Journal of Population Therapeutics & Clinical Pharmacology

RESEARCH ARTICLE
DOI: 10.53555/jptcp.v31i2.4423

A SCOPING REVIEW OF GENDER-BASED DIFFERENCES IN MEDICAL PROFESSIONALS AND THEIR IMPLICATIONS

Shagufta Gul[1*], Professor Lynn Monrouxe[2], Dr. Alexandra Marcia Marrugo[3], Fawad Ali[4]

[1*]Ex Chairperson, Department of English, Women University Mardan, Pakistan,
E-mail: ayeshayousafzai786@gmail.com
[2]Academic Lead and Professor, Faculty of Medicine and Health, University of Sydney, Australia,
Email: lynn.monrouxe@sydney.edu.au
[3]Lecturer, Student Learning and Communication, University of Sydney, Australia,
E-mail: alexandra.garcia@sydney.edu.au
[4]Institute of Biotechnology and Microbiology, Bacha Khan University, Charsadda - Pakistan
Email: fawadansi@gmail.com

***Corresponding Author:** Shagufta Gul
*****Ex Chairperson, Department of English, Women University Mardan, Pakistan
E-mail: ayeshayousafzai786@gmail.com

Abstract

Background: Health care Professions Education Research (HCPER) spans a multitude of topics, drawing from a diversity of research domains which adds to its richness and variety.

Purpose: This unique study maps literature of healthcare professional education (HCPE) about gender based discrimination in medical students and their implications, published in English.

Methods: A scoping review was carried out, using Arksey & O'Malley framework. Literature search included online database PubMed (from 1988 to 2022), manual scan of journals and hand searches. Demographic codes were developed after using PRISMA guidelines and data was managed by Endnote.

Data Sources: Pubmed, being the major medical data base was chosen along with hand searches and manual searches.

Eligibility Criteria: Primary research that reported gender based differences in medical students were the focus of the study. Manuscripts in English were included, although many other languages were included in Pubmed, which the researcher was familiar with, such as Urdu, Persian, Arabic, Hindi etc. but that led to 0 results. All study types were included. Participants were medical students. Studies carried out on the same topic but having participants other than medical field were excluded. Studies where gender was analyzed as a secondary variable were also excluded, although those studies where gender was not the sole variable were included to increase the breadth of the research.

Data Extraction: At time, one researcher screened 86 manuscripts (after removing duplicates, exclusion/inclusion criteria. The remaining 14 articles were coded and analyzed.

Results: PubMed advance search yielded to 67 results (using Medical Subject Heading terms differences, healthcare students, medical students, crossed with gender), while 19 articles that were retrieved from manual/hand searches were also included. Most of the studies were empirical including one literature review and one scoping review. A total of 11 articles were selected out of the total 86 articles based on the inclusion criteria mentioned below. Articles published in English language, using gender as a primary variable were included. Data was charted according to both pre-determined and emergent categories. The articles showed research carried out on gender amongst medical students in South Africa, Saudi Arabia, Syria, America, Netherland, Canada, Australia and England. Authors were predominantly affiliated with a university. Almost all studies comprised medical students as subjects. Four themes were highlighted:

Conclusions: This scoping review identified and characterized a relevantly large pool of literature having quality research. The review highlights the need for further research to understand the role of gender within health care professions education research (HCPER). The study hopes to help strategize medical curriculum reforms, leading to gender sensitive health services in developed and developing countries. Future research should also examine the analysis of literature in languages other than English.

Objectives: This scoping review was conducted to analyze gender differences in medical students and their implications.

Aims and Research Questions

Recently, there has been a growing body of research investigating differences in medical/healthcare students on the basis of gender. However, the studies are disjointed and small scale. We have no clear idea of the many ways medical students and doctors manifest differences on the basis of gender and how it has an impact on their studies and performance during and post studies in their professional lives. We address this gap by examining articles published in English on the topic since 1988. As we map medical journal articles about the topic, we aim to answer the following research questions.

