Medical students’ attitudes and perceptions about family practice: a qualitative research synthesis.

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ABSTRACT (289 words)

Background: During the last decade medical students from most Western countries show little interest in family practice. Understanding the factors that influence them to choose or not family medicine is crucial.

Objective: To systematically review and synthesize published evidence about medical students’ attitudes and perceptions about family practice.

Methods: A qualitative systematic review. The literature search was undertaken in July 2010 in PubMed, EMBASE, CINAHL, SSCI, and ProQuest Dissertations theses. Two authors selected independently the studies for their inclusion and assessed their quality. The selected studies were read and reread to indentify key themes and categories. We created a matrice to compare each theme across studies.

Results: Ten studies were finally included. We identified seven common themes across them: 1) Scope and context of practice was a broad theme that contained linked sub-themes: perception of varied specialty, broad practice, holistic perspective and flexibility that allows having a family; 2) Lower interest or intellectually less challenging: treating common disease, repetitive, quasi administrative job; 3) Influence of role models, either positive and negative, and society: negative comments from other professionals, peers and family; 4) Lower prestige; 5) Economic issues; 6) Medical school influences, being important both the length and quality of the exposure; 7) Post graduate training where the shorter duration and the lower intensity were perceived as positive aspects. We explored systematic patterns in the distribution of these themes among studies but we did not find any.

Conclusions: Our qualitative review provides a comprehensive picture of medical students’ attitudes to family practice in available literature. The available evidence shows that although students find family medicine appealing, in general, it is regarded as of lower interest and prestige. More research is needed on the influence of role models, medical school and post graduate training.

KEYWORDS: Family practice; Attitudes; Perceptions; Students,Medical; Qualitative research; Review.
BACKGROUND

Despite a likely high demand for family practitioners for the next years\(^1\), during the last decade medical students from most Western countries show little interest in family practice as a career choice\(^2-5\). The proportion of general practitioners is not increasing as much as the overall number of specialist in most OECD countries (Organisation for Economic Cooperation and Development, 2007)\(^6\), therefore the supply of family physicians has become a concern for many nations.

Understanding the factors that influence medical students to choose or not family medicine is crucial. A previous systematic review\(^7\) showed that older age, lower socioeconomic status or lower parental income or education, rural background, and values, knowledge (believe primary care is important, low income expectations, absence of plans for a career in research) and career intentions at entry to medical school, were related with a higher likelihood of choosing family practice. Public ownership of the school has been related positively with the choice of family practice too\(^7\). The most important factors in the decision making process are medical school related factors, specially the stated third and fourth year curricula, the amount of time devoted to family practice, the “hidden curriculum” created by the opinions and comments of students, residents and faculty, the negative and positive experiences of particular disciplines, the effect of role models, and the physical and professional environments in which education is delivered\(^7,8\).

During the years of medical education, students develop perceptions, about the content and characteristics of each specialty. These beliefs have an important role in the final choice of specialty\(^7\). Some studies have described that concerns about prestige, low income, and the breath of knowledge required are associated to a rejection of family practice\(^7,9\).

Several surveys examining the perceptions and attitudes of medical students about family medicine have been previously conducted\(^9-12\). Some studies suggest that the attitude of medical students toward family medicine improves as they progress in
the school of medicine and this may be partially explained by the greater contact with general physicians.12

Despite the usefulness of surveys and questionnaires, qualitative research allows for a more in-depth knowledge of the subject of interest. To our knowledge there is no previous review of the qualitative research in this important topic. The aim of the present study is to develop a systematic review and synthesis of qualitative studies exploring attitudes and perceptions of medical students towards family practice.

**OBJECTIVE**

To explore medical students’ attitudes and perceptions about family practice.

**METHODS**

We conducted a systematic review and synthesis of qualitative studies using a thematic synthesis approach.13

**Selection criteria**

We included qualitative studies based on data collected through focus groups, open, structured or semi-structured interviews, or any study which used qualitative methodology (that is, text-based and interpretative). We excluded questionnaires and surveys unless these were part of studies using mixed methods with qualitative research data. Medical students were our population of interest. The studies needed to be focused on the evaluation of perceptions and attitudes about family practice. We excluded studies that were not written in English, Spanish, Italian, Portuguese or French.

