;When disagreements occurs, a third reviewer can determine final inclusion</td>
<td>Specify inclusion and exclusion criteria</td>
<td>State process of selecting studies.</td>
</tr>
<tr>
<td></td>
<td>Use two researchers where possible</td>
<td></td>
<td>Describe process of screening</td>
<td>Give numbers of studies screened at each stage</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Provide reasons for exclusion</td>
<td>Use of prisma diagram</td>
</tr>
<tr>
<td>4</td>
<td>Charting the data</td>
<td>Charting can be an iterative process with changes to the data form made&lt;br&gt;Two authors should extract data from initial studies to assess consistency</td>
<td>Present the characteristics of included studies e.g. year of publication, country etc</td>
<td>Describe data collection.</td>
</tr>
<tr>
<td></td>
<td>Using a descriptive-analytical method</td>
<td></td>
<td>List and define all variables for which data were sought</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Collating, summarizing and reporting the results</td>
<td>Analysis should be descriptive and qualitative</td>
<td>Identify the synthesis methodology and describe rationale for choice</td>
<td>Describe methods of handling data and combining results of studies</td>
</tr>
<tr>
<td></td>
<td>A narrative rather than synthesis account</td>
<td>Reporting the results in an outcome that refers to research question</td>
<td>Identify who was involved in analysis</td>
<td>Discuss limitations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Discuss implications for future research and policy</td>
<td>Was deriving the themes inductive or deductive</td>
<td></td>
</tr>
</tbody>
</table>

**Optional stage**

|   | Consultation | An essential component | |

**Additional steps**

|   | State computer software used | Declare funding or conflict of interests | |
|   | Provide quotations from primary studies to illustrate themes | | |

Table 6: Proposed frameworks for conducting a scoping study
This summary draws on the experience of two groups of researchers with experience in conducting scoping reviews, but brings additional suggestions from two of the most universally used statements in systematic reviews and meta-analyses. These can be collated in order to create a format which the methodology for my scoping review has been based upon.

Stage 1 – The Review Question and Aim

The aim of this review is to identify what evidence there is regarding whether the training of medical professionals has a direct impact on the quality of care of patients they come into contact with in the outpatient setting. It was chosen to be a scoping review due to the anticipated disparate nature of the papers available.

The review question is:

“By incorporating the education of medical students and medical trainees in outpatient clinics, is the patient experience enhanced and their quality of care improved?”

This question will be broken down into more discrete elements when it is discussed later in the chapter. In doing so, the question is made more specific and guides the search strategy.

The rationale for the study has been presented in the introduction chapter. The aim of this scoping review is a more global one as opposed to the discrete purposes proposed by Arksey and O’Malley. It will aim to:

1. Outline the sources and types of evidence available
2. Comment on the nature and extent of the research activity. This step may inform us as to whether a full review would be beneficial.
3. Summarise and disseminate findings, acting to highlight gaps in the knowledge base.
To what degree each of these will be achieved will depend on the studies found and their content. An attempt to comment on the outcomes for each will be made in the results and discussion sections.

In order to achieve these objectives, the following key steps will be taken, detailed further in subsequent stages proposed:

- Identifying relevant papers that discuss outpatient clinics and quality of patient care
- Describing the type of literature available and whether the methodology used in the papers would stand up to the scrutiny of an effectiveness review.
- To produce a preliminary statement on how education can affect patient care and recommendations about this can be incorporated into educational planning

Stage 2 – Identifying Relevant Studies/ The Search Strategy

The search strategy will include hand searching of key journals and use of electronic databases, with a check of bibliographic studies of included papers. The process of “hand searching” key journals is felt to contribute more relevant articles and reduce the effect of poor indexing by search engines as well as the limitations of the search terms used (116). By checking the reference list of included papers, another route of identifying key papers is opened, adding to the overall search sensitivity (116). The search strategy will be outlined including listing of search terms, journals hand searched and databases searched electronically. This will be a pre-planned stage. Other than at the initial search term formulation stage, there was no access to formal librarian input due to funding limitations.

Stage 3 – Study Selection
The study selection criteria and process will be made specific using the PICO (population, intervention, comparator and outcome) principle. Exclusion and inclusion criteria will be explicit and any changes made to these during the process will be documented. The process of vetting the papers for inclusion will involve two reviewers unless stated otherwise and a reason for any deviation will be made. Access to a third reviewer was available should there be any contention regarding the inclusion of an individual paper. The PRISMA diagram will be used to illustrate the search process, how many papers were accessed and reasons for exclusion at each stage.

Stage 4 – Charting the Data

The data was initially be gathered in a tabular format describing main characteristics e.g. year and place of study. There were allowances for this to be an iterative process should initial paper reviewing highlight changes that need to be made to this stage of basic data gathering and this will be documented.

Stage 5 – Collating, Summarizing and Presenting the Results/ Data Synthesis

There will be one researcher involved in the final collating and presentation of data. The process will include some basic breakdown of the characteristics of the papers but also have a qualitative, narrative element in describing the findings. This narrative synthesis will take guidance from the ESRC (Economic and Social Research Council) guidance available (121). The results and discussion chapters will report findings according to the initial research question and discuss the potential implications for the results. Limitations of the entire process of the scoping review will be revisited.

Optional and Additional Steps
Systematic reviews are claimed to provide more useful results if there is a consultation exercise included within the approach (122), an approach supported by Arksey and O’Malley in their work who found that a consultation exercise added additional, previously unidentified, papers to include in their review, and insights where paper analysis in isolation may provide an account that isn’t reflected in real life practice (116). Levac et al.1 go further and suggest that consultation becomes a required component (118). This study will not include a consultation exercise although it is hoped that, through dissemination of results, there will be feedback received.

The additional steps included from PRISMA and ENTREQ statements are relatively simple strategies to enhance transparency of the review.

The framework for this scoping study has been described with the intention of reflecting on the experience of some of the experts in the field whilst appreciating that there are no fixed formulae for such qualitative research. Now, the detail of how the review question is broken down, the literature search performed and results analysed will be described.

The review question and key words

“By incorporating the education of medical students and medical trainees in outpatient clinics, is the patient experience enhanced and their quality of care improved?”

This question seeks to address whether medical training, which takes place in the outpatient clinic, impacts on patients’ quality of care. Although the review question uses the words “enhanced” and “improved” the scoping review actively reports on adverse outcomes and negative impacts on quality of care. The question separates out patient experience from overall quality of care because this has been shown to be independent of objective markers of quality of care in studies (94, 123). It is also more commonly addressed in studies, perhaps because it is easier to ask patients about their satisfaction with teaching clinics, as it is to untangle the effects of teaching
on objective measures of quality of care. Below, the terms within the question are
described in more detail.

**The trainees**

The trainees considered in this study include all medical trainees from first year
medical school through to final year specialist registrar i.e. undergraduate and
postgraduate doctors in training. Only studies including those in training posts will be
considered. For example, in the UK, non-training grades are often defined as trust
grade or associate specialists and they often have different job roles and
responsibilities, often, controversially, with less of a focus on their educational needs
(124). The glossary section at the end of the thesis details some of the commonly
used terms for trainees and trainers in the literature.

**Quality of care**

As discussed in the previous chapters, quality of care has multiple definitions. Within
the Health and Social Care Act 2012, the Secretary of State defines quality of services
as comprising three components (32):

1. The effectiveness of the services
2. The safety of the services
3. The quality of the experience undergone by patients

This three-point definition will be used in this review in order to keep the search
terms manageable and because evidence for each discrete element may be sought.

It is anticipated that the majority of the literature available will concentrate on
describing the effect of teaching clinics on patient satisfaction. Studies that address
whether teaching clinics in the outpatient setting can affect the more objective
measures of quality of care such as safety or effectiveness are likely to be fewer in
number. The literature from other medical environments described in the introductory chapter supports this view (39, 43-45, 71-73).

The patients

All patient groups will be included, as will all clinic specialty type e.g. medical and surgical clinics. The clinics will be those conducted in a secondary/tertiary care outpatient department. Primary care clinics, even if based in a hospital setting, a system common in the United States, will be excluded. This is because the referral system into the clinic along with the expectations of the service for both patients and health care providers can be markedly different.

The clinic environment

All types of training practices within the clinics will be accepted e.g. from clinics where trainees are simply observing a more senior doctor and having minimal contact with the patient themselves, to trainees independently running their own clinics with distant supervision.

Limitations of the Review

As mentioned, the team conducting the scoping review is a small one with access to librarian support only in the initial formation of the search terminology. Also, primary care studies, even if based in a secondary care setting will be excluded. Due to all encompassing nature of scoping reviews, some limitations are useful in order to ensure that the study is feasible within a realistic time frame. Additional limitations are discussed here.

Timeframe
The timeline 1994-2014 has been chosen to provide twenty years of literature, starting at a point at which the first edition of the General Medical Council’s document, Tomorrow’s Doctors was first published (subsequent editions have since been produced) (125). This document aimed to harmonise UK medical school curricula without prescribing a single curriculum to follow and there were subsequent changes made to both medical school and foundation programme competencies, including a move towards earlier clinical experiences.

**Geographical Scope**

The review question has been designed from the perspective of the UK health system due to the researcher perspective and location. Any findings will therefore be particularly applicable to the UK system of training and National Health Service provision of outpatient services. However, papers from other countries will not be excluded when the research concerned meets the inclusion/exclusion criteria. This is because any medical training which exposes patients to teaching clinics is likely to face similar challenges and, where possible, the findings of the review should ideally lend themselves to being extrapolated to other countries and establishments involved in medical training. Where the studies are from outside of the UK, any differences in the setting will be explored and commented upon.

**Type of Review and their Description**

All types of research paper and opinion or commentary piece will be eligible for inclusion in the review subject to them meeting the inclusion/exclusion criteria. This is an area that has not been limited because the nature of evidence is an important characteristic of the review to document in order to fulfil one of its intended purposes.

Next, the search strategy, study selection and data collation will be explained.
The Search Strategy

In order to obtain the relevant data, a search strategy was pre-planned to involve both hand-searching of key journals, electronic database searching and the scrutiny of bibliographies.

The databases used in the literature search were:

- PubMed
- EBSCO (ERIC plus CINAHL)
- Web of Science
- ASSIA
- Conference proceedings (Zetoc)
- Scopus

These databases were thought to represent potentially different collections; Scopus and Zetoc provided an added possibility of identifying conference papers or grey literature.

Hand searching was also performed for thirteen journals reporting on medical education and training. This was performed by one researcher, MS, who extracted, from title and abstract review, any potentially relevant article. The journals chosen were decided upon after consultation with the research team based on personal professional knowledge of resources. Some were added to the list after initial searching identified them as a likely stand alone resource. The journals that have been hand searched are:

- Academic Medicine
- Advances in Health Sciences Education: Theory and Practice
- BMC Medical Education
- Canadian Medical Education Journal
- Clinical Teacher
- Focus on Health Professional Education
-Journal of Advances in Medical Education and Practice
-Journal of Graduate Medical Education
-Journal of the International Association of Medical Science Educators
-Medical Education
-Medical Teacher
-Postgraduate Medical Journal
-Teaching and Learning in Medicine

**Search terms**

The search terms used in the search engine element of the review are as follows:

**Environment**
- Hospitals (community or general or tertiary or secondary or private or public or teaching or ambulatory medical cent*)
- Type of hospital setting (outpatient.mp. or exp Outpatients or ambulatory care or clinic)

**Intervention**
- Teaching clinic (educ* or train* or instruct* or tutor*or supervis* or clerkship or resid* or intern* or house officer.mp. or foundation doctor.mo. or registrar.mp. or core trainee.mp. or student doctor.mo. or intern.mp. or resident.mp. or medical student.mp.

**Outcome**
- Quality of care (quality assurance or quality improvement or quality indicators or patient satis* or patient pref* or efficiency or effective care.mp. or patient safety.mp or exp Patient Safety or access* or health services access* or patient exp*)

**Final search**
Environment plus intervention plus outcome

Study Selection

There were several steps involved in the study selection process which are examined here but also outlined in a PRISMA diagram further on in this chapter. The PRISMA diagram in the results section will detail the number of papers included at each stage as well as reasons for exclusion.

1. MS hand searched key journals and extracted articles based on title/abstract screen deemed to have any potential relevance and listed these articles in the software database, Mendeley.
2. MS inputted the search terms into the electronic databases to acquire a list of journals for abstract vetting
3. MS removed any articles deemed to be completely unrelated to the scoping review
4. Articles remaining were put into the Mendeley database, alongside the journals obtained via hand-searching, de-duplication was performed, and the list shared with a second researcher, SW.
5. MS and SW independently screened the abstracts to decide which papers would be obtained in full for a further round of vetting. Any abstracts that were disagreed upon were automatically obtained in full for the next round.
6. MS obtained the papers required and screened the reference lists of each paper for potentially relevant articles. Any articles that had not already been identified through the other search methods were included for the next step.
7. MS and SW independently screened the full papers to decide on inclusion and exclusion. Two papers were referred to a third reviewer, DP. One was included and one excluded.

During the initial screening of titles and abstracts carried out by MS, it is important to note that only articles with no reference to teaching clinics were removed. One example is where the search engine term “ambulatory” identified its other medical meaning i.e. the ability to walk. One such paper was titled “Exercise training utilizing
body weight-supported treadmill walking with a young adult with cerebral palsy who was non-ambulatory” (126). This was clearly not relevant to this scoping study and therefore excluded at the initial stages.

The formal decisions on paper inclusion during both the abstract and full text screening was undertaken by two reviewers, MS and SW, independently, using the inclusion/exclusion criteria in Table 7. These were pre-formulated, the only change made through iterative process was consideration of whether a good educational experience for a trainee would translate into improved quality of care for the patient. It was decided that this would be judged on the merits of an individual paper and how immediate the impact could be seen. A forecasted impact, one the researcher suggested would improve care of future patients, was not included as this could not be measured nor proven.

In the results section, the stages will be illustrated as a modified PRISMA flow diagram (120), an example is shown in Figure 3.
<table>
<thead>
<tr>
<th>Inclusion Criteria</th>
<th>Exclusion Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Population</strong></td>
<td></td>
</tr>
<tr>
<td>Medical Students</td>
<td>Non-medical health care professionals</td>
</tr>
<tr>
<td>Doctors in training</td>
<td>Doctors in non-training grades</td>
</tr>
<tr>
<td>All specialties – surgical, medical, paediatric etc</td>
<td></td>
</tr>
<tr>
<td><strong>Study Design</strong></td>
<td></td>
</tr>
<tr>
<td>Papers from 1994-2014</td>
<td>Papers dated pre-1994</td>
</tr>
<tr>
<td>All types of study design</td>
<td>Non English language publication</td>
</tr>
<tr>
<td><strong>Intervention</strong></td>
<td></td>
</tr>
<tr>
<td>Teaching in outpatient clinic.</td>
<td>Primary care</td>
</tr>
<tr>
<td>The teacher can be any health care professional.</td>
<td>Secondary care environments other than clinics e.g. ward rounds, theatre</td>
</tr>
<tr>
<td>Any supervision will count as a valid teaching clinic e.g. the doctor in training may see a patient independently but, if they seek feedback from the teacher, this is counted.</td>
<td>Clinics with no teaching</td>
</tr>
<tr>
<td><strong>Comparison</strong></td>
<td></td>
</tr>
<tr>
<td>Non-teaching outpatient clinics as a comparator would be ideal but studies will be accepted without a comparator.</td>
<td>Studies without a comparator will be accepted</td>
</tr>
<tr>
<td><strong>Outcome</strong></td>
<td></td>
</tr>
<tr>
<td>Studies which comment on patient care – satisfaction, experience, quality of care (patient safety, access to services, health outcomes). Scope to include those studies which comment on improvement of trainee performance (if there is a direct link to improving quality of patient care)</td>
<td>Studies that do not comment on patient care</td>
</tr>
</tbody>
</table>

Table 7: Inclusion and Exclusion Criteria for Abstract and Paper Vetting
Figure 4: PRISMA diagram showing how results of paper searching will be presented

Records identified through database searching (n)

Additional records identified through other sources (hand searching) (n)

Records after initial screen for relevance and duplicates removed (n)

Titles and abstracts screened by MS and SW for relevance (n)

Records excluded: titles and abstracts not relevant (n)

Records identified through reference list and de duplicated (n)

Full-text articles assessed for eligibility (n)

Full-text articles excluded (n)

Reasons for exclusion listed

Studies included in data collation (n)
Procedure for extracting data

Following the initial hand-searching phase of the paper identification, MS formulated a table for data extraction. During the full paper vetting stage, SW and DP provided feedback, allowing for the table to be amended to a final version, aiming to extract the salient points.

The following points were included:

- Author and article title with identification features
- Author background
- Source of funding
- Year of study
- Country of study
- Grade of trainee e.g. medical student or registrar
- Type of teaching clinic including specialty
- Recruitment procedure of participants
- Number of patients and their characteristics
- Whether a comparator was included
- Paragraph describing the type of research study including the quality of care domain assessed, type of outcome data and adverse events recorded

The main change to the list through this iterative process was that a descriptive paragraph was added to provide a clear summary which would then enable grouping of similar studies for further analysis.

MS extracted data from all studies. Once this was completed, basic observations on the country of origin, types of clinic and grade of trainee were illustrated prior to a more detailed analysis of the included papers.
Collating, Summarising and Reporting the Results

In the first instance the data was analysed and an overview presented according to factors including country of origin, type of clinic and grade of trainee.

A narrative synthesis was subsequently performed using elements of ESRC guidance on narrative synthesis, described in Table 8 (121).