1. RQ1: How prominent are gender differences amongst medical students and professionals?
2. Whether they are aware of in-built gender competencies.
3. How such types of differences and attitudes impact the performance of medical students during studies and after they graduate in their workplace and whether they are knowingly or unknowingly becoming part of this cycle?

Introduction

Healthcare professions education research (HCPER) holds an important position in shaping evidence based education in the field of healthcare professional (HCP) groups (Ironside, 2015). HCPER has been following a myriad of domains and gender is one of them (Varpio et all, 2021). Investigating the role of gender within the domain of healthcare needs attention because it facilitates egalitarian aspect along with enhancing diversity and productivity. Interestingly, experts in healthcare profession worldwide are now recognizing the importance of gender, socially constructed roles, and identities of men, women and gender diverse people. For instance, there is a growing realization that responsibilities of healthcare professionals also include providing standardized services, being considerate to the patients' gender and showing respect to their gender identity (ASHA, 2020). Further, their Code of Ethics clearly states that while delivering professional services, healthcare workers are not supposed to discriminate (in their relationship with colleagues, juniors, or students) on the basis of sex, gender identity and sexual orientation. Thus, synthesizing the role of gender within healthcare professions research (HCPR) might facilitate improve overall standards of the services being delivered.

The World Health Organization also facilitates policies that promote gender-based equality, besides encouraging nations to include gendered perspective into their public health policies (2002, 2007). Research has proved that gender has an influence on the overall health of individuals including

prevention, diagnosis, and treatment (Arber et al., 2006; Baggio, Corsini, Floreani, Giannini, & Zagonel).
Moreover, the domain of healthcare has been experiencing gender-based segregation on the basis of occupation. Men and women mostly specialize in different areas which leads to an inequality in workplace that also hampers their performance (Litosseliti & Leadbeater, 2013, Melissa et al, 2019). Based on their respective cultures, workplaces often have assumptions about gendered traits of workers including opinions about masculinity and femininity (Lindsay, 2007), which also influences workers motivation in opting for a specialty during specialization process. This also highlights the role gender plays in healthcare along with the reasons for gender imbalance within this profession.

Understanding gender differences is also crucial to attain gender equality. There is dearth of research about gender differences and their implications in terms of competence in medical school training (Zhuge, Kaufman, Simone, Chen & Velazquez, 2011), though some studies have shown that men have proved to make more mental mistakes and women are reported to be involved in procedural mistakes (Etherington, N., & Boet, S, 2018). A better understanding of these differences will lead to formation of individualized and more efficient education courses (Waddington, M. s. et al, 2009). More attention is now being given in developing and developed countries to modify and gender sensitize medical curricula. The present study aims to help strategize reforms in medical curricula which may help promote gender-sensitive health services.

Scoping Review Method

A scoping review method was employed to investigate gender differences in HCPER. Scoping review is also called as mapping review (Aksey & O, Mally, 2005), and this methodology is helpful in identifying gaps in literature, and mapping literature in a field on a given topic or synthesize findings (Arksey & O' Malley, 2005; Levac, Colquhoun, &O'Brien, 2010). These reviews might not be helpful in critical appraisal of articles but clarify concepts of a topic without focusing on specific area (Peters et al., 2015). Scoping reviews are not used to test hypothesis but to generate hypothesis (Tricco et al., 2016) and help to evaluate wide range of literature in a domain (Khalil et al., Levac et al., 2010; Pham et al., 2014). The impact of gender within healthcare specifically within the themes and codes identified in this review has not been reviewed earlier comprehensively and it is expected to find diverse and fruitful results and methodologies as solutions to find answers for research questions being posed.
For this study, Arksey O'Mally's (2005) scoping framework was used. It includes six stages that are as follows: (a) to identify research questions; (b) identifying relevant studies; (c) selection of helpful studies; (d) charting of data; (e) collating, summarizing and reporting results; and (f) a consultation step which is optional. Studies carried out by Levac et al (2010) also proved beneficial. Ethical approval is not a requirement for the conduction of a scoping review.