**Identification and selection of relevant studies**

The following databases were searched: PubMed, EMBASE, CINAHL, SSCI, from their inception dates until 5th July 2010. We searched for doctoral thesis in ProQuest Dissertations theses too. Search strategies were developed for each database in collaboration with a librarian and included each of the following categories: medical students, attitudes, perceptions, general practice, primary health care, family practice (Additional file 1).
Two authors assessed independently all retrieved titles and abstracts and identified studies that fulfilled the selection criteria. Full-text versions of the chosen papers were obtained and independently assessed. Disagreements about inclusion were resolved through consensus and in case of discrepancy by a third author. The quality of papers was assessed using an adaptation of the Critical Appraisal Skills Programme (CASP) tool for qualitative studies.\(^{14}\)

**Analysis**

The selected studies were read and reread. We identified the type of study, methodology, how information was collected and what type of analysis was performed for each study. We contacted study authors to confirm the methodology and type of analysis used (Table 1). We identified key themes and categories. The process of theme searching was dynamic and it did not finish until all the studies were accounted for. Emerging theme definitions and limits were discussed for their development and refinement. A descriptive chart was created for each study including key information like; author, date, country, methodology, results, quality and limits (Additional file 2). The initial list of themes was used to create a matrice, derived from an approach described by Miles and Huberman,\(^{15}\) which allowed the comparison of each theme across the studies. This matrice was reviewed and refined and the themes were grouped until it was possible to synthesize all the studies.

**RESULTS**

From the 2368 retrieved studies, we excluded 457 duplicates and 1826 through revision of the title and abstract. We evaluated the full text of 77 papers. We finally included ten papers, which fulfilled the inclusion criteria. (Figure 1).

The included studies were published between 1997 and 2010 and were all published in English. Three studies were from UK, two from Australia, one from Canada, one from USA, one from Japan, one from Malaysia and one from Spain. Four studies explored views and perceptions of medical students about family medicine,\(^{17,20,22,23}\); four explored the factors influencing a career choice on family medicine\(^{18-22}\); three the factors influencing medical students’ career interests\(^{16,17,25}\); and
one explored the views on the experience of learning in primary care in a curriculum with a strong community base\textsuperscript{24}.

The participants of all the studies were medical students: six studies only included students of final university years\textsuperscript{17,21-24,25}, and three of both firsts and final years\textsuperscript{16,18,20}. One study also included junior doctors, general practice registrars and general physicians\textsuperscript{19}. The number of participants ranged from 11 to 81 medical students. Five studies used focus groups\textsuperscript{16,20,21,213,25}, three used semi structured interviews\textsuperscript{17,19,24}, one used both focus groups and individual interviews\textsuperscript{18} while another used nominal groups and semi structured interviews\textsuperscript{22}. Two studies also used questionnaires or surveys\textsuperscript{21,25} (Table 1). Overall, the quality of the studies was high, with only one study being of moderate quality. A descriptive table of each study with is available in Annex 2.

Themes
Seven broad themes were identified (Table 2).

1. Broad scope and context of practice.

This extensive theme occurred in all studies and contained some linked sub-themes. All the studies indicated that medical students perceived family practice as a varied specialty with a broad practice and where the holistic perspective is necessary\textsuperscript{16-25}. Two studies pointed that despite the medical knowledge needed for family practice is broad, it is also more superficial\textsuperscript{20,23}.

“(...) a much more general knowledge of everything, but of a little less depth. Family physicians need much more knowledge than specialists. A family physician, if she or he has been well trained, can both remove a strange body in an eye and treat someone suffering from a psychological problem, a depression ... Something that an ophthalmologist will never take care of. That is, a family physician needs knowledge from all the specialties”\textsuperscript{20}.

The students considered that family practice allows the continuity of care and the long term care\textsuperscript{16,17,19,25}, to work in a community and family context\textsuperscript{16,17,22} and to do preventive and public health\textsuperscript{22} activities as well as home visits\textsuperscript{17}. 
Five studies pointed the specialness relationship established between family doctors and patients\textsuperscript{17,18,20,22,24}. In one study, students argued that private general physicians were more patient centered than those in the government health centers\textsuperscript{23}. This was the unique study where the investigators described a lack of understanding of primary care by the students, equating general practice to part of internal medicine or a combination of all other disciplines.

“To me primary care physicians . . . I’m still confused now between a primary care specialist and a physician in the hospital who is practicing as a general physician outside. […]”\textsuperscript{23}.

Students believed that family practice enables flexibility and part time work, which allows having a family\textsuperscript{16,18,19,21,22} although in one study, students said that this was not an important consideration for choosing an specialty at that moment\textsuperscript{24}. It was noted that family practice allowed also autonomy\textsuperscript{19,21} and independence\textsuperscript{22}.

“Lifestyle is important. One day I do want to be a mom, and I want to be able to spend time with my kids, and I think family is one field where you really can make your own hours. You can make your business what you want it to be, and you can do locums. You can work part-time; you can work full-time. I think that is what is so attractive about family medicine, is that you can really make a great lifestyle for yourself, outside of medicine”\textsuperscript{18}.