The results of the narrative synthesis are presented using this format in the next chapter. Figure 5 illustrates a theoretical model for this scoping review which was formulated using background literature explored in the introduction chapter. This will be re-visited during the discussion section where I explore whether the results from the scoping review fit with this initial theoretical model.
Elements of the synthesis | Purpose of this step
--- | ---
Developing a theoretical model of how teaching clinics affect patient care. (See figure 5) | To inform decisions about the review question and to contribute to the interpretation of the findings.
Overview of the included papers | A summary detailing the literature available, how much is available and who is writing it. This is to provide an overview of the literature.
Developing a preliminary synthesis | This involved organising findings from included studies to describe patterns as well as grouping publications according to particular characteristics e.g. type of study design. Themes from the literature are described.
Exploring relationships in the data | Considering the factors that might explain any differences in direction and size of effect across included studies.
Assessing the robustness of the synthesis product – what is the strength of our evidence? | To assess strength of the evidence in order to draw conclusions. This is limited to exploring whether the studies included would stand up to the scrutiny of an effectiveness review.
What are the implications? | A conclusion is made on the overall strength of the scoping review findings and whether there are any implications that can be derived for future policy.

Table 8: Suggested method for narrative synthesis
Figure 5: Logic model, adapted from ESRC guidance, suggesting theoretical ways in which training clinics may impact on quality of patient care.
How will this review inform future practice

This review has the potential to inform medical educational establishments, health economists, regulators and patients.

By considering how training can positively and negatively affect quality of patient care, steps can be taken to capitalise or minimise such effects. Low cost initiatives for health service improvement is a key challenge globally, particularly in our current economic climate.

It may be that firm conclusions are difficult to draw and that a systematic review is recommended. However, this scoping review will provide valuable information to prepare for such further research.

Dissemination of findings

It is envisaged that the findings from the review will be disseminated via the following channels:

1. Production of a thesis available in Hull and York Universities
2. Publication of findings in a medical education journal and circulation of this article to patient groups
3. Presentation of findings at a medical education conference
Chapter 4: Scoping Review Results

This chapter describes the results obtained from the scoping review of the literature. The format of this chapter follows the sequence described in the methodology chapter. The outline of the search results will be illustrated, followed by a more detailed breakdown which groups the papers into common areas for further discussion. Through both the headline and more detailed analysis of literature available, a grasp of the quantity, nature and strength of the evidence should be apparent.

Initially, the search engine and hand search results will be outlined, followed by an overview of the included papers where I will discuss the number and origin of papers, with a summary of who is contributing to this area of research.

Then I will organize the findings from included studies to describe patterns, grouping them into themes as well as discussing what types of study design have been used.

Identification of studies

The use of search engines yielded 7,261 results, illustrated in the PRISMA diagram in Figure 6. Hand searching of chosen medical education journals by MS yielded a total of 157 results. These papers were thought, from title or abstract, to have a possible relationship with the research question and went on to be assessed by two researchers, MS and SW, at the abstract vetting stage. The breakdown is illustrated in Table 9.

From the hand searching results, it can be seen that certain journals are more heavily featured, particularly Academic Medicine and Medical Education. These are journals in the medical education field with relatively high impact factors. Academic Medicine is the journal for the Association of American Medical Colleges whereas Medical education is published for ASME (Association for the Study of Medical Education). The journal Focus on Health Professional Education did not yield any
results. It is the official journal of the Australia and New Zealand Association for Health Professional Education. It has a wider scope compared to the journals with a lower impact factor.

<table>
<thead>
<tr>
<th>Journal</th>
<th>Number of articles identified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic Medicine</td>
<td>57</td>
</tr>
<tr>
<td>Advances in Health Sciences Education: Theory and Practice</td>
<td>2</td>
</tr>
<tr>
<td>BMC Medical Education</td>
<td>3</td>
</tr>
<tr>
<td>Canadian Medical Education Journal</td>
<td>1</td>
</tr>
<tr>
<td>Clinical Teacher</td>
<td>13</td>
</tr>
<tr>
<td>Focus on Health Professional Education</td>
<td>0</td>
</tr>
<tr>
<td>Journal of Advances in Medical Education and Practice</td>
<td>1</td>
</tr>
<tr>
<td>Journal of the International Association of Medical Science Educators</td>
<td>0</td>
</tr>
<tr>
<td>Medical Education</td>
<td>48</td>
</tr>
<tr>
<td>Medical Teacher</td>
<td>14</td>
</tr>
<tr>
<td>Postgraduate Medical Journal</td>
<td>2</td>
</tr>
<tr>
<td>Teaching and Learning in Medicine</td>
<td>10</td>
</tr>
<tr>
<td>The Journal of Graduate Medical Education</td>
<td>6</td>
</tr>
</tbody>
</table>

Table 9: Results of hand-searching key medical education journals
Further filtering of results

An initial title screen by MS to identify potentially relevant literature was followed by de-duplication using the software program Mendeley. This brought the number of papers down to 598. These were then screened by both MS and SW and 184 identified for full paper analysis. On these full papers, a citation search was performed which added 6 previously unidentified papers. The full text papers of 190 journal articles were screened, three of which went to a third researcher, DP, for a decision on inclusion. Two were included and one excluded in this process. Overall, 54 full papers were included for final analysis.

Reasons for exclusion

A major reason for excluding the full text papers was that they were related to primary care clinics only. This applied to 72 papers and was usually an easier distinction to make if the papers were non-US based. In the US, primary care or family medicine is not restricted to local surgeries but services are provided in the community as well as teaching hospitals or academic centres, walk in centres and emergency departments (127). Family medicine trainees are often also trained in secondary care clinics as part of their clinical rotations. Primary and secondary care outpatient clinics are usually termed “ambulatory clinics” in US and Canadian studies. During the inclusion and exclusion process, papers that were definitively concentrating on family medicine were excluded. This was on the basis that such clinics were not providing secondary care, including not requiring a specific referral process. However, secondary care clinics, which participated in the training of family medicine trainees alongside, for example, general medicine trainees, were included. The patients in these cases were receiving secondary care.

Another major reason for full text exclusion was that authors were looking for an educational effect following an intervention in ambulatory clinics, which occurred in 47 papers. For example, Latta et al. (128) studied how increasing education in an ambulatory setting can help medical students learn skills of managing patients with chronic illnesses which they have less exposure to as inpatients. This however was an
artificial environment created by physicians recruiting willing patients to attend sessions outside of their normal clinic appointments and the learning process did not follow the normal course of a clinic appointment. Similarly, Almoallim et al. (129) looked at developing an alternative model of education for postgraduate trainees in rheumatology outpatient clinics. The trainees were asked for feedback on whether the changes had helped them achieve learning objectives but patients were not consulted on their satisfaction with care received nor were patient outcomes assessed.

The third most common reason for paper exclusion at the full paper-screening step was that 14 papers were deemed not to be relevant whatsoever. This was usually because the abstract had not been detailed enough to make that judgement call in the preceding step.

Finally, the 3 remaining papers to be excluded were so because of a purely inpatient perspective or because they concentrated solely on costs of teaching in ambulatory care.
Records identified through database searching
(n = 7,261)

Additional records identified through other sources (hand searching)
(n = 157)

Records after initial screen for relevance and duplicates removed
(n = 598)

Records excluded: titles and abstracts not relevant
(n = 414)

Records identified through reference lists and de duplicated
(n = 6)

Titles and abstracts screened by MS and SW for relevance
(598)

Full-text articles assessed for eligibility
(n = 190)

Studies included in data collation
(n = 54)

Full-text articles excluded
(n = 136)
  Primary Care = 72
  Education effect = 47
  Not relevant = 14
  Cost of teaching = 2
  Inpatient setting = 1

Figure 6: PRISMA diagram illustrating results of literature search
Overview of Included Papers

In this section I will describe the journal, country of origin, author background, type of research study, trainee population and medical specialty covered. Appendix 5 is the final data collection table used as a basic summary to aid analysis.

Journal Title

Of the papers screened for final selection, and included in the data synthesis, 22 papers were from journals that were hand-searched, comprising 40% of the final papers included. However, twelve of these were also picked up by the electronic database search prior to de-duplication. The table below illustrates which journals the included papers originated from.

<table>
<thead>
<tr>
<th>Journal Title</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other (where results less than 2)</td>
<td>13</td>
</tr>
<tr>
<td>Journal of General Internal Medicine</td>
<td>11</td>
</tr>
<tr>
<td>Academic Medicine</td>
<td>9</td>
</tr>
<tr>
<td>Academic Psychiatry</td>
<td>3</td>
</tr>
<tr>
<td>Medical Education</td>
<td>3</td>
</tr>
<tr>
<td>Medical Teacher</td>
<td>3</td>
</tr>
<tr>
<td>American Journal of Medical Quality</td>
<td>2</td>
</tr>
<tr>
<td>British Medical Journal</td>
<td>2</td>
</tr>
<tr>
<td>Clinical Teacher</td>
<td>2</td>
</tr>
<tr>
<td>Journal of American Academic Dermatology</td>
<td>2</td>
</tr>
<tr>
<td>Ophthalmology</td>
<td>2</td>
</tr>
<tr>
<td>Teaching and Learning in Medicine</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 10: Breakdown of the journal of origin of included papers from both hand searching and search engine results
The Journal of General Internal Medicine and Academic Medicine were featured most strongly. Whilst Academic Medicine had been highlighted as a paper to hand search from the beginning, the Journal of General Internal Medicine had not. The latter is the official journal for the American Society of General Internal Medicine and is an active publisher of articles relating to patient safety, quality of care and educational issues (130). With over 8,000 articles, this would, however, have posed a challenge to hand search. It does represent however, that the journal articles of interest were split over specialist medical education journals and more generic clinical journals.

Country of Origin

Figure 7 illustrates the distribution of papers according to the country of origin. The majority of papers included in the review came from the United States, making up 72% of the total. The remaining articles are mainly from Western countries although this will have been significantly affected by restricting the inclusion criteria to English language papers.

Figure 7: Number of papers included in final data analysis according to country of origin
Grade of Medical Trainee

The inclusion criteria were set to include both undergraduate and postgraduate medical trainees. The papers show a reasonably even split with 22 concentrating on medical students, 28 on postgraduate trainees and 4 discussing both. This becomes relevant when themes are considered later on.

Primary Study Method Used

The research method most overwhelmingly used was the questionnaire. Out of the 54 papers, 30 involved a questionnaire given to patients or parents/carers of paediatric patients. Medical notes or computer records were used in 14 of the papers. Only one paper used face-to-face interview based research, and one a telephone survey. There were two reviews of available literature and five editorial or opinion pieces.

Medical specialty involved

Figure 8 is a bar chart representing the specialities involved in the studies of outpatient clinics. The overall number adds up to more than 54 due to some papers analysing results from more than one specialty. The most frequently observed specialty was general medicine. This was commonly seen in the US based papers where walk in clinics, staffed by trainees in internal medicine were examined. Interestingly there was also good representation from specialties including paediatrics and obstetrics and gynaecology, where patients are expected to be more weary of trainee involvement. The more specialist medical and surgical specialties were the least well represented with all surgical specialties making up only 5 of the total number of papers.
Comparators of Non-Teaching Clinics

The majority of papers did not have a comparator in their study of outpatient clinics. Fifteen did include a non-teaching clinic to compare training clinics too and five had a clinic of another type to compare to; this was usually a different style of teaching clinic or comparing grades of trainees.
Themes and Findings from Included Papers

In order to provide a narrative summary of the main findings from the included papers, they have been broken down into common areas, which the research was concentrated on. The two reviews and five commentary, or editorial, pieces are described separately in the first instance due to the different scope of these articles.

Review Papers

Adams and Eisenberg (10) reviewed the costs of ambulatory education in the United States which included time costs of the teaching physician, reduced number of patients seen by the physician or reduced billing productivity (charged costs). This was felt necessary to inform the planning of the expansion of outpatient education taking place. They found that there was some evidence of reduced productivity in teaching compared to non-teaching clinics although some papers suggested more patients could be seen when a teacher saw their own patients alongside the trainee. Two papers that were included in this review, dated pre-1994, commented that increased job satisfaction and continuing education for teachers were beneficial effects of outpatient based education, although no quantitative measure was made (131, 132). Whilst patient outcomes were not evaluated, one study did attempt to estimate cost savings afforded when trainees assisted with tasks such as phlebotomy and paperwork (133). Ultimately there was no firm conclusion over whether training clinics afforded effective care.

Farnan et al. considered, via a systematic literature review, the effect of clinical supervision on patient and residency outcomes following updated recommendations in 2010 from the Accreditation Council for Graduate Medical Education. (66). This US body sets standards for postgraduate medical education in the US and had suggested increased supervision of trainees in order to improve patient safety and quality of trainee education (134). The review comprised of five papers from the outpatient setting and nineteen from the inpatient setting. The outpatient clinics studied were from the specialties of internal medicine, psychiatry and paediatrics.
Papers included were all pre-1994 and the three main outcomes were that increased supervision improved patients’ continuation with therapy (in psychiatry), compliance of trainees with protocols and the facilitation by the supervisor to change the judgement of the severity of a patient’s illness, affecting management (135-139).

Opinion/Commentary Pieces

The five commentaries or editorials were spread over an eleven-year period from 2001 to 2012 (140-144). They all caution over issues facing medical training in the outpatient arena; some authors were concerned about whether research into teaching clinics was robust, others raised concerns about patient safety and one author discussed his personal experience of substandard care at training clinics. These are discussed further under the headlines of these themes below.

Patient Safety

Stott summarises some approaches to teaching postgraduate trainees in the outpatient clinic, upon the background of changes to working hour limitations which could reduce the exposure trainees have to such patients (144). He cites evidence that trainees may not always ask for help when they encounter a clinical problem for fear of disrupting the running of the clinic in order to ask the lead physician a question surrounding patient management. A primary care study in the US had found that one in three of these unanswered questions could result in patient harm (145). Stott goes on to suggest that trainees may also delay the timely discharge of patients back to primary care, reducing clinic efficiency and potentially causing unnecessary delays to patients who wait longer to be seen (145).

Young uses the description of a case report, of a psychiatric patient who committed suicide, to illustrate the patient safety risks of the regular rotation of medical trainees (143). When the death was investigated, errors in the process of the handover of this patient between residents at the transition of the academic years was thought to have significantly contributed to poorer care for the patient and hence greater mental health
risk. Young goes on in his commentary to discuss the risks of patients being transferred from experienced trainees at the end of a training year, to more inexperienced trainees on an annual basis.

Addressing Research Limitations

Fiebach and Wong, in an editorial which introduces two studies on resident-led clinics, address the “stark differences” in the demographics of patients seen by trainee doctors compared to fully qualified physicians (142). Residents in the US tend to care for disadvantaged minority groups with little or no health insurance, and the authors consider that patient background can significantly affect how the patient may report satisfaction with care or how health outcomes between resident and physician clinics may become less easily comparable. They also reflect that ancillary support is usually less available to residents adding to the disadvantages of lack of experience and time restrictions owing to inpatient and shift work duties.

Gerrity meanwhile postulates whether patient satisfaction studies in teaching clinics are asking the right questions (141). Introducing a study by Gress, also included in this scoping study, Gerrity underlines the findings that by looking at overall patient satisfaction in teaching clinics, we may miss the detail of whether patients are truly happy with trainee input into their care.

Quality of Care

In a particularly personal opinion piece in the BMJ, Walshe, a retired physician, recounts his personal experience of seeing multiple trainees in outpatient clinics which led to significant delays in his treatment (140). He has concerns that trainees, due to rotations, inpatient commitments and work hour restrictions, do not provide adequate continuity of care and subsequently, lower quality of care is provided due to their lack of personal responsibility for individual patient cases.
Themes from Individual Papers

The remaining 47 papers are discussed according to the main area or theme that were identified by MS. These are broken down into the following areas:

- Patients attitudes/perceptions towards trainees
  - Recognising the level of training
  - The Role of the Trainee
  - Comfort Levels and Right to Refuse
- Factors in the Acceptance of a Teaching Clinic
  - Demographics
  - Input of the trainee
- Satisfaction with care
  - Care Provided by Trainees versus Teachers
  - Factors affecting Satisfaction Levels
  - Teaching style used
- Improving quality of care through education
- Patient Outcomes
- Issues of Quality

Patient Attitudes/Perceptions Towards Students/Medical Trainees

Although not strictly a component of quality of care, patients’ attitudes towards trainees taking part in their health care was a very common theme and one which often impacted on patient satisfaction with their clinic encounter. By establishing patients’ opinions of students and trainees, what patients valued in the consultation would often be discussed.
Recognising the level of training

Several studies commented on the whether patients recognised what level of training the student or postgraduate trainee possessed. This is important in terms of acquiring informed consent from patients who participate in teaching clinics.

Guffey et al., surveyed the knowledge of patients surrounding who was delivering their healthcare due to concerns that this is poorly communicated and can subsequently lead to dissatisfaction with care (146). They found that whilst 95% patients reported that it was important to know the training level of their health provider, only 56% had a “moderate comprehension of the various training levels”.

Crawford and colleagues investigated the factors that affected patients’ satisfaction with trainee involvement in their care (147). Whilst 83.2% of patients said that they were aware of differences between residents and attending physicians, when asked in more detail, only 31% of respondents had a basic concept of how much training a resident will have received. Authors point to previous studies which suggest patients are more comfortable with training clinics when they are sufficiently consented and informed of the medical training hierarchy (148).

The Role of the Trainee

Where research had been done to establish what patients believed were the roles and responsibilities of trainees, most concentrated on medical students.