Inclusion Criteria

The study began in August 2022 and ended in January 2023. Inclusion/exclusion criteria (shown in box 1.) was inclusive to HCPER, in an effort to include as many studies as possible, based on primary studies. Inclusion and exclusion criteria was developed based on research questions to ensure consistency, though criteria for inclusion and exclusion was devised post hoc, as familiarity with the literature increased as the research progressed. (Arksey & O' Malley, 2005).

Figure 1 – Inclusion and Exclusion Criteria

Construct	Criteria
Time-Span:	Published between 2022 and 2023. Exclude other publication dates.
Reference Type:	Full research papers were included, while commentaries, brief reports, other short pieces, book chapters and unpublished conference proceedings were excluded.
Languages:	Articles written in English were included. Other languages were excluded.
Authors:	All publications were included regardless of authors or the location of the research

Research Design:	All kinds of research design were included.
Participant Groups:	Broad range of health care professionals (e.g., physicians, trainees and medical students were included. Non-health care related professionals or surgeons, management staff, nurses etc. were excluded.
Study Contexts:	All health care professionals' education related study and practice contexts (e.g., hospitals, clinics, Universities) were included. Other non-health care professionals' education-related study contexts, were excluded.

Search Strategy

Reflecting time and budget constraints, Literature from the major healthcare data base Pubmed (standard database that is used in the healthcare profession) from 1988 to 1922 was included. Pubmed has links to free full texts articles and provides advance searching including filtering and links to related articles. Filtering options also provides access to clinical trials, full texts and publication dates. In case of hand searches, no timeline was focused (in an effort to include as many relevant studies as possible). The researcher did not have access to an expert librarian to help in searching of different databases as local librarians were not familiar with advance searching for scoping reviews and paid subscriptions, so the researcher had to rely on self-efforts in terms of accessing free articles (that was provided by Pubmed), as subscriptions to paid articles and databases was not feasible. Due to the main focus of study on primary research and peer reviewed articles, grey literature was excluded. Foreign language material was ruled out because of the costs and time associated with translation. While these limits had to be accepted for pragmatic reasons, the possibility remains that potentially relevant papers might have been missed. For our study, initially all the major medical databases were chosen, however, trial and error showed that pubmed was the best choice keeping in view the time and financial constraints.

Search strategy was created by the researcher after consulting with a healthcare professional (clinician), who has expertise in community medicine and relevant research. Three groups of search terms were generated to describe: (1) gender (e.g. gender, gender identity, gender awareness, gender sensitive, gender knowledge, gender role, gender competency, male, female, feminine, masculine, gender fluid), (2) language differences, differences, and (3) medical students, healthcare professional, doctors. The search approach added title and abstract words (keywords) with the Medical Subject Headings from the US National Library of Medicine. The retrieval of relevant articles validated our search strategy in Pubmed from August 2022 to January 2023

Hand Searching of Key Journals

Relevant journals were hand searched to identify articles which could have been missed in database search, which might happen due to variety of reasons such as incomplete electronic databases, or due to the fact that abstracting services' coverage, indexing, and depth of information might differ. Many major and seemingly relevant databases such as Cochrane, Scopus, Embase and google scholar either picked up a large number of irrelevant studies (in case of google scholar) or needed subscription. Notably, this study has sought breadth rather than depth (Arksey & O'Mally, 2005).

Selection Methods

The studies included in this review examined how gender affected medical and healthcare students or practitioners or used the above topics as their primary focus. The following eligibility criteria was used to find articles: (1) studies focusing on gender, either in relation to gender differences in medical students' experiences or in clinicians; and (2) publication in a peer-reviewed journal, in English, between 1988 and January 1923. To ensure that research of good quality that is relevant is included and to decrease the risk of bias, grey literature was not included (e.g., book chapters, opinions, conference proceedings, commentaries, dissertations) (Doncliff, 2016; Kreiman, 2016). Studies that described gender in their demographic characteristics but not in results were excluded. Also, articles focusing on transgender voice and communication were excluded (although they are important and

are occupying recent literature, such studies were not the focus of this scoping review). Only binary studies were included. Two step screening was performed for the selection of relevant studies. After applying the inclusion and exclusion criteria, titles were screened first followed by screening of full text articles to find relevant studies.