One study reported the perception of less medical indemnity issues compared with other specialties\textsuperscript{16}. Other positive perceptions about family practice were the work environment, thought as friendly\textsuperscript{22}, and the advantage of working in a multidisciplinary team\textsuperscript{24}. The management of risk and assessing urgency of undifferentiated problems were concerns reported in two studies\textsuperscript{16,22}, and some students referred anxiety for wanting quick answers in diagnosis\textsuperscript{22}.

“In general practice, I just felt that sometimes they were over-investigating and sometimes under-investigating... I didn’t feel I could tell sufficiently who I wanted to investigate... I just found that particularly scary”\textsuperscript{19}.

The issue of rural family practice emerged in two studies. In general, students thought it was workload, with long working hours and with a lot of responsibility\textsuperscript{16,19}. Some other students thought there should be a compulsory rural term\textsuperscript{19}. 
2. Lower interest or intellectually less challenging

All the studies reported that medical students perceived family practice as not intellectually challenging\textsuperscript{19,20} because it treats common diseases\textsuperscript{17,23} and serious problems are referred to specialists\textsuperscript{16,21,22}. It was also regarded as superficial, “mundane” and repetitive\textsuperscript{20,22-24}.

“I’d never really go to my general physician other than mundane things, well they seemed to be mundane for me . . . it often seems that the good bits were taken by other places and the general physician was the person who saw the coughs and colds.”\textsuperscript{24}

It was pointed that there was less action than in hospitals\textsuperscript{23} and described as a low technology environment\textsuperscript{22}. Some students thought that family physicians are the gatekeepers of the health care system\textsuperscript{20} and they just triage patients\textsuperscript{23}. In one study, students argued that choosing family medicine seems to limit oneself, especially for high-achieving students\textsuperscript{18}. The idea of a quasi-administrative medical practice emerged in some studies\textsuperscript{16,20,22} and also the idea that family physicians suffered from lack of time and professional isolation\textsuperscript{19,22}.

“I know that... most specialties, the amount of time you can spend with a patient is restrictive, but I felt particularly in general practice often that the time really was limited and you often couldn’t spend as long with a patient as the patient really needed or you wanted to spend with them”\textsuperscript{19}.

One study reported that family practice teaches skills, like communication and counseling, rather than knowledge and that the students felt a lack of evidence based practice\textsuperscript{23}. Only one study reported that family practice was intellectually challenging as it addresses both variety and complexity of medical problems, but pointed that the breath of information required can interfere with the achievement of competency and mastery\textsuperscript{25}.

3. Influence of role models and society
Negative comments and attitudes from other specialists, teachers, residents, colleagues and peers about family practice influence on students’ career interests\textsuperscript{16,18,21,24,25}. In one study, students pointed that derogatory comments had no influence on their career choices\textsuperscript{22}. In other study it was said that bad opinions from lecturers not seemed to influence on students perceptions and that this could be because students perceived that lecturers pertain to the academic word and are not in the “real world”\textsuperscript{23}.

“I’ve also found with specialists, I think they’re pretty hard on GPs as well every specialty lecture they give, oh bloody GP did this, sort of thing”\textsuperscript{16}.

Several studies reflected that students felt pressure from family, friends and society to choose a different specialty\textsuperscript{16,20,21}.

“There’s still quite a stigma attached to it and I know this shouldn’t affect me, but everyone I meet, it’s like “You’re not going to be a GP are you? You haven’t worked so hard to be a GP”. It’s almost like it’s not a proper doctor”\textsuperscript{21}.

“Now people think that you will finish your studies and you will not be a family physician: you have to be a neurosurgeon and, if possible, in Barcelona… Less than that, you have spent six years of your life, and you have thrown them to the garbage”\textsuperscript{20}.

The influence of role models on students’ perception, either positive or negative was identified in five studies\textsuperscript{17-19,24,25}. In one study, participants said that exposure to positive role models was neither necessary nor sufficient for their career decisions\textsuperscript{25}. This study was the unique that identified a gender difference: women could not identify role models and this was a deterrence from considering particular fields and created anxieties and uncertainties\textsuperscript{25}.

“The problem was that when I went through ob-gyn (here), there were really no women attending; there was one that wasn’t really impressive or that I would aspire to be like, so I think that was one of the problems I had deciding to go into obstetrics and gynecology (woman, age 26)”\textsuperscript{25}.

The negative media coverage of family medicine was also identified as an important factor on students’ perception in three studies\textsuperscript{19,21,24}.
“I like it how on GP dramas and things on television they always seem to have the time to go for lunch and sit and chat to their spouses and things when they’re out for lunch”\textsuperscript{24}.

4. Lower prestige

Five studies reported students’ perception of lower status of family medicine compared to other specialties, either professionally (being at the bottom of the medical hierarchy), and socially (decreasing its social role)\textsuperscript{18-22}. One of the studies pointed that the lower status was not always an influence on students’ career decisions\textsuperscript{22}.