Abdulghani et al. suggest, in their study of patient attitudes towards students in Saudi Arabia, that patients accept medical students as an active participant of the health care team but are reluctant to be consulted on a more individual basis by students (113).

Hartz and Beal asked patients waiting for an Obstetric or Gynaecology appointment in a US clinic how they perceived medical students (111). There was a reasonably even split between patients who felt that students were there in a learning capacity
and others who saw students as a member of the team or a doctor’s assistant. The authors suggest that, for patients who have had previous limited or no experience to medical students, more certainty should be provided about the role of the student and this role should be kept minimal, increasing participation as the patient becomes more comfortable.

Mavis et al. considered the likelihood of patients consenting to medical students participating in their care during obstetric and gynaecology clinic appointments (149). There was a notable difference between the role patients assumed for medical students and that which the teaching physician deemed appropriate. The majority of physicians felt students should be able to participate in all facets of the clinic appointment, including pelvic examination whereas only 31% of patients concurred.

The only study that conducted in-person interviews with patients was that performed by McLachlan and colleagues in the UK (150). Ten patients were recruited for minimally structured interviews and results reflected on using phenomenological methodology. Here, patients saw the presence of a student as essentially irrelevant, perhaps reflecting on the limited role of the student in these encounters.

*Comfort Levels and Right to Refuse*

Although one study, which compared views of inpatient and outpatient settings in Saudi Arabia, did suggest outpatients feel more able to refuse students, this was not universally reported (113). Hajioff and Birchall conclude that the issue of consent in the outpatient clinic is more complex, while the distinction between refusal and non-refusal of students seems clear, those that accept the presence of students may have limitations on the roles they wish the students to perform (151).

The person consenting the patient may also be of importance, as suggested by Mavis et al. (149). In their study, women attending an obstetric or gynaecology appointment were significantly more likely to agree to student involvement if asked by a nurse or physician, compared to one of the administrative staff, a result which the authors
present as a conflict between increased trust patients hold for these health professionals versus influence that they hold over the patients.

Factors in the Acceptance of a Teaching Clinic

Seventeen of the journal articles had the words “attitude, perception, comfort or acceptability” as part of their research question. This related to patients’ views on medical trainees in outpatient clinics. Often these were then considered in terms of patient demographic or the specific input of the trainee into their care. The comfort of patients in the teaching clinic was thought by all to be an important factor in their subsequent satisfaction.

Demographics

Patients were found, in several studies, to express a preference for students or trainees of the same gender. This was particularly the case for female patients and those in specialties where examinations were more likely to be of an intimate nature (113, 149, 152-154). Female patients were also more likely to request the presence of a physician alone in both specialties thought to involve more intimate questions or examinations and those not (111, 113, 149, 152, 154). Two papers did not support the presence of a gender effect on student acceptance, including one conducting research in Obstetrics and Gynaecology clinics (114, 151). Azher et al. found no difference across genders with regards to preference of seeing a student before a doctor compared to no student being present (155).

Age of a patient was found to be a factor in four studies. Older patients were more receptive to both students and doctors in training (146, 151, 156, 157). Previous experience of medical students appeared to have a similar effect in four reports (111, 149, 156, 157).

Education level of the patient was found to be positively correlated with acceptance of trainees (113, 146, 153) and one study reported that a patient was more accepting of medical student presence the more severely they judged their disease (153). This, as
suggested by the authors, could represent patients with more severe, chronic disease having an increased chance of exposure to medical trainees.

Choudhury *et al.* discovered in their survey of patients in the UK that non-white British patients were more than twice as likely to feel uncomfortable in the presence of a medical student and three times less likely to allow a medical student to examine them than white British patients (156). Koh *et al.* conducted a study on patient acceptance of medical students and reported that 57.6% of patients were receptive to students (152). They compared this to studies conducted in Western populations and concluded that Asian patients are less receptive compared to their western counterparts. However, they were comparing papers from different populations and cultures enrolled in different studies. In the US, Shah-Khan and colleagues found white and Hispanic patients more accepting of students than black patients by over 30% (153). Authors suggest further studies to address the reasons for these differences. Choudhury *et al.* did comment that their study had revealed that ethnic minorities often placed limited value on the role of active student involvement for training purposes; Turkish patients being six times more likely to respond that it was not necessary for students to examine patients as part of their training (156). None of the other papers comparing ethnic background of patients and trainee acceptability asked the patients the reasons for their views.

*Input of the trainee*

As Hajioff and Birchall explored in their study on patient satisfaction in ENT (ear, nose and throat surgery) outpatient clinics, patients may be happy for trainees to be involved with their care but have certain limitations that they wish to impose. For example, a student observing a patient-doctor interaction is very different to the same trainee performing an invasive procedure or intimate examination. This was found to be the case in several studies.

AlGhamdi *et al.* found that whilst patients were happy to have their history taken or receive counselling by a trainee, they were far less willing to undergo a skin biopsy in dermatology clinic, where confidence dropped to 40% from 87% (114). Similarly,
Crawford *et al.* reported that 93.6% of patients were happy for residents to take a history from them but only 44.7% were happy for them to prescribe medications or perform invasive procedures (147). As perhaps expected, several studies found that patients became more uncomfortable if the history contained very personal details, if they were examined by a trainee without a physician present or if the examination was an intimate one (111, 147, 152-154, 156).

**Satisfaction with care**

Here, themes according to satisfaction with care are discussed. Satisfaction was determined mainly by patient questionnaires. In some cases, patient satisfaction is discussed in terms of overall effect, in other cases has been measured following a change to the structure of a teaching clinic, used as a tool to decipher which elements of the teaching clinic could be improved or to compare trainees with fully qualified staff members.

**Care Provided by Trainees versus Teachers**

Interestingly, although global satisfaction with teaching clinics tends to be relatively consistent compared to non-teaching clinics, studies that analysed satisfaction directly with a comparator in more detail; for example, patients’ satisfaction with a particular element of care often saw the trainee receive a poorer score than their fully qualified counterparts.

Hess *et al.* compared patient feedback from elderly care clinics where they had seen either residents or practicing physicians (158). Satisfaction with care from residents was around 10% lower and patients reported receiving less guidance, poorer communication and fewer interventions than the group cared for by physicians.

Monk and colleagues compared parent or carer satisfaction in a paediatric clinic when the patient was seen by trainees compared to faculty members (159). First year residents who had all of their cases overseen by faculty in the first six months, scored
lower on patient satisfaction parameters than physicians at higher levels of training, who were comparable score wise to faculty.

Sgrignoli, Lehman and Sekhar examined parents’ perceptions of the anticipatory guidance they received when seen by a resident or medical student or an attending physician (160). Interestingly, the results suggested that continuity of care was the primary factor in increasing satisfaction; if seen by residents or an attending other than their usual primary physician, parents reported advice provided to be poorer. If the visit was too long, or their questions not adequately covered, satisfaction was lower. Recommendations and advice in paediatrics was also found to be important by Tiao et al. who evaluated communication skills of medical students using multisource feedback (161). Whilst patients were satisfied with the students’ communication skills, they scored low on providing recommendations.

Yancy et al. compared patient satisfaction with care delivered by residents compared to attendants in an internal medicine clinic (162). Whilst overall satisfaction was broadly similar, residents scored significantly worse on personal manner and respect towards the patient. Waiting time and time spent with the doctor was also less satisfactory which authors suggest could be due to the different mix of patients in a resident clinic and that their clinics are less efficiently run or well equipped.

Factors affecting Satisfaction Levels

Some authors found that patients, who were satisfied or otherwise with teaching clinics, could change their minds depending on experience or what was involved in their participation, much like what was found in reasons for patient comfort and acceptance.

Satisfaction of patients with medical care provided by residents was found to be 98.4% and 99.5% in two separate studies based in dermatology clinics in 2005 and 2014 (114, 147). Crawford et al. studied patients who had seen residents and then their attending physician. Patients did report that the time they had spent with the resident had improved the quality of care they received. However, there was a
negative correlation between patient satisfaction and the increasing year of training of the resident seen, which was thought to be due to the more senior trainees partaking in more complex clinics where patient anxiety is higher (147).

Figueirô-Filho and colleagues enrolled patients in clinics where medical students provided routine antenatal care (163). Prior to the clinic, only 22% of patients reported that they felt comfortable with medical students providing their care. This rose to 97% following their clinic experience when trust ratings rose. This correlates with patients who have had some experience in teaching clinics being more willing to participate in the future.

Some papers revealed that whilst overall satisfaction was not altered by the presence of a student, there were suggestions that, when further questions were asked, patients may volunteer additional insights into their feelings of participating in teaching clinics. Hajioff and Birchall found 14% would have liked time alone with their doctor despite the fact their satisfaction remained high with the clinic (151). Townsend et al. also found 22% would like time alone with their doctor despite high satisfaction (164). Gress et al., meanwhile similarly reported that global satisfaction during outpatient clinics when students were present was not altered (165). However, when asked directly during a telephone survey about the students, 40% said that the student presence had not improved their care and a very significant 30% said they would rather not see a student at the next visit.

Simons and colleagues found that whilst half the patients they surveyed in a general medical clinic enjoyed interacting with students, one third did not want to participate in training clinics (157). Of the patients who did enjoy student contact, benefits reported included the students provided fresh insight, patients felt good about being involved in educating students, some reported physicians taking a more careful approach. Another study by Simon et al. found no significant difference with medical student participation on student satisfaction (166). However, they did note that teaching physicians were able to select which patients attended teaching clinics which may lead to them choosing patients who would be more accommodating of students.
Persson and colleagues used questionnaires to assess the opinions of parents regarding medical student skills in a paediatric clinic (167). Whilst parents rated skills highly, particularly communication, a significant number reported poor supervision by the attending paediatrician alongside increased length of appointment time. As a result, 6% would choose not to participate in a teaching clinic in the future.

Wiggins et al. found that, whilst patients thought residents displayed good professionalism, a large majority (83%) still wanted to have attending involvement in their care (168).

*Teaching style used*

Eight papers analysed whether a change to the structure of a teaching clinic could impact on patient satisfaction or quality of care with the aim of developing a model whereby quality of education could also be improved. Six were studies conducted in the US, one in Singapore and one in Australia. Questionnaires were used to gauge patients’ responses to changes made.

Anderson et al. examined whether patients preferred a trainee presenting their case to their supervisor in the same room as them or in a different location after randomising patients to one technique or the other. Patients preferred listening to the discussion between the trainee and supervisor around their case but it surprisingly did not affect the level of patient satisfaction (169). This was echoed by research by Rogers and colleagues who also found patients were more comfortable when students presented their case in front of them (112). Likewise, in a randomised trial conducted by Azher et al., patients did not demonstrate any change in satisfaction level whether they saw a medical student before their doctor or saw the student with their doctor, however they were more likely to rate the student as a professional if they had seen them on an individual level and the prolonged consultation time did not appear to be an issue (155).

Starmer et al. compared clinics where residents were directly observed by teaching faculty compared to traditional clinics where a resident sees the patient alone before
discussing the case with an attending physician (170). Whilst residents thought direct observation increased their learning opportunities, patients preferred the traditional approach due to the increased time spent in the clinic room and reduced comfort having two doctors in the same room during direct observation. However, 30% of patients who experienced the direct observation approach believed it might improve care.

Others have created specific teaching clinics and found that patients are more satisfied with student attitude, waiting time and the doctor’s explanation of their condition, feeling they learned more in this dedicated environment (171). Hartz and Beal also report that patients want to contribute to education yet et al. so feel they learn more as patients when the doctor teaches the student (110). Koh et al. meanwhile found family medicine patients were more likely to report that medical teaching improved the quality of their consultation than specialist outpatient clinics (152).

Grum described a model in 1996 that he had introduced to provide ambulatory teaching whilst maintaining clinic efficiency. In this short paper, patient satisfaction is reported as high with no dip in financial activity, yet there are no details provided (172). Similarly, Regan-Smith, Young and Keller in 2002, also describe a teaching model which aims to deliver effective education with minimal impact on patients care but once again, patient satisfaction results are not detailed (114).

Improving quality of care through education

Specific educational interventions were analysed for their effect on quality of care in four papers.

Arbuckle et al. educated residents in a psychiatry rotation to use a validated depression scale in their clinics in order to detect depression (173). Depression screening rates improved and monthly monitoring was subsequently increased for some patients. Whether this afforded better treatment was not determined, although the scales are designed to improve the safety of mental health services. The authors also recognised that practicing physicians do not always use these standardised scales
themselves, and their performance was not assessed which highlights the need for a comparator group when assessing trainees’ performance in clinic.

Neufeld et al. compared resident performance at medicine reconciliation (taking an accurate history and documenting a drug list appropriately) before and after an educational intervention (174). Whilst performance did improve, similar to Arbuckle et al., no actual outcomes were assessed and physicians were not compared.

Masterson and colleagues, meanwhile, found that resident clinics could meet nationally defined guidelines for control of cardiovascular risk factors (175). The comparison here was their own clinic data compared with published results from other medical centres. This did follow a re-design of the clinic service, with an increased level of faculty supervision alongside an education programme on evidence-based practice.

Gorrindo et al. trained medical students as health educators in a diabetic clinic and saw diabetic control improve with increased patient contact with the students (176). However, this was out with the normal clinic responsibilities of the medical students and was more a method of utilising available staff to improve a service, rather than looking at the impact of a teaching clinic per se.

**Patient Outcomes**

From the journals comparing objective outcomes of patient care, a pattern emerged suggesting that this is an area of potential concern, or at best indifference.

Karlinsky et al. used computer records to analyse steroid prescribing patterns of house staff physicians and attending physicians in general medical clinics (177). Trainees were found to be caring for a more unwell group of patients and this group were more likely to be admitted to hospital. Regardless of them being at higher risk, the authors suggest that increased levels of supervision may reduce the risk to these patients as trainees were found to have different prescribing patterns which may contribute to a poorer standard of care.
Lota et al. were interested to look at the economic impact registrars could have on an outpatient clinic and whether trainees could provide low cost health care (178). However, when auditing records, the authors discovered that registrars made less clinical decisions surrounding treatment or discharge from follow up. This is suggested to negatively affect care of both patients that are being seen and those waiting for an appointment that may be taken up by unnecessary follow up appointments.

Lynn, Hess and Holmboe published papers in 2009 and 2012, which analysed quality of care provided in elderly care clinics and endocrinology clinics (179, 180). In the elderly care clinic, residents were less likely to provide recommended care, for example screening for falls risk. The clinic set up, with less administrative support, was less conducive to reminding residents to complete certain tasks, for example documenting particular symptoms or enquiring about over the counter medications. In the endocrinology study, practicing physicians were found to perform certain recommended examinations more frequently than residents and their patients had better control of blood sugar and blood pressure.

Mladenovic et al. measured quality of care in resident delivered cardiology clinics across 23 sites across the USA (181). This demonstrated that appropriate use of guideline based medications varied widely, from 33 to 100%. Quality from the patient perspective in terms of access and satisfaction did not vary to the same extent and did not seem to mirror the more objective measures. Authors were unable to compare supervision, knowledge or practice patterns to explain the differences but were concerned about the root causes.

Conversely, some papers did find that trainees could perform adequately in clinic and provide comparable care. Dearinger et al. considered whether continuity of care would improve quality of care at a resident clinic and found that, where there was a greater continuity of care, patients had improved glycaemic control (182). This was not the same for the faculty physicians, thought to be due to the patients recognising the resident as their primary point of contact.
Jackson, Kroenke and Pangaro used a series of patient surveys to assess satisfaction but also symptom outcome and unmet expectations across clinics of both residents and staff physicians (183). Patients reported increased satisfaction with the time spent with their clinician in the resident group. Otherwise, the two cohorts had similar satisfaction levels and functional status improvement. There was no difference found in visit costs or onward referral rates. A breakdown of patient demographics in each group, or which patients in the resident group had also been seen by a senior clinician, was not provided.

Willett et al. aimed to determine whether adherence to national guidelines for screening differs by year of residency and increased training (184). They found that there was no difference for residents one year apart in training but felt that more junior trainees were benefitting from increased supervision levels. An alternative explanation could be that the more senior residents are not improving on their level of performance.

Williams et al. compared clinical management of child and adolescent psychiatry patients by attendings versus residents (185). They used data on the information gathered during an initial meeting and the number and types of services subsequently offered. No difference was found, suggesting comparable care provided by doctors in training. This study differed from others by analysing information provided by the resident prior to a review of the case by a senior doctor, reducing the affect of supervision.

Issues of Quality

Although scoping reviews are not always expected to comment on quality in depth, areas identified in this scoping review, which may affect the quality of the papers included, are therefore outlined and will be further discussed in the next chapter.

1. Medical trainees, or medical staff, usually distributed questionnaires directly to the patients. Occasionally, trainees would also facilitate these being completed by providing direct assistance to patients (186). There were 18
studies, which did not clarify who distributed questionnaires to the patients (111, 112, 114, 146, 147, 152, 153, 155, 157, 158, 161, 163, 164, 168-170, 183, 187).

2. All papers were completed by physicians or trainees affiliated to a medical school or postgraduate medical department with little input from non-medical persons.

3. Studies comparing teaching versus non-teaching clinics did not qualify how many of the patients, if any, had been reviewed by a senior doctor.

4. The location of the research was largely limited to western healthcare. Whilst the scope of this thesis is recognised to be limited in the same way, and such research is representative of the local population in the patient interview study, factors influenced by cultural differences are not represented fully.