Duplicates were removed after screening of the 87 manuscripts. Further screening of (n =14) was carried out by obtaining their full texts whereas the remaining (n=76) were excluded. Main author cross checked all stages for validity of inclusion (in an effort to include only relevant articles). Though critical appraisal of articles is optional in scoping reviews, this step was incorporated to make the review more fruitful.

Data Coding and Thematic Content Analysis

Coding framework was developed based on interest, and research topic including both qualitative and quantitative studies. Themes were identified from the selected articles, after mapping of codes being applied to the selected data. As the study progressed, new codes were developed or existing modified (Arksey & O'Mally, 2005). Codes were clustered conceptually to form themes.

Charting and summarizing the data

From the articles that were chosen for inclusion, relevant information was taken. Including the names of the authors, the publication year, country, and the study's goals, the characteristics of the sample, the design and analysis employed, the theoretical framework, the outcome metrics, and any pertinent findings. Data were extracted using a descriptive-analytical approach in accordance with the recommendations made by Arksey & O'Mally (2005). To conceptually map the content and the evidence, a thorough analysis was done both inside and across the studies. Next, relevant data was charted into categories on the basis of research questions. Common patterns across the articles were reviewed highlighting the main results of these studies. Meaningful data clusters were identified through concept maps to help interpret results (Arksey & O' Malley, 2005). Then, results were analyzed followed by synthesizing of these findings across all studies taking into consideration the key trends the extent to which these studies varied by sample characteristics. Analysis was followed by review and discussion of the similar patterns till organized results were obtained (Arksey & O' Malley, 2005).

Data Analysis

Data was analyzed descriptively by Shagufta Gul.