“There is a very clear hierarchy in medicine, and family medicine is at the bottom... Above lab but below medical specialties. Surgery has always had much prestige”\textsuperscript{20}.

“Only the fact that the family physician works in a community health centre, and one can go there for everything, it looks like family medicine practice is of less importance... People think that, when you finish your undergraduate studies, you can practice as a family physician; they are not aware it is a medical specialty”\textsuperscript{20}.

“[Family physicians] in Spain are undervalued, but they play an important role in other countries... Here, they have no authority. From this everything goes down because they do not have the social prestige they used to have...”\textsuperscript{20}

Some students considered the choice of family medicine as an inferior choice, a second choice residency, being a necessary specialty but undesirable as a career option\textsuperscript{18,19,20}. Two studies reported that family medicine was considered as a second career that follows working first in a subspecialty\textsuperscript{17,22}.

“I do see general practice as, as maybe an option once I’ve pursued the surgical route”\textsuperscript{21}.

“Well... (pause) as for my thoughts right now, I am leaning towards emergency medicine after graduation... I want to achieve a sufficient level of competency, then, for example ten years later, when it becomes physically burdensome, well, I think I will want to go into primary care”\textsuperscript{17}.

5. Economic issues

This theme was discussed in six studies. Three of them mentioned the poor remuneration, compared with other specialties as a reason to not choose it\textsuperscript{16,18,20}, and the difficulty to generate additional income in the private sector\textsuperscript{20}.
“That was a big factor, actually. That was really stressful in terms of that factor making a decision because you see the amount of debt you’re in, or the amount that I was in, or am in, from medical school and my previous education”\textsuperscript{18}.

On the other hand, Edgcumbe \textit{et al}\textsuperscript{22} reported that students thought that General Practitioners\textsuperscript{1} were well paid or overpaid, particularly at earlier stages of career. Mutha \textit{et al}\textsuperscript{25} reported that neither debt nor future income influenced students’ decision. This was the unique study that identified a gender difference: for women, the anticipation of being in a dual income family allowed them to minimize debt or income as a factor in their decisions.

The business aspects of running a practice were perceived in a negative light and stressful for some students\textsuperscript{22,24} while it was a positive factor for others\textsuperscript{24}. In one study carried in the UK students thought that the 2003 GP (General Practice) contract impinges on the professional autonomy\textsuperscript{22}.

“With these stupid government targets, everyone who comes through the door who’s got hypertension has to have this, has to have that, and you try to accumulate points which I think takes away a little bit of your clinical own judgement”\textsuperscript{22}.

6. Medical school influences on specialty choice

Students felt that undergraduate experiences in GP were significant and influenced in their career intentions\textsuperscript{16,20-22,25}. Some said that the exposure was more stimulating than expected because it needed hands on experience and no just observation\textsuperscript{19}, others perceived early experience as not real medicine\textsuperscript{21}, and others reported a disparity between training and practice\textsuperscript{23}.

“I don’t really agree with what we were taught. We were taught you need to listen to the patient, take the history as well as counsel them. So, all in all, definitely things will move on at least 10–15 minutes. Judging from the amount of patients that come to primary care, that’s why you see some of the doctors tend to skip through . . . .They just speak a few words, not even sentences. Even when the patient wants to ask anything, they just say, ‘‘OK, OK, next!’’ I mean the impression they give me wasn’t that good.”\textsuperscript{23}

\textsuperscript{1}Family physicians and general practitioners are equivalent and respond to different national ways to designate the specialty.
“I thought GP world be pretty boring… but to the honest, it (the GP attachment) opened my eyes quite a lot in that I saw lots of interesting cases, and you don’t really know what’s going to come through the door next”.22

One study reported almost no exposure to family medicine practice so the students had poor idea of what family medicine practice was19. Both the length and quality of the exposure and also the atmosphere during the practices were important elements that may influence on specialty choice17, 24. Some students thought there was little representation of GP in the curriculum and medical education was still mainly hospital based18,19,24. One study reported the benefit of being taught in primary care because it was possible to learn from cases not available in the hospital24.

“Just from other students, it seems to be the people who’ve had some really good GPs as supervisors, they’re keen to do general practice”16.

“The worst part is we don’t have any exposure to family physicians until third year”18

“…maybe this is one of the reasons why we are not attracted by family medicine: because actually we do not know what family medicine is. We finish our undergraduate studies and think that family medicine practice mostly consist of signing drug prescriptions, but this practice might have another content nobody has taught to us.”20

7. Post graduate training

This theme emerged in five studies: the idea of a less intensity and shorter training was discussed in two studies and was considered as a positive element16,18. The flexibility and well structured program and the lack of competition compared to hospital training were also positive aspects of family practice training22. In one study it was noted that the lack of research in the training was considered as either a positive or negative aspect depending on the students22. The Spanish study reported that students thought that the fourth year residency program was unnecessary20.