5. The number of patients involved in studies ranged from 10 to 32,866 with a mean of 961 and a median of 361. The largest numbers were seen where computerised or paper medical records were used.

6. Only two papers conducted randomisation in the selection of patients to clinic.

7. A comparator group (of a non-teaching clinic) was used in only 15 papers.

8. Most papers were limited in geographical scope to one hospital or institution.

9. Many trainee-led clinics had patients with vastly different demographics to the physician-led comparator.

Summary

This chapter of results of the scoping review has summarised

(1) Who is writing the studies
(2) Where most studies originate from
(3) What most studies concentrate on in terms of themes

The discussion section will go on to consider whether there are any explanations for these patterns, what the relationship is between the patient interviews conducted earlier in the thesis, whether there is a gap in the literature findings and whether a systematic review would be feasible.
Chapter 5: Discussion

This chapter aims to bring together the results from both the scoping review and the patient interview study, and compare these to what is known about the impact of medical education on quality of patient care from research in primary care and inpatient settings.

In order to do this, the following steps from ESRC guidance on narrative synthesis, shown in Table 7 in the Methodology chapter, will first be used (121):

1. Exploring relationships in the data: considering the factors that might explain any differences in direction and size of effect across included studies.
2. Assessing the robustness of the synthesis product: to assess the strength of the evidence in order to draw conclusions and consider whether included studies would stand up to the scrutiny of a full systematic review
3. Considering the implications: a conclusion will be made on the overall implications on policy concerning medical education and quality of patient care.

Prior to stage 3, considering the implications of the results, in order to place the implications into a wider context, the results of the scoping study will be compared against those from the local patient interview study (see Chapter 2) and data from inpatient and primary care studies discussed in Chapter 1. I will then reflect on the rigour of both approaches used, and my personal learning as a researcher throughout the process.

Once the potential implications on policy have been outlined, Chapter 6 will summarise the outcomes of the thesis, its main conclusions and what it adds to the current knowledge on this subject.
Exploring Relationships in the Data

The logic model (Figure 5, Methodology Chapter) suggested theoretical ways by which medical trainees could affect patient care in terms of patient satisfaction, effective care and patient safety. These included:

- Trainees engaging in audit and quality improvement projects contributing to patient safety improvement.
- Trainees gaining more exposure to certain conditions which may benefit patients in the future in terms of safe and effective care.
- Trainers read up on evidence based medicine and subsequently provide a higher quality of care with increased patient satisfaction.
- Trainers spend longer with patients to gather history and conduct examinations, which increases patient satisfaction and provides more effective care.
- Trainees act as patient advocates in order to increase effectiveness of care.

Before I consider whether the suggested mechanisms above, by which trainees could impact on patient care, were identified in the scoping review results, the main findings from the review will be discussed. Each main theme described will be explored in order to explain any similarities and differences across the included studies.

Reviews and Opinion/Commentary Pieces

The two review papers were both conducted in the United States, five years apart (10, 66). The papers had different aims; Adams and Eisenberg concentrated on costs of ambulatory education whilst Farnan et al. considered how effectively trainees were supervised when providing direct patient care. The first review paper could not reach a firm conclusion on whether training clinics provided effective care in terms of costs and productivity and other effects, including the possible benefits of continuing
professional development for teachers, were not sufficiently detailed (10). The second review paper concluded that outpatient studies had pointed towards supervision being crucial in improving patient care (e.g. increased patient concordance with management plans) and patient safety (identifying the severity of a patient’s illness) (66).

The five editorial or commentary pieces comprised of three from US-based authors and two from UK-based authors (140-144). All were written by people who had either had a training role or were still actively training students and/or postgraduate trainees. The striking theme here was one of concern regarding patient safety in teaching clinics but also whether research into this area was sufficiently robust.

**Patient Attitudes/Perceptions Towards Students/Trainees**

Studies addressing patients’ attitudes or perceptions of medical trainees were included as a “patient experience” marker. There was a general consensus that patients did not always understand the hierarchy of medical experience and responsibility, particularly in postgraduate grades (111, 113, 146, 147). Several studies also suggested that patients differed widely in how much they would expect or accept a medical student to be involved in their health care provision (149, 150). Medical students were the most studied in terms of acceptance by patients, presumably because their role in the healthcare team is less discrete.

Reasons for acceptance of trainee presence and input were explored to varying degrees by authors extrapolating data on demographic details provided. Female patients expressing a preference for students of the same gender was reported in six studies whereas Azher *et al.* found no such gender distinction (113, 114, 149, 152-155). Azher used questionnaires to gain responses from 151 patients in general surgery outpatient clinics in Australia. The other studies were larger, with 229-4142 patients enrolled in each one and were from various countries including the US, Saudi Arabia and Singapore. Three studies either completely or partially consisted of surveys on Obstetric and Gynaecology patients (111, 149, 154). It is perhaps not
surprising that, in specialties where intimate examinations take place, the same gender of trainee is preferred.

Age and previous exposure to students was less controversial and all studies which commented on these being a factor found older age and previous exposure to students were consistent with more openness to student and trainee involvement in healthcare (110, 146, 149, 151, 156, 157).

Some western studies suggested that white patients were more likely to accept students than non-white patients, irrespective of their country of birth (153, 156). Koh et al. came to the same conclusion in their Singapore study. However, their conclusions were based on a study of Asian patients which was then compared to published studies conducted in western settings comprising of different populations and utilizing different research methodology (152).

The issue of consenting patients for the presence or involvement of medical trainees drew some concerns. This surrounded issues of informed consent; whether patients were aware of the extent of involvement of trainees or were given time to weigh their decisions (151). There were also suggestions that there may be unintended coercion of patients when they were asked by their nurse or doctor as opposed to one of the administrative team (149). The depth of involvement of trainees was a particularly significant factor with many studies suggesting patients may wish to consent but on certain conditions e.g. the trainer conducting the intimate examination or invasive procedure (111, 114, 147, 151, 152, 154, 156).

Satisfaction With Care

The main finding in this section of the results was that asking patients to give a global satisfaction score following clinic would often lead to no statistically significant difference between teaching and non-teaching clinics, a finding highlighted by Gerrity in her editorial piece (141). Studies by Gress et al., Sgrignoli and colleagues and Hess et al. found that breaking down questionnaires by asking specific questions on
patients’ opinions of trainees could reveal some areas of dissatisfaction (158, 160, 165).

Other studies suggested that patients valued input from their consultant or attending even if they were happy for trainee involvement and, if supervision was lacking, this would cause satisfaction to lower (151, 161, 164).

There weren’t many studies in which authors asked patients what they valued about trainee input into consultations. Both Simons et al. and Hartz and Beal found patients reported that they enjoyed the process and felt good about being involved in education (110, 157). None reported whether patients believed trainees improved their quality of care.

*Improving quality of care through education*

Interestingly, in all four papers authors looked at whether they could train students or trainees to provide better healthcare but didn’t compare them to consultants/faculty/attendings running similar clinics (173-176). Instead the comparator was before and after the educational intervention or by comparing with other published data on trainee led clinics.

Therefore, whilst all concurred that increased training led to higher performance in patient outcomes, the impact of the healthcare provider being a trainee was lost. Furthermore, one study by Gorrindo et al., took medical students out of their traditional role and trained them as “health educators” which gave patients an extra contact aside from routine clinic appointments (176). This could be seen as a separate process from the main clinic consultation itself.

*Patient outcomes*

Nine papers reported on outcomes of quality of care other than patient satisfaction. Of these papers, written between 1999 and 2012, eight were from the US (177-185).
This may reflect the need to defend trainees providing healthcare in a mainly privatised healthcare system. In order to provide lower cost services for non- or under-insured populations, trainees in the US often provide resident-led clinic services with some faculty or trainer overview. This provides more data for research into the impact of trainees in secondary care outpatient environments than the UK system where trainees predominantly see patients from a consultant led clinic.

Five of the papers reported a negative impact on patient care when trainees were directly involved in their outpatient attendances (177-181). In three papers, residents were not found to be following evidence based medicine in terms of adherence to recommended guidelines (179-181). Lynn et al. in two papers did compare trainees to their supervising counterparts but Mladenovic et al. compared different resident clinics and commented on a spread of geographical heterogeneity without providing background on whether this was the case for non-teaching clinics. Lota and colleagues meanwhile considered whether registrar-level trainees were able to provide healthcare in an outpatient clinic in a way which proved economically advantageous to their host hospital (178). The delay of clinical decision-making and timely discharge from clinic was thought to negatively affect the care of both current and future patients.

The four papers that reported trainees providing comparable care were of mixed approaches. Williams et al. did directly compare provision of care from trainees and trainers in a child and adolescent psychiatric service. However outcomes included the number of services offered and information gathered during consultations, which may not have offered a true interrogation into the quality of care provided (185). Similarly, Jackson et al. found no change in referral rates or visit costs when comparing clinics run by residents and attendings (183). Dearinger et al. found that continuity of care boosted glycaemic control in patients cared for by residents and suggested that there was more focus on residents delivering continuous care in teaching clinics where patients may not see the same faculty members (182). The authors, as with other studies, recognized that they were unable to identify which patients had also received input from endocrinologists at each appointment, which could have altered the course of their biochemical results. Willett and colleagues add to this uncertainty in their study, which found that the adherence to national
guidelines in an outpatient internal medicine clinic did not vary by training year, but were unable to ascertain how the level of supervision provided varied between trainee grade (184).

No papers were found which analysed the impact of educating trainees with future patient outcomes.

**Summary of Findings and Relationship with Theoretical Model**

Here, I will briefly summarise the findings from the papers and discuss whether the theoretical mechanisms, by which trainees could impact on patient care, were identified.

The 54 papers included in the scoping review were predominantly from western countries but there was a roughly even split between the focus on undergraduate and postgraduate trainees. The questions asked by studies varied depending on which training grade was assessed. Studies involving medical students tended to focus on the acceptance of the student to the patient population and how satisfied patients were with student involvement in their care. Studies on postgraduate trainees (residents, registrars) focused more on cost risk/benefits and patient outcomes. This can be explained by the service role, which postgraduate trainees are more likely to fill compared to medical students who are generally not employed by the institution where they are learning. The specialties of surgery, particularly subspecialties, and radiology were not well represented.

The research method involved in data gathering was overwhelmingly the patient questionnaire or survey, used in 30 of the papers. Telephone or face-to-face interviews took place in 2 studies, with medical record analysis utilised in the remainder. This is an understandable approach given the labour intensive nature of interviewing patients compared to distributing questionnaires. It probably also allowed such large numbers of patients to be questioned, an average of 961. How the popularity of the questionnaire approach may affect the quality of research is debated in the next section. The next popular method was use of anonymous patient data,
which is likely to reflect ease of access, but this had its own problems in terms of whether the data accurately captured outcomes of quality of care.

*Trends Identified in the Studies*

Some trends in the papers were supported by a number of authors, whereas others demonstrated conflicting or undecided results.

The trends identified which authors were largely in agreement over included demographic data surrounding trainee acceptance and the positive effect of educational intervention on patient care.

Female patients and those in situations where intimate examinations are likely, tend to prefer students of the same gender (152-154). Male and older patients, meanwhile, are more accepting of trainees regardless of the specific clinical situation (110, 146, 151). Consent taken from patients when participating in teaching clinics was found to be a problematic area. The main points identified were that coercion may inadvertently be taking place when a trusted member of the healthcare team, e.g. doctor or nurse, asks the patient for permission for trainee involvement and that patients may have limitations on the role they are happy for the trainees to assume (149, 151).

Whilst there was some consensus that patients enjoyed teaching and felt good about being involved in educating trainees (110, 157), upon reading the papers, it was generally observed that there often weren’t explanations provided as to the reasons for patients to report satisfaction or dissatisfaction i.e. what was it about teaching clinics that they did or didn’t like?

Supervision was a cause for concern regarding patient safety and also satisfaction. This ranged from patients stipulating that they would prefer teaching clinics if they were guaranteed some input from their lead physician (151, 164, 168) to reports that supervision was so inadequate that it made patients concerned that they were not receiving safe and high quality care (167). The review by Farnan *et al.* shares the
view that teaching clinics can provide more effective care with increased supervision (66).

The four papers that tested the introduction of an educational programme to improve the quality of care provided to patients by trainees showed impressive results but lacked an in depth assessment to answer whether the same educational intervention could help the teaching physicians. There was often a danger of assuming that the quality of care provided by consultants/attendings/faculty was already superior (173-176).

Where studies differed in their conclusions were in the areas of cost implications of training, measuring patient satisfaction and whether trainees can provide equivalent care to that of non-teaching clinics.

Three papers and one review article covered the costs of training clinics in terms of productivity, time or billing (10, 114, 172, 178). Grum and Regan-Smith et al. do not provide a large amount of detail in their assessments, which suggest teaching clinics can be run in a way which does not affect productivity (114, 172). Lota et al., in their UK study, report trainees can cost the institution where they work money by delaying clinical decisions (178). The review by Adams and Eisenberg suggests that the current evidence is not sufficient and has too many variables to draw firm conclusions (10). One could argue that a specialist trainee employed by a hospital also provides significant inpatient and out-of-hours patient care, which may offset cost setbacks incurred by offering outpatient training, but no paper took this into account.

Alignment with Theoretical Logic Model

In the logic model proposed in the methodology chapter, suggestions of how trainees in secondary care outpatient clinics could affect patient care were proposed.

There was no evidence that trainees could contribute to patient safety improvement by participating in audit and quality improvement projects. However, Mladenovic et al. suggest that trainees who work in a system which embraces evidence based practice
will go on to be more prepared to instigate such systems in their own practice when they become independent (181). Lynn *et al.* echo this view, suggesting that residents delivering high quality care during training will go on to deliver high quality care in their own practice (180). Whilst these are logical presumptions, the participation of trainees in quality improvement projects could offer more rapid changes to patient care and this was not assessed.

Some conditions are not commonly seen and an outpatient environment can provide an increased chance of exposure to rare conditions that inpatient care does not afford. Although Grum reports in his commentary that students with greater exposure to ambulatory clinic perform better in certain examinations, none of the included studies looked at the long-term impact of ambulatory education on patient care, which is a common reason for patients to accept the presence of trainees in their consultations (172). However, this would likely involve significant research challenges in terms of length of time that a study is conducted over in order to assess this adequately.

Another suggested mechanism by which trainees could improve patient care was by encouraging their teachers to be more up to date with evidence-based medicine. Hartz and Beal did find that patients reported that they learned from the student-teacher interaction but did not specifically report that their physicians appeared more up to date (110). In their review into costs of ambulatory education, Adams and Eisenberg did report that teachers enjoyed teaching and found it an educational process but this was not sufficiently detailed (10).

There were mixed reports on whether teaching clinics led to senior physicians spending longer with patients, thereby increasing quality of care and patient satisfaction. Crawford *et al.* reported that dermatology patients, on the whole, valued their time with residents feeling that it improved the quality of their visit and did not make their visit onerously long (147). In their study into the teaching of medical students in paediatric clinics, Persson *et al.* found that consultations where teaching was taking place increased the length by 5-30 minutes but only 6% of parents reported this as a problem (167). The authors did not specifically ask parents whether they believed that they had longer with the teaching physician, concentrating instead on the parents’ opinion of the skills of medical students. However, lack of
supervision was reported suggesting that time spent with the senior doctor may have been lacking. Simons et al. had mixed reviews from patients on their experience of medical student teaching clinics in internal medicine (157). 28% thought they had received more attention but 23% thought less, a similar breakdown to that found in a study by Townsend et al. (164). A handful of patients did believe that their physician had taken a more careful approach due to the students’ presence. Whilst observing patient reactions to different teaching clinic styles, the method that took longer for patients was deemed less satisfactory, primarily due to the extra time taken. Such results could be explained by discrepancy between whether time or attention was measured. Simply spending more time in a clinic room is more likely to cause dissatisfaction when patients crave more time with their physician.

There was no evidence to support the theory that the trainee can act as a patient advocate to provide effective care.

To summarise, some of the theoretical ways in which trainees could affect patient care were investigated in the included papers. However, other major topics which were not anticipated include those around patient safety, cost of training and clinic productivity as a whole, patient consent and whether trainees can act in a more independent manner to provide equivalent care to their trainers.

**Assessing the Robustness of the Synthesis Product**

Whilst scoping studies tend to avoid commenting on the quality of papers because of the lack of in depth analysis, if a systematic review is being considered, an overview of the strength of the evidence presented can help to decide whether studies would stand up to the scrutiny of a full systematic review.

In the results chapter there were elements affecting quality that were listed e.g. over-reliance on questionnaire studies, lack of comparator group, limitation of studies to one institution etc.
In order to present a summary of this, first the limitations of papers suggested by the authors are outlined below. Then this is put in the context with other observed areas of concern.

Many authors recognised that the questionnaire-based approach of analysing patients’ views was problematic for several reasons. Most did not comment on the problem regarding medical personnel distributing the questionnaires but two papers did conclude that medical students assisting patients with their responses could induce bias (113, 186). In one study, there was participation from different groups of clinicians and trainees without a standardised approach to distributing questionnaires nor a recording of the approach taken by any group (158). Others cited problems with using pre-existing tools to survey patients that might not have been appropriate to their particular study, or creating new tools that were not assessed for validity and reliability (151, 163, 186). This was confirmed as an issue by Wiggins et al. when they discovered that many patients had misunderstood the instructions in one of their questions on a questionnaire that was not pre-tested adequately (168). Participation or selection bias was also a worry, particularly when questionnaires were available in only one language or given to patients with possible visual impairment (151, 154, 186).