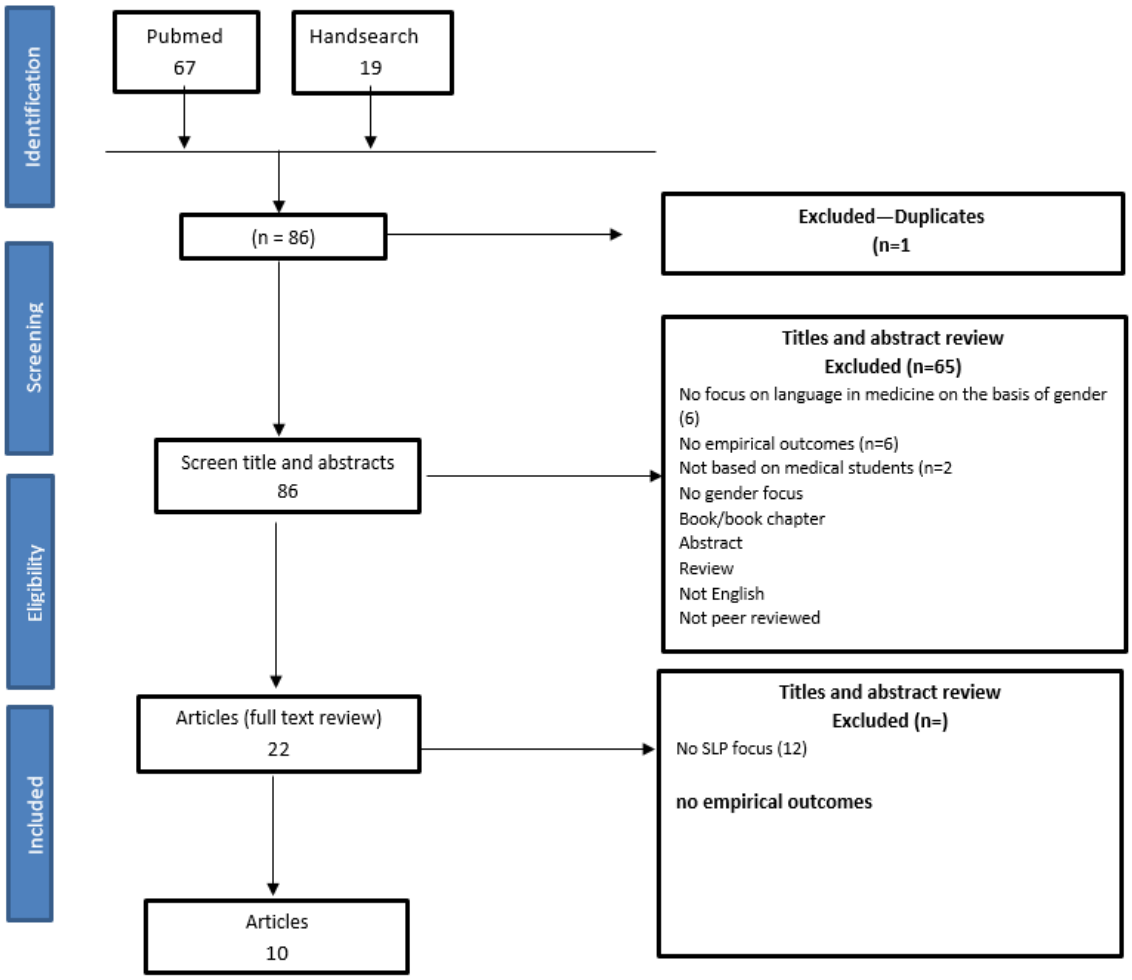
Results

Characteristics of participants and study

This scoping study comprised 10 studies, based on participants from five countries and was spanned over six year period (Fig.2). Interestingly, six studies were carried out in United States, and the remaining in Syria, Sri Lanka, Saudi Arabia and Korea respectively.

Research methodology differed across the studies. Four amongst them comprised qualitative method, two were observational studies, one was a quantitative research, and three were textual analysis using different soft wares. Sample size was from 50 to 87,922 and was based on undergraduate medical students and clinicians. Only one study (1/10) was based on a theoretical framework (social constructionist theory).

Fig.1



Conceptual Mapping

Following patterns were highlighted.

Gender based differences in academic setting

One study found relevant to this theme was conducted in Saudi Arabia in 2012.The study measured the student's learning styles according to theory popularized by researchers such as Bruner and Piaget (1974 & 1990) which was based on the assumption that language is acquired using four sensory modalities namely visual, kinesthetic, visual iconic and auditory. They divided the learning styles based on the above styles, into unimodal, bimodal, trimodal, and quamodal preference based on the learning styles they preferred. They found that the ratio of multimodal learners in males was higher as compared to female learners (32.2 to 10. 63). They also applied Fischer exact test (two sided) but that yielded to no significant differences amongst both the genders.

Medical students' narratives of gender dynamics

One study (female only sample at a medical school in Sri Lanka), focused on the effect of gender bias in healthcare has a negative impact on the ethical grooming of students as well as the safety of patients. Based on 12 group interviews of 71 students' participants, the study led to the results that gender plays a leading role in healthcare and that females, either in the role of a patient or professional, face professional lapses related to patient safety as well as the abuse of students. Interestingly, perpetrators in such cases are also female healthcare professional professionals and educators. The findings showed that, the role of students was not only passive, they neither intervene nor report such cases due to hierarchical cultural contexts. Sometimes, if not always, the students also became part of the vicious cycle and reproduced the unprofessional behavior they despised. This ingrained gender bias

in medical system led to such patterns being normalized including the disrespect of students and patients which is a continuous threat to the safety and wellbeing of women in different roles and show a dire need to reforms to counter such attitudes (Malissa et al, 2019).