Synthesis
After identifying these seven key themes, we explored patterns in the distribution of these themes among studies. This was conducted by comparing and contrasting the themes against the country in which the study took place, the phenomenon of interest, the method of data collection (focus groups or single interviews), the method of analysis and the characteristics of the study population (sex, age and year of medical course) and the type of university (public or private). No systematic pattern connected to any of these factors or any other was found.

DISCUSSION

Summary of main findings

Our qualitative review provides a comprehensive picture of medical students’ attitudes to family medicine in available literature. We identified seven themes from the included studies. Although some students find family medicine appealing, in general is regarded with lower interest and prestige.

This review shows that medical students know some of the most important characteristics and aspects of the scope of practice in family medicine. The most repeated positive aspects being the continuity of care, the holistic approach and the relationship with patients. The idea that family medicine allows for flexibility and a good lifestyle which facilitates having a family, was repeated in most studies.

In general, students had the perception that family medicine is a specialty with lower interest and intellectually less challenging than other specialties. Role models, either positive or negative, were identified as important factors that influence their perceptions. The negative attitudes from other specialists, teachers and peers seem to play an important role, as well as media coverage. The perception of lower prestige, and sometime salary, than other specialties was reported in many studies.

Medical school curricula and exposure to family practice was an important factor on specialty choice. It should be noted that some students expressed a change in their perceptions (towards positive) after exposure to family medicine\textsuperscript{22,24}. Some positive thoughts about aspects of postgraduate family medicine training were the
short duration, the lower intensity of training and the work environment. Nevertheless, two studies reported negative views about this theme: the easy of matching with family medicine and in case of Spanish context, the long duration of the residency program (4 years).

**Strengths and limitations of the study**

One of the strengths of this study is that we did an effort to localize all relevant primary studies by performing an exhaustive bibliographic research in six different databases. We also contacted main authors from the included studies for additional information. Nevertheless, we cannot exclude that there might studies published in other languages other than English, Spanish, Italian, Portuguese or French. A final strength is the originality of the work, as no other qualitative synthesis about this topic is, to our knowledge, available.

Our study has some limitations. While the goal of this review was to investigate medical students’ attitudes and perceptions about primary care and family medicine, half of the included studies focused primarily on identifying factors that influence a career interest in medical students.

Although the students expressed their own views about family practice it is plausible that other themes may have emerged if these studies had focused specifically on their perceptions and attitudes. Another inherent limitation of performing a synthesis is that the confidence in its results depends partially on the quality of the included studies. In our synthesis the quality of the included studies was generally high. On the other hand, despite efforts to find common patterns among the themes identified, we only managed to extract and combine the results providing a lower interpretative level than if we had been able to undertake a meta-synthesis.

**Comparison with existing literature**

The majority of the literature related to this area focuses on the study of the factors that influence students to choose a medical specialty. A study with graduate students that joined a family medicine residency program identified some perceptions
similar to those identified with medical students\textsuperscript{26} (scope of practice, diversity of the work, freedom to shape practice to best meet individual and community needs, presence of family medicine role models). A previous literature review about factors related to the choice of family medicine also found that faculty role models were related to specialty choice, serving as both positive and negative\textsuperscript{7}.

Students’ perception of poor remuneration of family practice has been reported in other studies. A survey of 781 medical students in the University of Toronto about their perceptions of physician remuneration showed that between 85\% and 89\% of students perceived that family physicians were paid too little\textsuperscript{9}. However, in two narrative reviews published before, there was not a clear-cut relationship between debt and specialty choice\textsuperscript{7,27}. One of these reviews was about factors related to the choice of family medicine and identified the lack of prestige, low income potential and low intellectual content of the specialty as factors concerning students rejecting family medicine\textsuperscript{7}.

It is has been already described that experiences at medical school are strong determinants of attitudes to the medical specialties, and attitudes are the most important factor that determines a specialty choice\textsuperscript{28,29}. As in our work, two systematic reviews\textsuperscript{7,8} stand that medical school experiences are an important factor related to the choice of primary care.

Finally, a systematic review identified the influence of medical school exposure to family practice and the culture of the institution as factors associated with medical students’ choice of a primary care specialty\textsuperscript{27}. In our review, one study claimed the benefit of an earlier exposure to family practice, although one of these reviews found no evidence that inclusion of family medicine courses in first and second year curricula was related to the choice of family medicine. Nevertheless required family medicine time in the third or fourth year was positively related to higher numbers of students selecting family medicine\textsuperscript{7}.