Other research methods were also limited. The one study that involved face-to-face interviews was one in which those interviews were conducted by a medical student, an issue acknowledged by McLachlan et al.. Farnan et al., in their review, found few randomised controlled studies, small numbers were common in all types of study and there was a lack of objective assessments regarding quality of care (66). In the two RCTs conducted by Anderson et al., they also comment that there was no evidence gathered on outcomes including visit duration and resource allocation, with small patient numbers and staff being aware of the assessment they were under (169).

Using medical record data was also found to have its limitations due to lack of knowledge of administrative staff extracting data and the quality of the data that was available in the first instance (179). Several authors felt their studies were limited to being a single point in time analysis rather than providing a longitudinal perspective.
with specific focus on whether an intervention truly altered patient outcomes (170, 175, 176, 184, 185).

The use of a single site or institution in the study, whichever research approach was used was a common limitation cited (155, 161, 163, 165, 174-176, 183, 187, 188). In the review by Farnan et al., this was a specific problem identified for included studies (66).

Whether or not a study provided generalisable results was questioned by eleven papers (111, 113, 152, 157, 159, 160, 166, 179, 182, 183, 187). This was largely due to demographics being non-representative e.g. little variation as a whole or trainee and teacher patient populations differing to a large degree (113, 159, 160, 179, 187). Other patient population discrepancies were thought to occur if the majority of patients had seen trainees before (often the case when attending a teaching institution), the nature of the patient demographic attending walk-in clinics, or whether teaching physicians may actively ask patients who they know are more likely to consent to teaching clinics (111, 152, 157, 166).

Other concerns included the variability of trainees involved in studies e.g. grade, time of year study was conducted (which could affect experience gained), as well as lack of control group use and recording which patients had seen both trainee and trainer in a consultation (173, 174, 176, 182, 183).

In eight papers there was no specific discussion around limitations identified by the authors (147, 149, 156, 164, 171, 172, 177). This suggests a lack of recognition regarding the importance of a robust research method.

The issue of quality regarding use of questionnaire-based studies was identified in the results section as a potential problem. The lack of clarity around distribution was not addressed as a limitation in the majority of papers (111, 112, 114, 146, 147, 152, 153, 155, 157, 158, 161, 163, 164, 168-170, 183, 187).
Another important area, not specifically mentioned by authors of the included studies, is that the background of those conducting research is exclusively one of physician or trainee physician, usually affiliated to a teaching department.

Summary

The nature of scoping reviews lends itself to the accrual of a heterogeneous mix of papers with different research methodology, particularly when including commentary or editorial pieces. Indeed, from background literature and initial searches carried out to test the search strategy, a paucity of high quality research literature was expected, hence the few restrictions made to the search strategy and selection criteria. However, there is limited geographical scope in the literature search, imposed in part by the search strategy and inclusion criteria.

The focus on the use of patient questionnaires designed and distributed primarily by medical personnel allows for some element of comparability between studies but raises questions about why other methods of patient feedback were not used more frequently e.g. face-to-face interview or focus groups. Whilst questionnaires allow more data to be gathered from a larger population within a given time frame, interviews would have allowed a more in depth analysis on patient views (189). This would perhaps have gone some way to addressing concerns around whether questionnaires were detailed enough to pick up particular areas where patients were satisfied or otherwise (141, 165). However, time and cost restrictions are likely to have played a significant role in making these other methods less utilised.

The low number of randomised controlled trials would make a systematic review on these alone to be of low power. Including all other types of study meanwhile would include many that lacked basic internal validity e.g. presence of confounding factors or selection bias. For instance, it was not usual practice for random recruitment of patients to be employed.

However, a systematic review could be performed with the intention of exploring these issues of research quality in more depth. However, there would need to be
significant adjustments to the protocol. The inclusion and exclusion criteria would need to be amended appropriately and a wider team with librarian expertise may well find an altered database of papers on which to conduct a systematic review (190). When considering robustness of the scoping result results, one has to assess the quality of the data inputted, i.e. the limitations of the scoping review itself, which will be discussed further on in this chapter.

Prior to the implications of the scoping review and patient interviews being considered, there will be a summary of the similarities and differences between the scoping review and patient interview results as well as comparing these to the data from inpatient and primary care studies.

How the Results from the Scoping Review Compare to Patient Interview Data and that from Inpatient and Primary Care Studies

In Irby’s 1995 thematic review on teaching in ambulatory care settings, over 100 articles dated from 1980-1994 were assessed. The conclusion was that “education in ambulatory care clinics is characterized by variability, unpredictability, immediacy, and lack of continuity” (191). Continuity of care was thought to be minimal and there were issues with lack of discussion of cases with teachers, affecting students and patients alike.

Data in this review, from 1994 onwards, suggests some problems are the same but that there is somewhat more of a recognition for appropriate supervision and education (66, 144, 167). The theme of inadequate supervision in teaching settings giving rise to potential patient safety risks is echoed in inpatient data (65, 66). This was less reflected in primary care data. Whether this is due to inadequate supervision being less prominent or whether the research methods have simply not captured the data is not clear.

Patient satisfaction was found to be roughly equal in teaching versus non-teaching environments in both primary care and secondary care clinics (39, 43-45, 141, 165).
However, in all three settings, there was concern about the depth of analysis carried out on patient satisfaction, for example regarding patients’ thoughts on the level of input they were comfortable for a trainee to have (43, 72, 147, 157, 167).

Patient knowledge of the grade of trainee they were exposed to was also questioned across the studies (44, 78, 146, 147, 192). This raised questions over consent, as did reports that the person who asked the patient for consent could also have an impact on whether the patient felt more obliged to participate (49, 50, 79, 149). Interestingly, the paper by Benson et al. reported that patients felt they may have more control over seeing trainees in a primary care setting compared to inpatient settings, perhaps because trainees are more often playing a care provider role as well as one of a learner (39).

Demographics affecting patient consent to trainee involvement seem to have been more thoroughly assessed in the results from secondary care outpatient clinics. Data from primary care did not have the same focus, although the paper by Choudhury et al. looked at both primary care and secondary care and came to the same conclusions regarding the demographic profiles of patients who were more or less likely to participate in training clinics (156). Some of the findings from inpatient studies approached this issue from a different angle. For instance, Nicum and Karoo reported that women who had experienced labour previously were more likely to accept medical students in their second or third attendance on a labour ward (83).

Reasons for patients agreeing to participate in, and the likelihood of them gaining satisfaction from, teaching clinics or inpatient encounters with trainees tended to centre around a sense of altruism in training the next generation of doctors (39, 46, 82, 157).

Whether or not the institution as a whole performed better because of its teaching status was more positive in primary care than secondary care. Primary care studies on the whole demonstrated a higher quality of care being delivered at teaching practices with higher job satisfaction (35, 36). Studies conducted in secondary care, both in inpatient and outpatient services, were less positive although the review by Adams and Eisenberg suggests some reports of increased job satisfaction from teaching
clinicians (10). Inpatient care has conflicting reports regarding whether quality of care is superior in teaching versus non-teaching hospitals (54, 58, 59). Indifference in inpatient care seemed to change to a more negative tone in the outpatient studies. Here, training clinics in the main did not perform adequately (177-180). Although when appropriate supervision was ensured, this did seem to alter the outcome (182).

One factor, which may affect patient satisfaction in secondary care outpatient clinics more than inpatient care or primary care, is that of continuity of care. It has been suggested that continuity brings improved access to health care and higher patient satisfaction (193, 194). Continuity of care was found to be an important factor for patients from the results of the scoping review (160). A number of primary and secondary care outpatient studies suggest that, even if patients are happy to partake in teaching clinics, they would still like some input from their regular doctor which does suggest continuity is paramount (45, 151, 164).

There was more of a focus on economic costs of training clinics in the secondary care outpatient environment compared to inpatient studies or that in primary care. This may reflect the fact that education is increasing in secondary care outpatient settings at a higher rate as well as the fact that inpatient wards are traditionally more heavily staffed by junior trainees.

Conclusions from the patient interview study echoed findings from primary care and secondary care studies in several ways. The majority of patients interviewed wanted to participate in teaching clinics in order to help the trainee learn, in order to educate the future workforce of the NHS. The sense of “giving something back” to the NHS is something perhaps not reflected in the scoping review due to the predominance of private medical healthcare in the non-UK papers.

There were examples of where patients had enjoyed the interaction between the consultant and trainee and had learned something from the encounter, something which primary care studies as opposed to the scoping review support (46, 47). This may reflect the fact that the patients will have been asked in the interview why they consented to a teaching clinic and why they enjoyed it, if they said they did.
Gaining two opinions and having a fresh approach were quotes from the patient interview study that were also reflected in primary care studies (44). However, the wish to see the consultant was reflected in the patient interview project and all five patients who said this were female. The scoping review results certainly points towards female patients being less willing to consent to trainee involvement (152-154). Similar demographic breakdowns were observed in the older patient population who seemed more willing to participate in teaching clinics both in papers from the scoping review and in the local interview study (110, 146).

Overall there seems to be good correlation between findings from primary and secondary care. The findings from the scoping review appear more critical of teaching in outpatient clinics than was found in primary care or from the patient interview studies. This may reflect issues over teaching organisation, patient expectations or study design.

All studies indicate that the right questions are not always being asked of patients, suggesting more in depth questionnaires or interviews are warranted. Likewise, research on objective outcomes surrounding quality of care is lacking.

Understandably, most patients who were interviewed for this thesis gave variable responses when asked whether they felt a teaching hospital offered them a higher quality of care. Certainly most patients felt their individual experience would only benefit future patients of the trainees rather than themselves in a more immediate fashion.

The next section, on limitations and reflexivity, goes on to consider the weight that can be applied to the findings from the thesis before the implications are discussed.

**Reflexivity and Limitations of the Thesis**
In order to further consider the strengths and weaknesses of this thesis, prior to forming a conclusion, limitations of the two approaches used along with a section on reflexivity will be presented.

**Limitations of the Thesis**

In the introductory chapter, it was stated that the thesis aims to provide a broad insight into the evidence available on medical education and quality of patient care within outpatient departments. A two-pronged approach was to involve a series of patient interviews within a local population followed by a scoping review of the literature available. Ideally, I wanted to know whether there was a direct effect on the quality of care a patient receives when they are exposed to the teaching of medical trainees during their attendance at an outpatient clinic.

The patient interview study had the specific aims of providing first-hand patient views and experience in order to give a local perspective, but also to inform a subsequent scoping review.

The scoping review of the literature meanwhile had the specific aims of describing the type of literature available on this topic; summarizing the main themes, commenting on the extent of research activity and highlighting gaps in the knowledge base.

Once both were complete, I hoped to triangulate the two approaches to learn lessons for future healthcare and medical education within the local population.

Firstly, the aim of the patient interviews informing the search protocol and analysis of results did have some affect. There was attention taken to papers that might suggest a long term impact of education on patient outcomes, however it was established that this was not researched to a significant degree. There was some evidence in the scoping review that the grade of trainee was of importance, with one paper suggesting patients were more satisfied with trainees towards the end of their training and many
papers commenting that patients were unsure of what the training grades described in
terms of experience.

There was also evidence to support the findings from patient interviews that, where
clinics were based in specialties where there are intimate examinations, that patients
feel more unwilling to consent to trainee involvement. The scoping review results
also indicated patients would be more likely to have a gender preference. There were
some studies which measured a direct impact on medical care by trainees, particularly
postgraduate trainees in the studies where comparisons between trainees and usual
physician were made.

Transferability of the patient interview studies has been proved in part by the
similarities found between comments made by interviewees and that found in the
analysis of results of the included papers in the scoping review.

The main limitations of the patient interview study were discussed in Chapter 2.
However, some were notably similar to those of the studies within the scoping
review; for instance, lack of a comparator interview, weaknesses in the patient
recruitment method and lack of true randomisation. The interviewer and supervisor
for the patient interview study being medical trainee and medical educator
respectively also tallies with potential issues with the research.

Known limitations of the scoping review were outlined in the methodology chapter.
These included issues related to time and resource issues including a small scoping
review team, little librarian input, no available translator, a narrow geographical scope
and a prescribed timeframe of papers on which to search.

However, using a scoping style was probably the right approach in view of the limited
team available and the limited pre-existing knowledge required in order to create a
robust protocol for a systematic literature review. The benefits of the scoping review
were that we could go back and amend criteria and include a wide range of papers.
The quality of papers included has been highlighted as a potential issue and this may
have further thwarted the production of a sound systematic review.
Whilst no consultation exercise was conducted, background literature from primary care and inpatient data was used to triangulate evidence, along with the results from the local patient interview study. However, prior to considering a systematic review, the dissemination of the results of this thesis and gathering comments and critique would likely be invaluable in modifying a future review protocol.

Interestingly, while we found that the U.S.A produced the majority of papers, a recent study by Doja et al. found that Canada, the Netherlands, New Zealand, the UK and the U.S.A in that order were the most productive of medical education papers which raises a question of why the breakdown of country of origin was different in this study (195). One explanation could be that Doja et al. looked at evaluative studies of medical education whereas this scoping review was analysing many facets of quality of care, bringing in journals that are not specific to medical education. Another reason could be that, in evaluating effective patient care, some papers considered the costs of education and training in outpatient clinics which may have altered the geographical location of papers.

Hand searching of journals was intensely time consuming, as was the initial screening of paper titles by MS. Whilst not hand searching journals and conducting a search with more narrow terms could have reduced this work, it is likely that the search would have lost sensitivity. Around half of the papers identified through hand searching and included in the final analysis were also picked up via search engine results. However, this did mean that 22% of included papers would not otherwise have been identified and it went some way to compensate for anomalies in the search strategy or indexing of databases that may have precluded their identification (196, 197).

Other problems specific to the scoping review have come to light during the analysis of the papers. A particular problem was that papers from the US used quite different terminology for outpatient clinics due to the nature of their education and healthcare systems. Eliciting which papers concerned true secondary care as opposed to primary care was hampered by crossover with clinics that were run by specialties such as internal medicine, which would be deemed secondary care in the UK but can be termed primary care in the US. Generally where the term primary care was overtly
used to describe a clinic these papers were excluded. However, there were papers where the distinction was less obvious. In all cases, the clinic rather than the specialty of the trainee was the deciding factor. This was because primary care trainees in both the US and the UK, have varying degrees of training in secondary care settings.

There were significant differences in the aims of the research papers both from different countries and when comparing undergraduate and postgraduate trainees. US authors were the most likely to present papers detailing the outcomes for patients of resident-led clinics, which may reflect trainees there having their own list of patients, reflecting a different style practiced compared with the UK. This is important when we consider how transferable findings are from an international scoping review when considering a local patient population. In the case of trainees having their own clinic lists, continuity issues may therefore affect trainees in different systems differently.

The different focus on undergraduate trainees compared to postgraduate trainees is not surprising given their roles as healthcare providers. Undergraduate trainees were more likely to be assessed in terms of patient satisfaction whereas the majority of studies looking at impacts on other patient outcomes tended to centre around postgraduate medical training. This may suggest a need to consider separate consideration for these groups of trainees in future research to enable a clearer focus.

Finally, there is the limitation imposed by the quality of the research of the included studies coupled with the nebulous term “quality of care”. Whether the correct outcomes are being assessed and by adequate research methodology is questionable. Future research in this area would need a specific focus on what quality of care parameters are most reliable, coupled with a higher standard of medical education research (198).

Reflexivity

Reflexivity is a way of acknowledging how a researcher may unintentionally influence their research project. Finlay suggests that reflexivity is valuable by
realising the positionality and perspective of the researcher and examining its impact within the context of a particular study (199).

When considering my own position as a researcher for both the patient interview study and the scoping review, it is clear that my position as a medical trainee has influenced the choice of the project. By evaluating the impact of medical trainees on quality of patient care, if the results were positive, could promote the status of medical education, allowing it greater consideration during budget planning for instance.

During the patient interview study, my reflexivity was considered in terms of influencing patient responses by introducing bias in the way that questions were asked or by analysing the results in a way which put more weight on positive aspects of patient encounters with trainees or minimising the negative effects.

During the scoping review, attempts were made to reduce the input of positive search terms. For example, the wording “improve” and “enhanced” are in the research question but not search terms themselves. Neutral terms were instead employed.

During the analysis, the results from the papers were represented as described by the authors. However, as all of the authors were either medical trainees or fully qualified physicians, the lack of reflexivity from the authors is of concern.

Aside from the possible bias that my own position and that of other members of the paper vetting team could afford, my own academic limitations are likely to have affected the quality of both interview and scoping studies. Having never conducted qualitative research via interview or a scoping literature review before, nor used any specific software to manage papers, the processes involved were at times faltering. There was a steep learning process involved and the lack of expertise will undoubtedly mean there is much room for improvement in subsequent reviews.

Considering the Implications
The aim for the conclusions of the scoping review and the patient interview studies, was to offer some insight into the impact on medical training in secondary care outpatient departments. It was hoped that the conclusions could inform medical educational establishments, health economists, regulators and patients.

Whilst a follow on systematic review would be advantageous to better scrutinise the data available, with a more robust review process, there are some stand out learning points from the results of the scoping review. These learning points could be used to reflect on current practice now and to inform future research projects to enable a larger study to be conducted looking at a more diverse patient population and range of outcomes.

There were several key findings from the scoping review and patient interview study that are worth taking note of prior to conducting further reviews or original research projects. For instance, patient safety and adequate supervision are issues that perhaps need to be addressed urgently in secondary care outpatient departments. Whilst patients may not arrive to such appointments in an acutely ill state, the potential mismanagement of chronic conditions can lead to significant sequelae. Likewise, improving the education of patients with regards to the training level of the student or trainee that is involved with their care is imperative in gaining informed consent. An awareness from the teaching physician that the patient may be subject to coercion when gaining consent for teaching clinics is also an important point that could be addressed simply through trainer and departmental education.