Specialty preference in medicine on the basis of gender

Out of ten studies, three studies concluded that gender played a role in the decision to opt for a specialty in medicine amongst both genders. Asaad et al (2020), in their cross sectional study, analyzed the gender based professional experiences of 561 medical students (both male and female) of Aleppo university in Syria. They found out significant differences in the results. Majority of males (40 %) preferred surgery while 16% opted for internal medicine. In case of females, majority preferred other specialties (17%), internal medicine was chosen by 16% while surgery by 15% which presented quite a contrast with the results of male doctors. Reasons behind choosing a specialty also differed in both genders. The main reason was their interest in a specific specialty which garnered 71% ratio in males and 74% in females. Second common factor was work/life balance in females for their choice of career while anticipated income turned out to be the major factor for males in their career choice. The third reason endorsed by both genders was that they should be given free will to opt for any specialty, irrespective of their gender. Females also opined that they have decreased opportunities based on their gender as compared to males in career choice.

Differences in competence in medicine on the basis of gender

One study in this review was tested the assumption if it is true that men make mental lapses while women make procedural ones (Etherington & Boet, 2018). Based on 50 medical students (25 male and 25 female), at a medical school in Korea in 2019, they were given a two hour lecture about Laryngoscopy (tracheal incubation) and then asked to perform it on 3 patients each, leading to 150 results. The findings suggested that female students showed more interest during briefing in airway evaluation before the procedure as compared to males, and male students were more interested during laryngoscopy procedure as compared to females, the end results of performance ratio of both genders didn't show any differences.

Implicit gender based bias in linguistic competence

Five studies within our review were focused on linguistic differences in applying for subspecialties through letters of recommendations or personal statements etc. Osman et al, 2015; Rojek et al, 2019; Go et al, 2021; Chen et al, 2020, Demzik et al, 2020). These studies affirmed the view that implicit and explicit gender bias is there in medicine field as well. For example, a study based on 2138 personal statements of candidates applying for US internal medicine residency program, using data from 377 medical schools. Automated textual analysis programs were used to analyze the data. Researchers extracted five themes that are significant such as; interest in residency program, memorable patients, healthcare as public policy, research, and family inspiration. Some themes were repeated in most applications, but significant gender-based variations appeared in others. Amongst these, men were found to focus more on describing personal attributes and self-promotion whereas women were interested in expressing communicative and team-based attributes. Consistent with this study, the research carried out by Chen et all (2020) focused on exploring gender based linguistic differences in MSPE (medical school performance evaluation) letters by male and female evaluators, in their study in a US based medical school. A total of 583 evaluations, for 183 students (51.9% female and 48.1% male), were analyzed in 2018. Out of these, 148 evaluations were carried out by females whereas 435 by males. Previous studies led to extraction of four themes after a rigorous literature review, namely; ability, grindstone, standout, and personality adjectives (in order to describe student's ability to work with others). They concluded that implicit gender bias is present in evaluations of students. The content and linguistic patterns of male and female evaluators differed. Consistent with these studies, a research carried out in University of North Carolina in 2017 analyzed gender based linguistic differences of 342 urology residency applicants' personal statements. The themes they analyzed using textual analysis software titled Linguistic Inquiry and Word Count. They found substantial linguistic

differences amongst the personal statements of both genders, in consonance with previous studies.

In a comparative study by Go et al (2021), at the University of Pittsburg Medical Center in 2018, investigators used the four themes mentioned in the previous study to analyze 398 letters of recommendation (LOR), where 198 letters were from Vascular Surgery (VS) and 200 for Obstetrics and Gynecology (Ob/Gyn). Amongst VS applicants, 30% were females while 81 females comprised Ob/Gyn. Investigators reported similar trends in medical school applicants. Reference letters for both genders highlighted attributes differently depending on the gender of the applicant.
The mentioned were carried out in a single medical school. A study (Rojek et al, 2019), used data from two medical schools based on 87,922 clerkship evaluations of third year medical students in an observational study. Through natural processing, the researchers found that 37 words differed by gender. Amongst them, 62% showed attributes such as lovely more frequently in female evaluations while 19% reported behaviors such as scientific in higher ratio in males' letters thus pointing towards a gender based variation.