\textbf{Implications for future research}
The findings of our qualitative review improve our understanding of medical students’ perceptions and attitudes toward primary care and family medicine across countries. Our results confirm that experiences at medical school have an important role shaping students’ perceptions. As students’ perception towards one specialty is a crucial factor in the process of choosing their career preferences, it should be important to study in more detail some of the factors identified. One of the emerging research topics is the characterization of role models, either positive and negative as well as the factors that influence and perpetuate the “hidden” curricula identified in most of the studies that influence in a negative way on the perceptions about family medicine. This work may identify interventions that could be applied in medical schools in order to reach a neutral academic atmosphere, free from negative attitudes from teachers, physicians and lecturers towards some specialties like family medicine.
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Figure 1. Study inclusion/exclusion process

Additional file 1. Search strategy

Additional file 2. Summary tables of included studies

Abbreviations
CASP: Critical Appraisal Skills Programme
GP: General Practice / General Practicioner

Competing interests
The authors declare that they have no competing interests.

Authors' contributions
AMZ, JJV and PAC participated in the conception and design of the protocol and drafted a first version. All authors participated in data collection, analysis, revising the manuscript draft critically for important intellectual content and have given final approval of the final version.

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<td>Descriptive*</td>
<td>Semi-structured interviews (students), informal interviews (academic faculty), Field notes.</td>
<td>Factors influencing medical specialty preference in Japan. Understanding of family medicine, primary care and subspecialty practice.</td>
<td>25 medical students or 3rd to 6th year. (17 male, 8 female). One university</td>
<td>Interpretative. Thematic analysis.*</td>
</tr>
<tr>
<td>Scott18 2007</td>
<td>Canada</td>
<td>Qualitative: phenomenology</td>
<td>Descriptive</td>
<td>Focus groups. Individual interviews</td>
<td>Factors influencing medical students regarding a career in family medicine.</td>
<td>33 medical students: end of preclinical years and end of the clinical years. (6 male, 27 female). Three universities</td>
<td>Interpretative. Thematic analysis.</td>
</tr>
<tr>
<td>Thistlethwaite19 2008</td>
<td>Australia</td>
<td>Qualitative: phenomenology</td>
<td>Exploratory-interpretative</td>
<td>Semi-structured phone interviews</td>
<td>Factors that influence students and junior doctors to choose or reject a career in general practice.</td>
<td>13 medical students (3 male, 10 female), 5 junior doctors, 5 general practice registrars, 15 general physicians. One university</td>
<td>Interpretative. Thematic analysis.</td>
</tr>
<tr>
<td>Hogg21 2008</td>
<td>United Kingdom</td>
<td>Mixed: qualitative interactionist and quantitative. Exploratory, descriptive and interpretative.</td>
<td>Focus groups. Questionnaires</td>
<td>Focus groups</td>
<td>Factors influencing medical students regarding a career in general practice.</td>
<td>30 final year medical students after a general practice module: 15 took part in the focus groups.</td>
<td>Interpretative. Framework analysis</td>
</tr>
<tr>
<td>Edgcumbe22 2008</td>
<td>United Kingdom</td>
<td>Qualitative: framework system</td>
<td>Exploratory</td>
<td>Semi-structured interviews. Nominal groups</td>
<td>Views about general practice as a potential career and factors shaping them.</td>
<td>27 final year medical students (7 male, 8 female). 15 interviewed and 12 formed the nominal group.</td>
<td>Interpretative. Framework system.</td>
</tr>
<tr>
<td>Chirk-Jenn23 2005</td>
<td>Malaysia</td>
<td>Qualitative: Interpretative description.</td>
<td>Exploratory</td>
<td>Focus groups</td>
<td>Perceptions of medical students towards primary care and factors that influence them.</td>
<td>33 final year medical students (21 male, 12 female). Two universities.</td>
<td>Thematic analysis.</td>
</tr>
<tr>
<td>Firth24 2007</td>
<td>United Kingdom</td>
<td>Qualitative: phenomenology</td>
<td>Exploratory</td>
<td>Semi-structured interviews</td>
<td>Views of undergraduate students on their experiences of learning in primary care in a curriculum with a strong community base.</td>
<td>11 medical students from 3rd to 5th course (6 male, 5 female)</td>
<td>Interpretative. Thematic analysis. Grounded Theory.</td>
</tr>
<tr>
<td>Mutha25 1997</td>
<td>USA</td>
<td>Qualitative: phenomenology</td>
<td>Descriptive</td>
<td>Focus groups, two individual interviews, surveys.</td>
<td>To identify beliefs and values that influence career decisions of medical students.</td>
<td>52 medical students from 4th to 5th course (25 male, 27 female). Three medical schools.</td>
<td>Content and thematic analysis.</td>
</tr>
</tbody>
</table>

Table 1. Characteristics of included studies. *Unclear, not explicitly reported.
Table 2. List of studies, extracted themes and findings.