The lack of consensus regarding whether trainees can provide an equivalent standard of care as they gain more responsibility was a contentious issue and one that teaching physicians should aim to assess in a more systematic way to ensure effective care is delivered. Consistent levels of supervision would be advantageous for trainees and patients alike in order to provide high quality now and in the future.

The cost implications of medical training in outpatient clinics were less clear. In the UK particularly, many trainees have limited outpatient exposure, certainly as independent health care professionals. Employers therefore, may value their
contribution to inpatient care more highly as the short term reward is greater. A health economics perspective on this area would be invaluable in assessing how trainees are best suited to learning whilst contributing to clinical productivity.

By considering how training can positively and negatively affect quality of patient care, steps can be taken to capitalise or minimise such effects. Low cost initiatives for health service improvement are a key challenge globally, particularly in our current economic climate.

The conclusion chapter follows and brings together the key findings and suggestions for future research.
Chapter 6: Conclusion

Whether or not patients benefit when exposed to trainees in outpatient departments is an ethical challenge for medical educationalists (154, 200). There is a clear need to train medical professionals to provide health care for future generations but whether or not current patients may be impacted by this process is not as obvious.

This thesis sought answers regarding the impact of medical education in secondary care outpatient clinics on quality of patient care. Using two approaches: a patient interview study and a scoping review of the literature, there were obvious similarities between, not only the two approaches, but also findings from other healthcare settings. Major findings included issues around informed consent, quality and depth of the research undertaken, discrepancies surrounding whether teaching hospitals and clinics afforded a higher quality of care and global patient satisfaction scores falling short of providing the whole picture on patient experience.

Informed consent is one that may be assumed too quickly when patients are briefly asked whether they mind being seen by or have their consultation observed by a medical trainee. Studies show that patients do not understand the hierarchical structure of training, with its many disparate terms, and may feel pressured into consenting when a trusted professional is asking them (149, 151). This was found to be particularly pertinent according to the demographic background of the patient or the level of privacy expected (156).

The quality and depth of the research undertaken was highlighted as an issue as it became clear that authors struggled with measuring aspects of quality of care, and the range of different approaches across the literature subsequently prevented an effective comparison of their results to other published data (169, 179). Often there was an over-reliance on the use of a patient survey or questionnaire without a robust strategy to reduce bias in data collection (113, 158, 186).
Whether or not teaching hospitals or clinics provide a higher or lower standard of patient care in different settings was also a contentious subject (10, 66). The preconception that teaching hospitals are superior was found to exist among patients involved in the interview study for this thesis. This presumption warrants challenging to enable deeper and more frank analyses to take place in future studies.

Another key finding was that global patient satisfaction scores do not always give the complete story about which aspects of a teaching consultation patients were or were not happy with (141). Those that asked follow on questions usually gained added insight as to the factors impacting on their experience (147, 157, 167).

There is much concern among physicians, that as the pressure mounts to provide increasingly streamlined care with increased clinical productivity, teaching will become less of a desired role (28, 201). Added to this, if patients are found to not benefit from partaking in teaching activities, physicians may not want trainees to be present in their clinics (159).

Whilst the outpatient clinic can offer trainees increased exposure to preventative and diagnostic medicine, trainees are often pulled to inpatient duties which impacts not only on their training but also their ability to provide continuity of care to clinic patients. This interruption in continuity can particularly affect the most vulnerable patients whilst the disorganised environment of an outpatient environment can dissuade trainees from further training in an outpatient specialty (202).

The scoping review and patient interview studies confirm many findings from inpatient care and primary care data. There are many similar studies being conducted with results produced that are questionable on their level of detail and quality. There is unlikely to be a particular answer to the question of trainees’ impact on patient care due to the many different factors at play; including institution, individual characteristics of patient and trainee, depth of trainee involvement and so on. The results from this thesis imply that patients who are exposed to training in secondary care outpatient clinics may not be as positive about the experience as those in primary care. The reasons for this need to be elucidated in order for action to be taken to
improve the experience for trainee and patient alike. Issues around patient health outcomes and safety issues need to be addressed more urgently to safeguard patients.

Ways in which healthcare providers could act immediately include reconsidering their consent process and employing a style of increased supervision. Consent could be addressed through simple measures including advanced notice with details on the trainee’s likely involvement in their care, or a member of administrative staff e.g. a receptionist taking consent.

Future research projects in this area should avoid repetition of patient satisfaction surveys unless these are properly tested for validity and reliability. There should be more attention given to randomisation of patients, perhaps with a multi-site model enabling a larger patient cohort to be examined across different geographical regions.

Whatever approach is taken, there needs to be more consideration given to the impact of trainees in an area of clinical medicine where they have previously been less visible.

The main recommendation from this research therefore would be to consider a large multi-centre, and ideally multinational, study. Recruitment of patients of a mixed socioeconomic background, from clinics of different specialties, seeing trainees at varying stages of training would be ideal. A qualitative analysis into patient experience alongside a quantitative assessment of objective patient outcomes could be run concurrently.

A second recommendation would be for training institutions to re-evaluate how they conduct training clinics to ensure trainees have the optimal educational experience whilst patients are delivered safe and effective care.
References


140. Walshe J. The "curse of the registrar". BMJ. 2012;345:e6039.


APPENDIX 1
Dear Dr Slade

Study title: By incorporating the education of medical students and trainees in outpatient clinics, is the patient experience enhanced and their quality of care improved?

REC reference: 13/WS/0152
IRAS project ID: 127160

The Proportionate Review Sub-committee of the West of Scotland REC 5 reviewed the above application on 05 June 2013.

We plan to publish your research summary wording for the above study on the NRES website, together with your contact details, unless you expressly withhold permission to do so. Publication will be no earlier than three months from the date of this favourable opinion letter. Should you wish to provide a substitute contact point, require further information, or wish to withhold permission to publish, please contact the Co-ordinator Mrs Sharon Macgregor, sharon.macgregor@ggc.scot.nhs.uk.

Ethical opinion

The Sub-Committee were satisfied that there were no ethical issues. However, a few minor changes were requested to be made to the Information sheet and topic guide.

It is noted that this study is only observational. However, as a point of advice only, it is suggested that the researchers might nevertheless wish to generalize their findings usefully to a larger population and so might wish to ensure the sample is representative. This, however, does not require a change to the application and is a suggestion only.

On behalf of the Committee, the sub-committee gave a favourable ethical opinion of the above research on the basis described in the application form, protocol and supporting documentation,
subject to the conditions specified below
Ethical review of research sites

The favourable opinion applies to all NHS sites taking part in the study, subject to management permission being obtained from the NHS/HSC R&D office prior to the start of the study (see “Conditions of the favourable opinion” below).

Conditions of the favourable opinion

The favourable opinion is subject to the following conditions being met prior to the start of the study.

Management permission or approval must be obtained from each host organisation prior to the start of the study at the site concerned.

Management permission (“R&D approval”) should be sought from all NHS organisations involved in the study in accordance with NHS research governance arrangements.

Guidance on applying for NHS permission for research is available in the Integrated Research Application System or at http://www.rdforum.nhs.uk.

Where a NHS organisation’s role in the study is limited to identifying and referring potential participants to research sites (“participant identification centre”), guidance should be sought from the R&D office on the information it requires to give permission for this activity.

For non-NHS sites, site management permission should be obtained in accordance with the procedures of the relevant host organisation.

Sponsors are not required to notify the Committee of approvals from host organisations.

- In the last line of the Participant Information Sheet, the sentence ”Thank you for taking part” should be changed to ”Thank you for reading this information sheet.”

- In the topic guide, several of the last questions are leading and should be changed as follows:
  
a) “Do you think, overall, you get a better standard of care when a trainee is present?” to ”When a trainee is present, do you think, overall, this has an impact on the care you have received?”

b) ”Do you think you get a better standard of care at a teaching hospital?” to ”Has being cared for in a teaching hospital had an impact in the care you receive?”

It is the responsibility of the sponsor to ensure that all the conditions are complied with before the start of the study or its initiation at a particular site (as applicable).

You should notify the REC in writing once all conditions have been met (except for site approvals from host organisations) and provide copies of any revised documentation with updated version numbers. The REC will acknowledge receipt and provide a final list of the approved documentation for the study, which can be made available to host organisations to facilitate their permission for the study. Failure to provide the final versions to the REC may cause delay in obtaining permissions.
Approved documents

The documents reviewed and approved were:

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Membership of the Proportionate Review Sub-Committee

The members of the Sub-Committee who took part in the review are listed on the attached sheet.

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

After ethical review

Reporting requirements

The attached document “After ethical review – guidance for researchers” gives detailed guidance on reporting requirements for studies with a favourable opinion, including:

- Notifying substantial amendments
- Adding new sites and investigators
- Notification of serious breaches of the protocol
- Progress and safety reports
- Notifying the end of the study

The NRES website also provides guidance on these topics, which is updated in the light of changes in reporting requirements or procedures.

Feedback

You are invited to give your view of the service that you have received from the National Research Ethics Service and the application procedure. If you wish to make your views known please use the feedback form available on the website. Information is available at National Research Ethics Service website > After Review

Please quote this number on all correspondence

We are pleased to welcome researchers and R & D staff at our NRES committee members’
training days – see details at http://www.hra.nhs.uk/hra-training/

With the Committee’s best wishes for the success of this project.

Yours sincerely

[Signature]

for

Dr Gregory Ofili
Chair

Enclosures: List of names and professions of members who took part in the review

“After ethical review – guidance for researchers”

Copy to: James Illingworth, Hull and East Yorkshire Hospitals NHS Trust
West of Scotland REC 5

Attendance at PRS Sub-Committee of the REC meeting on 05 June 2013

Committee Members:

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<td>Dr Stewart Campbell</td>
<td>Consultant Physician &amp; Gastroenterologist</td>
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<td>Professor Eddie McKenzie</td>
<td>Statistician</td>
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<td>Mrs Liz Tregonning</td>
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Dear Dr Slade

Study title: By incorporating the education of medical students and trainees in outpatient clinics, is the patient experience enhanced and their quality of care improved?

REC reference: 13/WS/0152
IRAS project ID: 127160

Thank you for your email of 7 June 2013. I can confirm the REC has received the documents listed below and that these comply with the approval conditions detailed in our letter dated 06 June 2013.

Documents received

The documents received were as follows:

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Approved documents

The final list of approved documentation for the study is therefore as follows:

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You should ensure that the sponsor has a copy of the final documentation for the study. It is the sponsor's responsibility to ensure that the documentation is made available to R&D offices at all participating sites.

13/WS/0152

Please quote this number on all correspondence

Yours sincerely

Mrs Sharon Macgregor
Committee Co-ordinator

Copy to: James Illingworth, Hull and East Yorkshire Hospitals NHS Trust

Mrs Sharon Macgregor
Committee Co-ordinator
APPENDIX 2
**CONSENT FORM**

Title of Project: By incorporating the education of medical students and trainees in outpatient clinics, is the patient experience enhanced and their quality of care improved?

Name of Researcher: Dr Maria Slade

Please initial all boxes

1. I confirm that I have read and understand the information sheet dated (12/04/2013) for the above study. I have had the opportunity to consider the information, ask questions 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 giving any reason, without my medical care or legal rights being affected.

3. I understand that only personal data required to contact me if required will be kept. My medical notes will not be accessed during the course of this study.

4. I agree to take part in the above study.

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Patient Participation in Outpatient based Interviews

You are invited to take part in a research project looking at patient experiences in outpatient clinics. We would like to talk to patients who have been seen by a doctor in training i.e. pre-consultant grade which includes any grade from medical student through to senior registrar. You may have seen them alone or with your Consultant.

We will ask you some brief questions regarding your appointment, during which you will not be expected to reveal any personal details regarding the reason for your clinic appointment. We will instead be concentrating on your opinions regarding the involvement of trainees in your care.

This is being undertaken in order for us to begin to understand the patient view with regards to the impact which education can have on the quality of care provided in hospitals and forms part of a larger research project. The findings from our short interviews with patients in outpatient clinics will be presented at an Educational Conference in July 2013. This is a meeting attended by those involved in educating health care professionals. They may also be written up as a publication.

You are not obliged to take part in this study. If you choose not to answer questions following your clinic appointment this will not affect your care. Nor will it decide whether or not a trainee is present in your consultation. Your personal details will be kept confidential and we will not store your data. However, should you mention something in your interview which raises concerns over patient safety then we would be obliged to break confidentiality. Ethical review has been sought.

If you have any questions regarding this study please do not hesitate to contact me at:
Maria.Slade@nhs.net
Thank you for taking part.
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</tbody>
</table>

Aim to study patients’ attitudes towards medical students and to compare variables such as gender, marital status. 64% wouldn’t object to medical students being present. 57.9% preferred students of the same sex. Appearance and manner of the students affected their cooperation. More than 83% said they wouldn’t cooperate in the same way with students as they would with their physician. 44.8% of married patients preferred physicians alone compared to 38.6% of single patients. Age not described as a confounder. Lower acceptance for medical students in Obstetrics. Questionnaires filled out in presence of students.

| 2 | What is the Cost of Ambulatory Education? | Not stated | 1997 | Various ambulatory clinics | Students and post-graduates | US review of English language papers | N/A | N/A | Non teaching clinics |

A review into the costs of teaching in the outpatient department. Billing charges were not found to be affected, less patients are seen in teaching clinics (reduced productivity), teaching physicians have time costs. Residents cost more in time and productivity than an observing student. Job satisfaction and continuing education for teachers were identified benefits.

| 3 | Perceptions, Attitudes, and Satisfaction Concerning Resident Participation in Health Care among Dermatology | Funding from University No COI declared | 2014 | Dermatology | Residents | Saudi Arabia | Questionnaire on attitudes distributed to patients who had seen a resident in OP. Not clear who distributed questionnaire | 742 | None |
93.5% had a positive experience. Only 35% accurately described a resident’s position. Lower satisfaction for residents performing procedures (37.6% for skin biopsy) but it wasn’t clear if this was following experience or willingness for resident involvement in invasive procedures.


| 4 | Outpatient Case Presentations in the Conference Room versus Examination Room: Results from Two Randomized Controlled Trials | Anderson Medical school base | Not stated | 2002 | Internal medicine | House officers (1st-3rd years of training) | US | Not clear who distributed questionnaires | 227 first trial, 186 second 60-70% had insurance from a Medicaid health maintenance organization | Both teaching clinics but patients assigned to either personal contact with the teaching physician or trainee gaining advice alone |

2 RCTS assigned patients to groups as stated above. Examined whether direct involvement of the teaching physician with the patient improved satisfaction and improved education. No change in satisfaction, or education outcome (reported by trainee and trainer) was found although authors note that house officers had a pre-established relationship with patients. House officers did not feel comfortable presenting the patient case in front of the patient but the patients found listening to their case made them more comfortable.

| 5 | A Curriculum in Measurement-Based Care: Screening and Monitoring of Depression in a | Arbuckle University based | Scholars program to individual researcher | 2013 | Psychiatry | 3rd year residents | US | Notes/records used. Patients not personally recruited | Not documented (percent ages) | None |
Residents were trained in using measurement-based care as part of a quality improvement strategy. There was an increase in depression rate screening from 4% to 92%. Monthly monitoring of affected patients was duly increased—thought to improve quality of care.

| 6 | Medical student participation in a surgical outpatient clinic: a randomized controlled trial | Azher Teaching hospital practitioner | No mention | 2013 | Surgical outpatient clinic | Medical students | Australia | Unclear | 151 | Equal split between consultation styles | Predominance of females in student with doctor (72%). Other characteristics evenly spread | One style was no student with consultant |

Randomized controlled trial to 3 different consulting styles (no student present, student with doctor and student before doctor). Patients were asked to complete a questionnaire following consultation. No difference in satisfaction according to different styles but patients reported students as more professional if they had seen a student before the doctor. Students preferred seeing patients on their own first for learning. Clinicians reported time was extended when students saw patients first.

| 7 | Patients’ attitudes towards the presence of medical students during consultations | Choudhury Medical student lead | Not declared | 2006 | GP and hospital OP | Medical students | UK | Medical students distributed questionnaire | 422 (50% in secondary care) | None |
Aimed to investigate the attitude of patients towards the presence of medical students during consultations, with a particular emphasis on ethnicity. Primary versus secondary care setting did not affect results. Older patients, those with previous exp of students, those UK born more likely to accept students by a large margin. Non-white British patients were more than twice as likely to feel uncomfortable with medical students. Non UK patients are 3 times less likely to accept a student watching them being examined. These patients also did not agree that students examining patients was important for their training.

| 8 | Patients’ attitudes towards resident participation in dermatology outpatient clinics | Crawford University dermatology dept. | No funding or COI | 2005 | Dermatology | Residents | US | Patients were selected if they were first seen by resident and then by attending. Not selected from resident continuity clinics. Not clear who distributed questionnaire. | 191 patients | None |

99.5% patients satisfied for residents to be involved in their care. Patients felt that their time with residents improved the quality of care they received. Only 31% could broadly categorize the amount of training accomplished. Willingness for residents to perform invasive procedures e.g. skin biopsy low or px medication (less than 50%). Negative correlation between patient satisfaction and increasing year of training. Authors felt this could be because the higher level trainees were concentrated in more specialist clinics where patients have higher anxiety and potentially more serious conditions.

| 9 | The Effect of Physician Continuity on Diabetic Outcomes in a Resident Continuity Clinic | Dearinger University based | No funding and no COI | 2008 | Diabetes | Residents | US | Data from records obtained – no direct recruitment procedure | 70 patients | Faculty |
Authors wanted to look at the effect of continuity on diabetes care. Resident clinics can struggle to maintain continuity. Performed retrospective analysis of data obtained from a medical record review of diabetic patients seen in a resident clinic. Resident physician continuity was found to be linked with improved glycaemic control. There was no relationship between preceptor/faculty continuity and HbA1c levels. Authors suggested this is because faculty have an informational rather than personal element of continuity and it is the personal continuity that is important in diseases that patients need to self manage.