Discussion

The study was based on research focusing on the effect of gender medical profession and incorporated 10 articles across five countries, over a7-year period. It was a binary research and did not focus on the newly emergent non-binary aspect which is also important and gaining momentum in the recent literature.
Overall, the study highlighted that recent research is focusing on many the multifold impact gender has in different domains in medicine and health-care professionals, it is still a gendered profession, (Malissa et al, 2019). While half of medical school graduates (specifically in the US), are women. The percentage of males and females varies greatly on the basis of specialty. As a result, women in many surgical subspecialties remain under-represented. One example is the low percentage (only 27%) in integrated Vascular Surgery Programs (VS) programs in 2017-2018 cycle in US medical schools. Conventional gender-based segregation theories often have a strong influence on how these subspecialties, such as OB/Gyn and obstetrics are termed as women's work. For instance, Women made up 77% of applicants for the same cycle mentioned above for Ob/Gyn, a domain where surgical aspects are also involved (Go et al, 2019). Such gendered discourses have the tendency to interpret a profession as being feminine (Litosseliti & Leadbeater, 2013), partly because of the fact that females are seen as carers and communicators. Numerous studies highlighted that societal norms have the power to reinforce to negative professional trends which leads to men being discouraged from entering certain subspecialties, and leading to lack of equity in such domains (Lof et al., 1999). Interestingly, socio-economic influences including the materialistic drive have also played a role in promoting masculine and feminine expectations that leads to a gendered environment within workplace whereby females are viewed as appropriate for some domains while males for others (Bradley, 1993). A study in the US about the distribution of various medical subspecialties found that females were marginalized in orthopedic surgery and neurological surgery (15 % and 17% respectively), while males occupied 17% of obstetrics and gynecology and 29% of pediatrics. In surgery, males were 40% and 16 % opted for internal medicine. The figures show internal structure of gender segregation among students in specialty preference. It is a common knowledge that during medical studies, surgery is opted by men and gynecology, pediatrics and general practice by women (Diderichsen, 2013, Alers et al, 2014), resulting in an imbalance representation where a vast majority of men are surgeons and women are gynecologists (Lambert et al, 2006).This is called horizontal segregation. Another aspect is the fewer number of women on higher positions. This is called vertical segregation (Kilminster et al, 2007). We can safely say that gender is everywhere in career choices in medicine.
Our review highlighted that several factors affect gender related career choices, as women are more interested in maintaining a balance between work, and being a good parent/raising a child. Men's choices are based on factors such as anticipated income, familial and societal influences (Assad et al, 2020, Alers et al, 2014).
Our review is in consonance with previous studies which showed that career choice in medicine is

effected by many factors and only interest in the field is not the only driving force (Litosseliti & Leadbeater, 2013). Other studies (Lindsay & Kolne, 2023), noted that career choice is based on having to choose an option which is the best choice amongst the alternatives. Further research is needed to understand the role of gender in influencing career choice, which might help policymakers in the field develop such educational programs and modifications that can enhance balanced influx and representation of both genders in different specialties and ensure patients' needs are met as well (Diderichsen, 2013, Al-Ansari, 2006, Khader et al, 2008).

No differences were highlighted in the learning styles during medical studies in a study carried out at a medical college in Saudi Arabia (Nuzhat et al, 2013). Some studies, showed some distressing results. For Example, a study carried out at a medical college in Sri Lanka highlighted the negative effects of gender bias on medical students and also on the wellbeing of patients at the hands of female professionals. Hierarchical cultural norms prevented the students to intervene, let alone prevent such cases and even at times they reproduced such discriminatory behavior they had earlier criticized, thus becoming part of a vicious circle. This situation is quite alarming as it not only manifests the ingrained gender bias and unprofessionalism in the medical system but also hampers the work ethics of female medical students. In addition, when such disrespectful and abusive treatments at the hands of female professionals are normalized, it might present serious complications in maintaining the wellbeing and safety of women. Researchers provided different reasons for the abusive behaviors including shortage of women in sensitive or key positions (Ely, 1994). Many studies observed that some women who have weak gender identities (a case when their gender is in sync with their self-image when reach high positions, sabotage the advancement of other women and give preferential treatment to men (Kaiser and Spalding 2015).