<table>
<thead>
<tr>
<th>Study</th>
<th>Scope and context of practice</th>
<th>Lower interest or intellectually less challenging</th>
<th>Influence of role models and society.</th>
<th>Prestige</th>
<th>Economic issues</th>
<th>Medical school influences on specialty choice</th>
<th>Post graduate training</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tolhurst et al 2005</td>
<td>•Diversity, continuity of care + •Community and family context + •Use of pre-existing skills + •Less medical indemnity issues+ •Discomfort assessing the urgency of undifferentiated problems - •Prefer focus on a particular area of expertise - •Flexibility and part time work allow having a family + •Rural practice: practice a lot of skills +, is workload and a lot of responsibility -</td>
<td>•A lot of paperwork- •Serious problems are referred to specialists-</td>
<td>•Negative attitudes from specialist and teachers to general practice- •Family and friends pressure to choose a specialty -</td>
<td></td>
<td></td>
<td>•Undergraduate experiences influenced depending on GPs’ attitudes. +/-</td>
<td>•Less intensity and length of training, less long working hours.</td>
</tr>
<tr>
<td>Saigal et al 2007</td>
<td>•Holistic perspective. •Treat the entire family. •Community based. •Long term care. •Good relation doctor-patient+ •Focused on prevention, triage and medical interviews. •Home visits. •Primary consultation before seeing specialists. •Broad knowledge than specialities.</td>
<td>•Common disease, easy to treat. •Choosing family medicine seems to limit oneself, especially for high-achieving students-</td>
<td>•Personality of physicians influences on choice. •The presence of a physician role model or mentor.</td>
<td>•A second career that follows working first in a sub specialty.</td>
<td></td>
<td></td>
<td>•Little representation of family medicine in the curriculum -</td>
</tr>
<tr>
<td>Scott et al 2007</td>
<td>•Broad scope of practice especially in rural settings+ •Enduring relationships with patients. •Good lifestyle, flexibility+</td>
<td>•Role models affect the choice +/- •Negative view by other specialists-</td>
<td>•Lower prestige. •Second-choice residency.</td>
<td>•Worries about income during their practice life</td>
<td>•Poor remuneration-</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Thistlethwaite et al 2008 | • Continuity of care+  
• Patient-doctor interaction+  
• Holistic care+  
• Skill mix  
• Stimulating and variety+  
• Working with people+  
• Autonomy+  
• Flexible working hours and lifestyle+  
• Rural practice: hard work. | • Lack of support.  
• Lack of time  
• Not intellectually challenging. | • Negative role models.-  
• Negative views of GP expressed by hospital doctors without reasons-.  
• Negative media coverage-  
• Family medicine has prestige but decreasing.  
• Social status.  
• General practice is seen as inferior choice. | • Medical education mainly hospital based.  
• Having general practice exposure earlier +  
• General practice exposure was more stimulating than expected: needs hand-on experience not just observation.  
• Sell GP as a great job | • Residency is appealing. (+) |
| --- | --- | --- | --- | --- | --- |
| López-Roig et al 2010 | • Holistic care +  
• Special relationship with patients+  
• The kindest and more tolerant doctors.  
• The largest breath but depthless medical wisdom. | • Broad and superficial knowledge -  
• Repetitive -  
• Lack of intellectual challenge.  
• Absence of medical “technology”-.  
• Devalued type of knowledge needed to practice.  
• Quasi administrative -  
• Elderly patients -  
• Gatekeepers of the health care system.  
• First medical contact and referer to specialities. | • Social and academic persuasion for not choosing family medicine.  
• Lost of social role.  
• At the bottom of the medical hierarchy.  
• Unknown status of family medicine as a medical specialty.  
• Lack of professional recognition.  
• Lower status and facilities.  
• Population and health care decision-makers do not appreciate Family medicine.  
• Family medicine is a necessary specialty but undesirable as a career option.  
• Lower salaries.  
• Less probability of additional income when practicing in the private sector. | • Undergraduate experiences are significant.  
• Almost no exposure to family medicine practice: poor idea of what family medicine practice is.  
• Exposure to (a few) good family medicine experiences in later training years. | • The four year residency program is unnecessary (-). |
| Hogg et al 2008²¹ | • Varied, challenging+  
• Preference for a career in hospital settings  
• Work outside the medical hierarchy.  
• The best of both worlds: a GPs with a special interest  
• Flexibility +  
• Control over financial affairs, working hours and lifestyle +  
• A backup career when you want to make your life external to the medicine a priority.  
• Lower level of control over the medical care and have to refer to specialist -  
• Bad mouthing from family and hospital doctors -  
• No attractive media role models -  
• Perception of the early experiences as not "real" medicine.  
• Importance of general practice exposure+ |  |  |
| Edgcumbe et al 2008²² | • Holistic care +/-  
• Variety of conditions + vs monotony –  
• Anxiety for wanting quick answers in diagnosis –  
• Relationship with patients +  
• Feeling part of the community +  
• Public health +  
• Concerns in managing risk -☺  
• Friendly work environment +  