10 A Systematic Review: The Effect of Clinical Supervision on Patient and Residency Education Outcomes

Academic Medicine

Farnan
Lead author
professor at a medical school

Funding by Chicago medical university

2012

Variety of specialties. Inpatient and outpatient settings

Residents US

N/A – a systematic review

Systematic review which aimed to look at the effect of clinical supervision on patient and residency outcomes. Enhanced clinical supervision of trainees has been associated with improved patient and education related outcomes. Only 20% of the studies looked at supervision within the outpatient setting. Ambulatory effects noted were patients in a psychiatry clinic having greater success at continuing therapy with more supervision and a positive effect on adhering to quality of care guidelines.

11 Taking Care of Patients in Resident Clinics. Where Do We Stand?

Journal of General Internal Medicine

Fiebach and Wong
University medical schools

Editorial

2001

Residents US

This editorial suggests that there are “stark differences” between patients seen by residents and faculty staff in clinic in terms of race, socioeconomic factors and health status. Background characteristics of patients may alter their attitude towards medical encounters. Ancillary support may also be less available to residents. Overall impression seems to be that although patients report high satisfaction with resident care, they may not have experience of different care or any informed choice.

12 Minimal supervision out-patient clinical

Figueiro
No funding and no COI

2014

Antenatal clinics

Medical students Brazil

Patients given questionnaire. Not clear who administered. 95 patients

No comparator
| Teaching
The Clinical Teacher
DOI 10.1111/tct.12237 | University medical school | declared | Patients were consented to consultations with medical students |

Pregnant women presenting for a first consultation were seen by senior medical students. Patients completed a questionnaire before and after the consultation. Students completed one after. Prior to seeing students, 22% of patients were not sure if they would be comfortable with students performing antenatal care. 97% reported feeling comfortable afterwards. Minimal indirect faculty member supervision clinics were used. No patient outcomes were looked at.

| 13 | Medical Student Education in Ambulatory Settings. Does It Affect Patient Satisfaction? Gerrity
University medical school Editorial 2002 Medical students US |

Comments on the increase in OP teaching. Also comments on study by Gress. Suggests that previous studies looking at patient satisfaction may not address whether patients are definitely satisfied with trainee involvement in their care specifically.

| 14 | Medical Students as Health Educators at a Student-Run Free Clinic: Improving the Clinical Outcomes of Diabetic Patients Gorrindo
Lead author medical trainee. Other authors in medical training, dean or professor Various grant/award x, No COI declared/mentioned 2014 Diabetes Medical students US N/A- patient record analysis 45 patients No comparator |

Retrospective review of medical records – patients who had a medical student as a health educator (students are trained in pathophysiology, pharmacy, and health coaching). Mean HbA1c values improved significantly and the more patients were contacted the more this would improve by. Did not consider whether other professionals trained as health educators would have the same effect.
<table>
<thead>
<tr>
<th>15</th>
<th>Effect of Student Involvement on Patient Perceptions of Ambulatory Care Visits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Gress</td>
</tr>
<tr>
<td></td>
<td>Training grant</td>
</tr>
<tr>
<td></td>
<td>2002</td>
</tr>
<tr>
<td></td>
<td>General internal medicine</td>
</tr>
<tr>
<td></td>
<td>Medical students</td>
</tr>
<tr>
<td></td>
<td>US</td>
</tr>
<tr>
<td></td>
<td>Consent taken at time of telephone survey. Not clear who conducted telephone survey.</td>
</tr>
<tr>
<td></td>
<td>66 attending physician; 68 with med student</td>
</tr>
<tr>
<td></td>
<td>Yes - Attending physician only</td>
</tr>
</tbody>
</table>

Looked at whether patient satisfaction changed in the presence of medical students. Outpatients were randomly assigned to see either attending physician alone or one with a student. Global ratings for satisfaction were not affected by the student. However, when asked directly about students, 40% patients reported that students did not improve their care and 30% said they’d rather not see a student at a next visit.

<table>
<thead>
<tr>
<th>16</th>
<th>Educating Medical Students in Ambulatory Clinics while Maintaining Patient Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Grum</td>
</tr>
<tr>
<td></td>
<td>Small commentary type piece</td>
</tr>
<tr>
<td></td>
<td>1996</td>
</tr>
<tr>
<td></td>
<td>Medical Students</td>
</tr>
<tr>
<td></td>
<td>US</td>
</tr>
</tbody>
</table>

Describes a model of providing ambulatory teaching whilst maintaining flow. Author suggests patients acceptance is high but no details given. Suggest students perform better than students without ambulatory experience in end of clerkship examinations. Financial activity has not proved any dip in clinic efficiency when teaching takes place.

<table>
<thead>
<tr>
<th>17</th>
<th>Patient Knowledge of Physician Responsibilities and Their Preferences for Care in Ophthalmology Teaching Clinics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Guffey</td>
</tr>
<tr>
<td></td>
<td>Stated none</td>
</tr>
<tr>
<td></td>
<td>2009                                                             Ophthalmology</td>
</tr>
<tr>
<td></td>
<td>Medical students and various grades of doctors in training</td>
</tr>
<tr>
<td></td>
<td>US                                                              Unclear who distributed surveys</td>
</tr>
<tr>
<td></td>
<td>312</td>
</tr>
</tbody>
</table>
Looked at what the patient understanding of hierarchy was at a teaching hospital. Patient survey not on experience but on their knowledge regarding training and responsibilities of students/doctors in training. 95% patients reported it was important to know the training level of their health care provider but only 56% were aware of the different training levels. Increased age and knowledge made patients more likely to be comfortable with doctors in training or students being present.

18 Medical students in ENT outpatient clinics: appointment ties, patient satisfaction and student satisfaction
Haioff and Birchall
Senior lecturer and consultant
Not declared 1999 ENT Medical students UK Questionnaires given to patients by nurses at the end of clinic 325 responses received. 135 had encountered students Clinics with no students but doesn’t say if other training grades present

A study looking at whether medical students in ENT clinics affected appointment times, patient satisfaction or student satisfaction. Clinic time sheets reviewed and questionnaires administered. No change to appointment length apart from at the centre which chose to provide longer slots. Patient satisfaction was found not to be altered when students were present but students valued time alone with patients and patients valued time alone with their doctor. Students were more likely to be accepted by older patients or those of lower social class.

19 Patients’ Attitudes and Comfort Levels Regarding Medical Students’ Involvement in Obstetrics-Gynaecology Outpatient Clinics
Hartz and Beal
Medical student and assistant professor at a medical school
Not declared 2000 O&G Medical students US Not clear how Qs were distributed and then gathered 229 patients responded

Questionnaires given to patients in waiting room, before their appointment. A breakdown of demographic details was provided. 40% viewed students as students, 30% as part of the healthcare team. Half preferred to see student and doctor together. Patients with fewer previous visits with a medical student present were more likely to decline a student’s involvement. Most were happy for
students to be present for examination but not intimate examinations – 43% would be comfortable if a student was present for a pelvic examination. The reasons given for allowing medical students to be present were a desire to contribute to education and a perception that they learn more when the doctor teaches the student.

<table>
<thead>
<tr>
<th>20</th>
<th>Listening to Older Adults: Elderly Patients’ Experience of Care in Residency and Practicing Physician Outpatient Clinics</th>
<th>Hess</th>
<th>Foundations supplied funding.</th>
<th>2011</th>
<th>Elderly care</th>
<th>Residents</th>
<th>US</th>
<th>Information on how either group distributed surveys or whether surveys were completed on paper or phone is not available</th>
<th>2213 surveys on residents, 4204 on physicians</th>
<th>Practicing physicians</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Hess</td>
<td>Lead author on American Board of Internal Medicine</td>
<td></td>
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</tr>
</tbody>
</table>

Study compared quality of care for elderly patients attending clinic with a resident or a practicing physician. Groups of patients similar in terms of characteristics. Patients were less satisfied with the care in resident led clinics and were less likely to report receiving guidance or interventions. Communication from residents was also deemed poorer.

<table>
<thead>
<tr>
<th>21</th>
<th>A Comparison of Outcomes for Walk-in Clinic Patients Who See Interns and Those Who See Staff Physicians</th>
<th>Jackson</th>
<th>Grant from uniformed health services</th>
<th>1999</th>
<th>Walk in medical clinics</th>
<th>Interns</th>
<th>US</th>
<th>Not clear who distributed Qs</th>
<th>195 patients seen by interns 555 by staff physicians</th>
<th>Staff physicians</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

To assess the effect of interns on patient care outcomes, patients visiting both interns and staff physicians completed pre-visit and three post-visit questionnaires assessing symptom outcomes, satisfaction, illness worry and unmet expectations. Patients seen by interns had similar satisfaction levels and functional status improvement. No difference in visit cost or onward referral rate. There was no documentation on how many of the intern’s patients had also been reviewed by a staff physician.

<table>
<thead>
<tr>
<th>22</th>
<th>Use of a Standardized Patient Satisfaction</th>
<th>Jagadeesan</th>
<th>Various fellowship</th>
<th>2008</th>
<th>Ophthalmology</th>
<th>Residents</th>
<th>US</th>
<th>A medical student distributed questionnaire and helped</th>
<th>167 patients</th>
<th>No comparator</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
</tr>
</tbody>
</table>
### Questionnaire to Assess the Quality of Care Provided by Ophthalmology Residents

**Medical school/university**

- **DOI**: 10.1016/j.ophtha.2007.05.033

The aim of this study was to develop a patient satisfaction questionnaire to address what the overall satisfaction level is with resident care. This is to help to assess residents performance in areas of general competency.

A demographic breakdown of patients completing the survey was given.

Residents scored highly for patient satisfaction, most so in communication skills. No further breakdown provided.

### Differences in Outpatient Corticosteroid Prescribing Patterns Between Attending and House Staff Physicians as an Indicator of the Quality of Supervision

**American Journal of Medical Quality**

- **DOI**: 10.1177/10628606001500105

Study looked at differences in corticosteroid prescriptions given to outpatients as an indicator of quality of supervision. Retrospective study using computer records.

Found that house staff were prescribing to a different group of patients – more acutely unwell. This made interpretation of results difficult. However patients admitted to hospital were more likely in the resident group and could have benefitted from more timely intervention authors suggest more supervision is required.

### Acceptability of Medical Students by Koh

**National teaching**

- **Year**: 2010

- **Medical students**

- **Singapore**

- **Unclear who administered questionnaire**

- **4142 patients**

- **None**
Study looked at acceptability of medical students before and after the experience of a consultation with a medical student. A pre visit questionnaire was given to patients attending teaching private family practices public family practices and speciality clinics in a teaching hospital. However, the post visit questionnaire wasn’t completed at the public family practices or hospital clinics due to scheduling limitations. Overall, 79% were comfortable with history being taken by students but only 60% with students examining them. Female patients were less likely to allow students of the opposite gender to examine them. Family medicine patients were more likely to feel medical teaching improved the quality of consultation than specialist outpatient clinics (this was still pre-visit). Authors suggest that asian patients are less receptive to medical student teaching than western counterparts.

| 25 | When is a “free” registrar in clinic not free? | Lota Trainee, other authors include other trainees and professors | Declared as none | 2011 | Cardiology | Registrars | UK | N/A | 273 outpatient consultations |
| 26 | Clinic Systems and the Quality of Care for Older Adults in Residency Clinics and in Physician Practices | Lynn Department of quality research, American board of | Grants from medical foundations | 2009 | Elderly care | Residents | US | N/A | 2216 charts from resident, 3693 charts practitioners | Compared to practicing physicians |

Objective was to investigate whether using registrars rather than consultants in outpatient clinics saves money. Economic formula applied to clinic letters from outpatient appointments. Outcomes looked at were whether a diagnostic decision was made which completed a clinical episode. Registrars actually costed money due to less frequent decision making and episode completion.
<table>
<thead>
<tr>
<th>DOI</th>
<th>internal medicine</th>
<th></th>
<th></th>
<th></th>
<th>g physicians</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.1097/ACM.0b013e3181b0f38</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Looked at the baseline level of care provided to older patients in residency clinics (internal medicine and family medicine residents). Compared to that provided in clinics of practicing physicians. Used a quality assessment tool (used in clinical practice) to assess medical charts and asked practitioners questions about their practice. Patients seen by residents were younger and had fewer chronic conditions. They were less likely to receive recommended care and residency clinics were less likely to have elements designed to support care for older adults. Of note, several sites participated in this study and some resident clinics performed better than others. Reasons for this are not clear.

<table>
<thead>
<tr>
<th>27</th>
<th>Gaps In Quality of Diabetes Care In Internal Medicine Residency Clinics Suggest The Need for Better Ambulatory Care Training</th>
<th>Lynn As above</th>
<th>Not stated</th>
<th>2012</th>
<th>Endocrinology</th>
<th>Residents</th>
<th>US</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOI</td>
<td>10.1377/hlthaff.2011.0907</td>
<td></td>
<td></td>
<td></td>
<td>2493 charts</td>
<td>2429 surveys resident s, 13777 charts and 14167 surveys internists</td>
<td>Compared to general internists</td>
<td></td>
</tr>
</tbody>
</table>

Compared the quality of diabetes care provided in residency clinics with that provided in practicing physician clinic. Used a quality assessment tool used in clinical practice which is a combination of chart review, patient survey and a survey of how the individual clinic system functions. Patients seen in residency clinics were younger, more comorbidities, several long term complications of diabetes and have barriers to self care. Practicing physicians performed certain tasks more frequently than residents (foot exam, retinal exam) and their patients had lower HbA1c, BP control. Authors raise concerns that residents are not being trained to apply appropriate tools in their clinics and may leave them unequipped for independent practice.

<table>
<thead>
<tr>
<th>28</th>
<th>Quality of Cardiovascular Care in an Internal Medicine Resident Clinic</th>
<th>Masterson All affiliated with university medical school</th>
<th>Not stated</th>
<th>2010</th>
<th>Cardiology</th>
<th>Residents</th>
<th>US</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOI</td>
<td>10.4300/JGME-D-</td>
<td></td>
<td></td>
<td></td>
<td>628 patients attending a supervised resident clinic</td>
<td>None</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

628 patients attending a supervised resident clinic
Analysed whether resident clinics were meeting nationally defined guidelines for control of cardiovascular risk factors. Data was extracted from medical records and it was recorded what proportion of diabetic and non-diabetic patients met treatment goals for hypertension, cholesterol and hyperglycaemia. Patient group was racially diverse, under or not insured and of low income. Goal attainment was found to be 44.9% for blood pressure, 55.7% for cholesterol and 43.3% for hyperglycaemia. Authors compared this to published results from other medical centres and suggested this resident led clinic performed at least as well, better in some areas.

<table>
<thead>
<tr>
<th>29</th>
<th>Medical Students’ Involvement in Outpatient Clinical Encounters: A Survey of Patients and Their Obstetricians-Gynaecologists</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mavis Professor at medical school</td>
</tr>
<tr>
<td></td>
<td>Grant from O&amp;G foundation</td>
</tr>
<tr>
<td></td>
<td>2006</td>
</tr>
<tr>
<td></td>
<td>O&amp;G</td>
</tr>
<tr>
<td></td>
<td>Medical students</td>
</tr>
<tr>
<td></td>
<td>US</td>
</tr>
<tr>
<td></td>
<td>Receptionists provided questionnaires to patients</td>
</tr>
<tr>
<td></td>
<td>1059 patient responses</td>
</tr>
</tbody>
</table>

Study looked at prior exposure of patients to medical students and other factors affecting their likelihood to consent to future student involvement. 72 physicians also completed a survey on their views on patients accepting students. Based on knowledge that the intimate nature of history and examination in this speciality can make women less likely to consent to medical students. Patients would be more willing to see students if a nurse or physician asked them to. 68% reported they would allow medical students to be involved, 16% said only female students. 26% thought that medical students should only observe, 31% thought they should participate in all of the visit. 63% physicians thought students should participate in the entire visit. Patients with prior experience of medical students were more likely to be receptive to requests to allow students to participate in their care.