As mentioned earlier, gender bias in healthcare has an adverse effect both on female students and patients, but also female students and overall medical profession as negative and toxic environment is being propagated. Though female participation in medical field is increasing, segregation is still a part of the field whether it is horizontal or vertical. Additionally, facing biased attitude at the hands of female educators is one side of the picture. Women entering medicine are facing other challenges as well such as competing in a male-dominated profession that involves gender discrimination and sexual harassment (Nagata-Kobayayashi et al. 2006; White 2000; Witte et al. 2006). Although recent research has showed that the abuse is impartial to gender they did not differentiate between male and female students (Cook et al. 2014; Gagyor et al 2012; Mavis et al. 2014; Rees and Monrouxe 2011). Facing discriminatory and biased attitudes make women feel unworthy and less able in medicine (Foster et al. 2000), but sometimes such patterns are normalized and acceptable (Beagon 2001), which is a dangerous trend. Research has also reported that normalizing such attitudes at workplace can result in anxiety, and self-doubt in female students and they might question their decision of entering the medical field (Barbaria et al, 2011).

Implications

Research in HCPER has proved that gender imbalance is widespread in medicine and is reproduced in the form of a vicious cycle that affect not only patient-doctor relation but the quality of medical education as well (Giles & Hill, 2015).

The findings highlight under-representation of women in certain specialties and societal influences in choosing specialties that sometimes have a bad implication in providing standardized services to patients as they can't find a doctor of their gender with whom they can openly discuss their problems that might hamper provision of best services to patients.Additionally, the findings of our review reveal that gender affects motivation and influences decision to pursue a subspecialty in this field (Litosseliti & Leadbeater, 2013b). Further research is needed to explore the role gender plays in shaping medical students' identities while entering the medical school as well as their professional life.

Limitations and risk of bias across the studies

There might be risk of bias in the studies included. Secondly, articles in English only were included

and articles in other languages might have been missed. Then, the studies included covered five countries having diverse and different ideologies about gender roles which can lead to complexity in interpreting the results as societal expectations regarding gender differ by country. Further, the studies in this review took a binary approach. Future research might be more diverse and all-inclusive if they consider non-binary and trans-gender as well. Few studies have confused the term gender with sex and hence results may be viewed with caution. Future research might include other socio-demographic traits, such as racial and ethnic backgrounds. Finally, our study had a limitation as we lacked finances and resources for a consultation step, which though is optional but important in a scoping review.

Conclusion

This scoping study analyzed the role played by gender in medical profession. The review was based on ten articles across five countries spanning over seven period time. Following key themes were extracted and discussed: (1) Gender based differences in academic setting (2) Medical students' narratives of gender dynamics (3) Specialty preference in medicine on the basis of gender and (4) implicit gender bias in linguistic competence. Further research is needed to understand the role of gender within HCPER.

Acknowledgements:

The main author Shagufta Gul would like to extend Special thanks to Dr. Lynn Monrouxe, Associate Dean, Faculty of Medicine and Health at University of Sydney for suggesting this scoping review topic and providing her feedback and help in initial stages, besides the continual support of Dr Alex, c0-author for sparing time to review article and provide valuable feedback. Authors are also thankful to Principal, Community Medicine, Bacha Khan Medical College Mardan, Dr. Iftikhar Uddin for providing necessary input and support for the project. This study is unique in the sense that the authors did not quit despite lacking resources at many stages and conducted this review with minimal resources and support. The study is preliminary and might be viewed as such.

Funding Statement:

The study did not receive any external or internal funding and was carried out on self-support.

Conflict of Interest:

The authors hold no conflict of interest

Ethical Statement:

Although being a scoping review, the study did not need an ethical approval but there is no violations of ethics involved at any stage.

Funding

Authors received no funding for this research.

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