• Work anywhere vs remain in one place after buying into a practice +/-  
• Flexibility, lifestyle, easy to have a family +  
• Independence +  
• General practice as a go-between -  
• Prefer acute conditions and deal with problems without referral. -  
• Mundane/ repetitive -  
• Administrative work-  
• Lack of time -  
• Low-technology environment -  
• Professional isolation -  
• Hospital doctors made derogatory comments about general practitioners and vice versa but it not influenced students’ career choice.  
• Lower status than hospital based specialists -  
• The status doesn’t always influences career intentions +  
• A second line option after a hospital career -  
• Business aspects of running a practice -.  
• The 2003 GP contract impinges on the professional autonomy -  
• Well paid or overpaid (particularly at earlier stages of career) +  
• Short, well structured and flexible compared to hospital-based medicine.  
• Competition in hospital training is unattractive  
• Lack of research +/-  |
| Chirk-Jenn et al 2005²³ | • Holistic, comprehensive +  
• Patient centred +  
• The breadth rather than depth of medicine  
• Lacked understanding: equating general practice to part of internal medicine or a combination of all other disciplines.  
• Private GPs more patient centred than those in the government  
• Bored by repetition of common illnesses –  
• Miss the action in the hospital -  
• It teaches skills (communication, evidence-based medicine, counselling) rather than knowledge  
• Triage patients -  
• Lack of evidence-based  
• Opinions from colleagues and seniors influenced their perceptions  
• Lecturers not seem to influence their perceptions (which could be because lecturers weren’t in the real world)  
• Disparity between training and practice: what was taught in their classes was not practised: time pressure, lack of support and difficulty in making decisions in a short consultation (-)  
• Positive experience in the attachment |  |  |
<table>
<thead>
<tr>
<th></th>
<th>Health centres</th>
<th>Practice -</th>
<th>Benefits of being taught in primary care: cases not available in hospital</th>
<th>the majority of scenarios studied based within the hospital setting. This added the notion that GP was less interesting.</th>
<th>Importance of the quality and enthusiasm of the teachers to make Foundation training a success.</th>
</tr>
</thead>
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<tr>
<td>Firth et al 2007</td>
<td>• range of case mix +</td>
<td>• mundane diseases and boring -</td>
<td>• business-driven negative and stressful for some and attractive to other +/-</td>
<td>• negative experiences difficult to reverse (n)</td>
<td>• perceptions developed during clinical rotations (n)</td>
</tr>
<tr>
<td></td>
<td>• increasing amount of medical care within primary care.</td>
<td>• peers saw primary care in a negative light: boring and for taking time off.</td>
<td>• new view of GP role +</td>
<td>• the attachments improved student’s views +</td>
<td>• ineptitude services tended to discount the effects of cognitive specialties.</td>
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<td>• “Social side” of disease (+)</td>
<td>• bad speaking by hospital tutors’. It influenced perceptions</td>
<td>• media portrayal of the profession as major influence +/-</td>
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<td>• quality of care +</td>
<td>• positive view of GP role +</td>
<td>• relationship +</td>
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<td>• relationships +</td>
<td>• multidisciplinary team +</td>
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<td>• better lifestyle but it was not an important consideration</td>
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<td>• multidisciplinary team +</td>
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<td>Mutha et al 1997</td>
<td>• long -term relationship with patients vs surgical specialties that do interventions with immediate and tangible results +.</td>
<td>• the breadth of information required interfered with the ability to achieve competency and mastery -</td>
<td>• intellectual challenges: address a variety and complexity of medical problems +</td>
<td>• exposure to positive role models influenced some students’ choices +</td>
<td>• neither debt nor future income influenced decisions.</td>
</tr>
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<td>• intellectually challenging: address a variety and complexity of medical problems +</td>
<td>• clinicians (residents and attending physicians) influenced students’ career decisions +/-</td>
<td>• exposure to positive role models was neither necessary nor sufficient for most of the students’ career decisions (n)</td>
<td>• gender differences: for women, the anticipation of being in a dual-income family allowed them to minimize debt or income as a factor in their decision.</td>
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considering particular fields and created anxieties and uncertainties -

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+: Positive perceptions. -: Negative perceptions. n: Neutral perceptions
Figure 1. Study inclusion/exclusion process
Additional files provided with this submission:

Additional file 1: Additional file 1.docx, 15K
http://www.biomedcentral.com/imedia/1913426182682186/supp1.docx
Additional file 2: Additional file 2.docx, 49K
http://www.biomedcentral.com/imedia/4059390426821868/supp2.docx