<table>
<thead>
<tr>
<th>30</th>
<th>Phenomenological analysis of patient experiences of medical student teaching encounters</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>McLachlan Medical school base</td>
</tr>
<tr>
<td></td>
<td>Not declared</td>
</tr>
<tr>
<td></td>
<td>2012</td>
</tr>
<tr>
<td></td>
<td>GP or OP (dermatology endocrinology)</td>
</tr>
<tr>
<td></td>
<td>Medical students</td>
</tr>
<tr>
<td></td>
<td>UK</td>
</tr>
<tr>
<td></td>
<td>Medical student invited patients to be interviewed at a later date</td>
</tr>
<tr>
<td></td>
<td>10 patients mainly female, 80% secondary care</td>
</tr>
</tbody>
</table>

Minimally structured interviews were conducted with ten patients following a consultation where a medical student had been present. The aim was to know how patients are affected by becoming opportunistically involved in medical student education. Most respondents found the presence of a student irrelevant to their experience. One patient described different experiences where one doctor had made her feel part of the teaching process whereas another had made her feel objectified.
<table>
<thead>
<tr>
<th>31</th>
<th>Variation in Internal Medicine Residency Clinic Practices: Assessing Practice Environments and Quality of Care</th>
<th>Mladenovic University medical schools</th>
<th>Stated as none</th>
<th>2008</th>
<th>Internal medicine</th>
<th>Residents years 1-3</th>
<th>US</th>
<th>N/A</th>
<th>4783 patients</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Objectives were to assess the quality of preventative cardiology care provided by trainees. Analysed patient records using a tool which identifies relative outcome measures. Performance varied widely across training sites. Patients received on average 57% of appropriate interventions. Authors comment on need to understand the significant variation across sites.</td>
<td></td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>32</th>
<th>Comparison of Resident and Faculty Patient Satisfaction Surveys in a Pediatric Ambulatory Clinic Teaching and Learning in Medicine</th>
<th>Monk University medical school</th>
<th>Not declared</th>
<th>2006</th>
<th>Paediatrics</th>
<th>Residents</th>
<th>US</th>
<th>Surveys – nursing staff distributed and collected</th>
<th>676 surveys</th>
<th>Faculty attendings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>To compare patients satisfaction in paediatrics seen by residents and faculty attendings. The 1st year residents scored lower on satisfaction than physicians at higher levels of training. Higher level trainees had results comparable to scores of experienced faculty. Note – all cases seen by 1st year residents were seen by faculty in the first 6 months of their placement, after this cases were at least reviewed – may have had an impact on satisfaction e.g. appt length.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>33</th>
<th>Positive Recognition Program Increases Compliance With Medication Reconciliation by Resident Physicians</th>
<th>Neufeld University medical school</th>
<th>Declared no COI or direct funding</th>
<th>2013</th>
<th>Anaesthetics (pain medicine)</th>
<th>Residents</th>
<th>US</th>
<th>N/A</th>
<th>1733 patient charts</th>
<th>None</th>
</tr>
</thead>
</table>
Compared performance at medicine reconciliation after a positive recognition intervention. Performance improved after intervention by 82%. However, no comparator group of consultants was used. Trainees were chosen because the authors suggest efforts of trainee are vital to the initiative of improvement within academic centres.

<table>
<thead>
<tr>
<th>Study</th>
<th>Title</th>
<th>DOI</th>
<th>Authors</th>
<th>Institution</th>
<th>Setting</th>
<th>Measures</th>
<th>Results</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>34</td>
<td>Measuring Resident Physicians’ Performance of Preventive Care</td>
<td>Palonen University medical school</td>
<td>Grant and National scholars fellow</td>
<td>Internal medicine and medicine-paediatrics</td>
<td>Residents years</td>
<td>US</td>
<td>Exit surveys not clear who distributed</td>
<td>659 patient surveys 761 charts</td>
</tr>
<tr>
<td>35</td>
<td>Do patient’s comfort levels and attitudes regarding medical student involvement vary across specialties?</td>
<td>Passaperuma University medical school</td>
<td>Not mentioned</td>
<td>O/G, family medicine, urology, general surgery, paediatrics</td>
<td>Medical students</td>
<td>Canada</td>
<td>Distributed by nursing/admin staff</td>
<td>625</td>
</tr>
</tbody>
</table>
Looked at whether differences in the nature of specialties would affect patients’ comfort levels with medical students. Patients completed questionnaires in the waiting room prior to consultations. Patients in all specialties except urology reported greater comfort with female medical students (62% respondents were female). Patients were most comfortable in routine physical exams rather than questioning. Less comfortable with invasive exams.

<table>
<thead>
<tr>
<th>Study Title</th>
<th>Author(s)</th>
<th>Year</th>
<th>Specialties</th>
<th>Study Design</th>
<th>Country</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance on Preventive Cancer Screening Tests in the Ambulatory Setting by Internal Medicine Resident Physicians</td>
<td>Perry University medical school</td>
<td>2009</td>
<td>Internal medicine, Residents</td>
<td>US</td>
<td>N/A</td>
<td>3729 None</td>
</tr>
</tbody>
</table>

Study looked at whether year of training and background of trainee (family medicine versus internal medicine) influenced preventative cancer screening rates in an internal medicine clinic. Medical records were reviewed and patients eligible for screening identified. Neither resident type or year of training was found to be associated with screening rates. No relationship between their data and that expected was provided and no comparator used.

<table>
<thead>
<tr>
<th>Study Title</th>
<th>Author(s)</th>
<th>Year</th>
<th>Specialties</th>
<th>Study Design</th>
<th>Country</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent assessment of medical student’s skills in ambulatory pediatrics</td>
<td>Persson University medical school</td>
<td>2013</td>
<td>Paediatrics, Medical students</td>
<td>Canada</td>
<td>Clinic staff consented and distributed Qs</td>
<td>449 None</td>
</tr>
</tbody>
</table>

Questionnaires assessed parent’s attitudes towards and opinion of skills of medical students. Parental satisfaction with student involvement in the consultation was high. 6% said they wouldn’t wish to see a student again citing reasons as increased length of appointment time and lack of supervision of students. No trend associated with grade of medical student. One fifth of parents did report poor supervision by the attending paediatrician.

<table>
<thead>
<tr>
<th>Study Title</th>
<th>Author(s)</th>
<th>Year</th>
<th>Specialties</th>
<th>Study Design</th>
<th>Country</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>An Efficient and Effective Teaching Model for Ambulatory Geriatrics, gynaecology, rheumatology Medical students and internal medicine</td>
<td>Regan-Smith University medical</td>
<td>2002</td>
<td>Geriatrics, gynaecology, rheumatology Medical students and internal medicine</td>
<td>US</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>
Descriptive change to a teaching model for ambulatory care. Aimed to improve the educational experience by timetabling trainees in appropriately with adequate time for teaching staff. Through a change in the model of the clinic they found that the trainees could see more patients whilst the preceptor (teacher) maintained same level of productivity. Authors report that satisfaction improved according to patients but it is not clear how this has been measured and whether this was compared to a standard teaching clinic or a clinic without trainees.

39 Examination Room Presentations in General Internal Medicine Clinic: Patients’ and Students’ Perceptions
Academic Medicine
PMID 14507630

Rogers
Medical student – other authors included professor at university medical school
Not stated 2003 Internal medicine Medical students US Not clear who consented patients. 100 patients. In room presentation v out of room. No comparator of non teaching clinic

Examined whether patients satisfaction changed depending on if the medical students present in front of the patient or out of the room. Patients with in room presentation enjoyed the experience of participating in a teaching clinic more. Students reported they learnt more about physical diagnosis with in room presentation. However, teaching physicians were allowed to choose rather than randomize the process – authors suggest they may have kept poorer students from in room presentations.

40 Does Trainee Involvement Affect Anticipatory Guidance in Well-Child Care?
Clinical Pediatrics
DOI 10.1177/0009922813500339

Sgrignoli and Sekhar
University medical school
Stipend through federal student aid program. No COI declared 2013 Paediatrics Residents and medical students US Medical students approached parents to complete questionnaire. 204 patients Attending physician or patient’s primary physician

Looked at how parents perceived levels of anticipatory guidance received and whether this met their preferences. Pre and post visit questionnaires asked whether certain preventative topics had been covered and satisfaction with visit. Parents reported their priority topics were covered only one third as often as when the consultation was conducted by someone other than their primary physician – this includes a different attending physician. Continuity of care is therefore highlighted by the authors as being important and disrupted by trainees. Satisfaction rates were lower when the
consultation was deemed too long. No adequate breakdown explanation between non primary attending and trainees – possibly because all patients seen by trainees were also seen by an attending.

<table>
<thead>
<tr>
<th>41</th>
<th>Patient Attitudes Toward Medical Students in an Outpatient Colorectal Surgery Clinic</th>
<th>Shah Khan</th>
<th>Not stated</th>
<th>2004</th>
<th>Colorectal surgery</th>
<th>Medical students</th>
<th>US</th>
<th>Not clear who distributed questionnaire</th>
<th>100 patients</th>
<th>None</th>
</tr>
</thead>
</table>

Examined patient attitudes towards medical students being present in outpatient surgical consultations where potentially embarrassing examinations are performed. 100 consecutive patients asked to complete a questionnaire after clinic visit but no differentiation in the results of how many patients had seen a student or not.

97% believed it was important for students to learn by observing doctors. 62% of patients found it acceptable for a student to perform an examination in the same room as the physician but only 23% with the student alone. Female patients less likely to accept the presence of students. White and Hispanic patients were more accepting of students than black patients. Those who perceived their disease as more severe were more likely to accept the presence of medical students.

<table>
<thead>
<tr>
<th>42</th>
<th>Patient Attitudes toward Medical Student Participation in a General Internal Medicine Clinic</th>
<th>Simons RJ</th>
<th>Not stated</th>
<th>1995</th>
<th>General medicine</th>
<th>Medical students</th>
<th>US</th>
<th>Not clear who distributed the questionnaire</th>
<th>194 patients</th>
<th>None</th>
</tr>
</thead>
</table>

Studying patient attitudes towards medical student participation in clinic. Half of the participants had no preference regarding student participation. A third preferred to see the attending physician alone. 24% were uncomfortable disclosing personal information in front of the student. 46.5% enjoyed the encounter with students, 10.3% disliked, others were neutral. 37% reported benefit. Male and older patients were more likely to be accepting of medical students as were patients who had seen students before.

Benefits were reported as students providing fresh insight, feeling good about being involved in educating students, some reported physicians taking a more careful approach when students were present.

The third of patients who preferred not to have students present did not provide comments regarding reasons.

| 43 | Effect of Medical | Simon SR | Not stated | 2000 | Internal | Medical | US | Research assistants | 567 | Preceptors on |
Looked at patient satisfaction when involved with education of students in managed care settings (a health care delivery system aimed at managing costs, quality and utilisation) – typically less willing organizations to support medical training.

No significant difference in satisfaction was found among the groups and all groups were similar in terms of demographics. However patients were not randomized to groups.

### 44 Direct Observation of Resident-Patient Encounters in Continuity Clinic: A Controlled Study of Parent Satisfaction and Resident Perceptions

<table>
<thead>
<tr>
<th>Authors</th>
<th>Starmer</th>
<th>Not stated</th>
<th>2009</th>
<th>General paediatric</th>
<th>Residents</th>
<th>US</th>
<th>Not clear who distributed questionnaire</th>
<th>27 patients (direct observation clinics)</th>
<th>54 (traditional teaching)</th>
</tr>
</thead>
<tbody>
<tr>
<td>University teaching hospital</td>
<td>General paediatric</td>
<td>Residency</td>
<td>US</td>
<td>Not clear who distributed questionnaire</td>
<td>27 patients (direct observation clinics)</td>
<td>54 (traditional teaching)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Authors studied whether there was a difference in patient satisfaction between clinics where residents were directly observed by physicians or traditional teaching clinics (resident sees patient alone and then discusses case with an attending who may or may not see patient directly). 70% highly satisfied with DO clinic, 80% with traditional. Parents of patients were less satisfied with the length of time spent in the room during DO clinic.
| 30% thought DO improved their child’s care but 11% thought it was uncomfortable to have 2 doctors present. | 27 patients (direct observation clinics) | 54 (traditional teaching) |
Aim was to assess whether students gain more learning outcomes from a dedicated teaching environment compared to a conventional outpatient clinic. Patient satisfaction was also compared. Patients reported greater satisfaction in the dedicated teaching environment with regards to student attitude, manner, waiting times and doctor explanation of their condition. In terms of learning outcomes for students, some outcomes were more easily achieved in the dedicated setting but some were more easily achieved in the traditional environment.

A commentary piece addressing concerns about safety of postgraduate trainees in outpatient clinics. Because trainees usually would have to interrupt a consultant to ask for advice, they delay the clinic. Therefore sometimes they may not ask for help. This can present a clinical risk to the patient. There are also concerns about delaying discharge of patients from clinic follow up. Stott suggests altering the model so there is time for discussion once the clinic is finished.

Study looked at evaluating communication skills of medical students using multi source feedback. The medical student’s interactions with patients was video-recorded and then staff watched it back to complete their assessment of the student whilst the parent of the patient would complete a form after the appointment. Patients were overall satisfied with the consultation but students scored...
Questionnaires were given to patients who had seen medical students in an outpatient dermatology clinic. Most had favourable responses. Only 1.5% wanted to see physician alone, 94.2% enjoyed interacting with students. However, 23% did report they would value time alone with their physician and 23% would like a student of the same sex to perform the examination (more likely in younger patients). Around 30% felt they received more attention when students were present but 40% were undecided, the remaining patients thought less time was spent with them due to students.

Opinion piece entitled “curse of the registrar”. The author describes his personal experience of seeing various registrars in outpatient clinics. He reports this delayed his treatment and suggests registrars have lack of continuity of care and provide lower quality of care.
<table>
<thead>
<tr>
<th>Study aim</th>
<th>Differences in Preventive Health Quality by Residency Year, is Seniority Better?</th>
<th>Willett</th>
<th>Grant from university where study took place</th>
<th>2005</th>
<th>Internal medicine</th>
<th>Internal medicine residents</th>
<th>US</th>
<th>N/A</th>
<th>1017 patient records.</th>
<th>Compared groups of trainees rather than trainees with fully qualified physicians</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Journal of General Internal Medicine</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DOI</td>
<td>10.1111/j.1525-1497-2005.0158.x</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Study aimed to determine whether adherence to national guidelines differs by year of residency. Extracted data from medical records.</td>
<td>There was no difference in the quality of care provided by residents one year apart in training. There was no comment on how residents performed compared to what is expected in a standard clinic. Explanations such as increased supervision of junior staff and longer time with patients were provided by the authors.</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Academic Psychiatry</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>DOI</td>
<td>10.11176/appli.ap.32.5.400</td>
<td></td>
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<td></td>
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<td></td>
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</tr>
<tr>
<td>Compared management of care provided by attendings and doctors in training using. Data was gathered from medical notes. Information on primary diagnosis, amount of data collected by the doctor and number of post evaluation services recommended was gathered. There was no significant difference found between the two groups. Authors suggest supervision along with integration of standardized measurements affords this.</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>53</td>
<td>Patient Satisfaction in Yancy</td>
<td>Not stated</td>
<td>2001</td>
<td>Internal</td>
<td>Residents</td>
<td>US</td>
<td>Research assistants</td>
<td>288</td>
<td>Attendings</td>
<td></td>
</tr>
</tbody>
</table>
Compared patient satisfaction with care provided by residents and attendings. Results were controlled for patient characteristics and generally high satisfaction was found globally. However, patients reported less satisfaction with residents in terms of personal manner and respect towards the patient. Waiting time and time spent with the doctor were also less satisfactory. Patients did not report lower technical skills in the resident group. Authors suggest that residents may be less familiar with their environment, residents patients were a different mix, particularly of socioeconomic class and that resident clinics were busy in terms of more residents to office staff, reducing efficiency.

<table>
<thead>
<tr>
<th>54</th>
<th>Enhancing Patient Safety and Resident Education During the Academic Year-End Transfer of Outpatients: Lessons From the Suicide of a Psychiatric Patient</th>
<th>Young University medical school</th>
<th>No competing interests or funding declared</th>
<th>2011</th>
<th>Psychiatry</th>
<th>Residents</th>
<th>US</th>
<th>N/A</th>
<th>N/A</th>
<th>None</th>
</tr>
</thead>
</table>

The author describes a patient suicide, believed to be due to the process of year-end transfer (where patient cases are transferred from one resident to another due to rotations). It is suggested that elements of error within the process of transferring the patient’s care contributed to her risk of suicide. The author suggests that there is a lack of process to ensure important clinical information is passed on, particularly from a more senior to more junior trainee.
Glossary

Attending
A predominantly American term; a doctor who has completed their residency training and now practices as an unsupervised physician in their chosen specialty.

Consultant
A term used in the UK; a doctor who has completed their specialty training and now practices as an unsupervised physician in their chosen specialty.

Core trainee
A term used in the UK, largely to replace use of senior house officer as a term; a trainee who has completed medical school and foundation training and has chosen a hospital specialty for further training. Includes core medical and core surgical trainees.

Faculty
A term used in the American literature; refers to academic staff but generally infers that they are fully qualified physicians who are also academic (research or teaching).

Fellow
An American term; a fellow is a doctor who has completed residency training but is undergoing subspecialty training in a particular area

Foundation doctor
A term used in the UK to replace pre-registration house officer and house officer; it covers the first two years of broad training following completion of medical school.

House Officer/Housestaff
Used in the U.S.A and the UK; an old term in the UK to describe postgraduate trainees prior to them becoming registrars which could cover a wide breadth of experience. Also includes the terms “pre-registration house officer” and “senior
house officer”. In the U.S.A. house officer or housestaff can be used to cover the whole length of postgraduate training.

*Intern*
An American term; tends to describe the first year of residency training.

*Preceptor*
A predominantly American term; a qualified physician who teaches.

*Registrar*
A UK term; a trainee who has completed initial hospital training and is now training in a particular specialty.

*Resident*
In America; a physician undergoing their first year of residency training following qualification from medical school. In other countries; Ireland and Australia are examples which also use the word “internship” to describe the first year of training following medical school when trainees are not fully licensed to practice medicine independently.

*Specialty trainee*
UK term; now replaces registrar to indicate a trainee who is training in a given specialty but can include a wider breadth of grades. Also called specialty registrar.