Influence of Cisgender Male and Female Genders on Perceived Social Support of Medical Students: A Scoping Review

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Abstract

Stress associated with medical studies often leads to an increased need for social support among medical students. While other influencing factors concerning the social support needs of medical students have been studied, the influence of gender in this area is scarce. Therefore, this scoping review mapped out the relevant literature, identified gaps, and suggested the influence of cisgender male and female genders on the perceived social support (PSS) of medical students. This scoping review was guided by the PRISMA-ScR checklist. Rationales and research questions were mapped according to Arksey and O'Malley (2005). The databases PubMed, Wiley Online Library, ERIC, and CNKI, were searched for academic articles published in English and Chinese between November 2011 and November 2021 that met preset criteria. The selection of sources of evidence based on screening and eligibility of evidence reduced the identified 796 sources of evidence in the searched databases to seven sources of evidence. The identified gaps include the lack of in-depth exploration of male and female genders alone as a determinant of PSS, how gender may be used to promote PSS among male medical students and female medical students, how different sociocultural, sociodemographic, and personality influence the PSS of genders among medical students, lack of qualitative research and mixed-methodologies on the subject as well as the use of longitudinal studies and how major areas of research and gender affect the PSS of medical students.

Keywords

Gender; medical students; perceived social support; social support

Introduction

Medical students arguably face more stress than other students due to the intense demands of their education programs (Cecil et al., 2014; Fawzy & Hamed, 2017; Frajerman et al., 2019; IsHak et al., 2013; Pagnin et al., 2014). Medical college students have a heavy course load, fewer extracurricular activities, and a single system of education, so consequently, they may face more significant stress. This situation may be ameliorated by perceived social support (PSS), as it is integral to the well-being of medical students. Furthermore, PSS creates a positive self-concept, has been linked to higher academic achievement (Tayfur & Ulupinar, 2016), balances out the family demands of academic achievement (Khallad & Jabr, 2016), and reduces overall depression and stress (Shi et al., 2021).

Theoretical stress models include the stress process and the stress system models. These models indicate that stress is a multi-factor process comprising life events, social support, personality characteristics, cognitive evaluation, and coping style. Among these aspects, social support as the core factor has been of particular concern. Social support is a kind of action and emotional sharing that refers to the care and support given to individuals by others, groups, and communities manifested as material assistance, living assistance, and psychological assistance (Fang, 2013). Social support is real or perceived by individuals; therefore, instrumental or expressive support provided by groups, social networks, or significant others is vital in promoting individual health and reducing physical and mental diseases (Cohen & Wills, 1985).

Numerous studies have also confirmed the mitigating effect of social support on many negative psychological characteristics, such as depression and anxiety. Even though these studies have established the significant promoting effect of positive psychological qualities, such as happiness, not all social support promotes individual development and adaptation. For example, past studies have found that the feelings of embarrassment brought on by individuals seeking help from others when they are under pressure will add additional pressure on them and interfere with the process and results of their stress response (Bolger et al., 2000). Hence, whether or not social support impacts individual adaptation will be influenced by many factors, including the type of support.

Among many kinds of social support is an individual's subjective feeling and evaluation of the degree of external support, which significantly impacts physical and mental health (Cheng & Wang, 2012). Perceived social support is an essential psychological resource for individuals to cope with stress, which is significant for understanding and predicting the state of mental health of the individual (Brissette et al., 2002). For instance, in modern medical education, the mental health of medical students has continually been the focus of medical education and psychological research. However, with the rapid development of society, the increasingly accelerated pace of life, ever-increasing academic tasks, continuous increases in graduation requirements, fiercer competition in the industry, complex interpersonal relationships, the excessively long training cycle, and the anxiety about the future of the individual sector make medical students experience heightened anxiety.

This anxiety is further perpetuated by pressures related to publishing academic articles, graduation, employment, and marriage. Combined, these factors are known to cause medical

students to drop out of school or commit suicide (Shen et al., 2010; Wang et al., 2010). Medical students also feel anxious from a lack of ability to treat patients, and this long-term psychological pressure is not conducive to the development of medical students' physical and mental health (Nechita et al., 2014; Saeed et al., 2016). Therefore, it is crucial to pay attention to the mental health of undergraduate students majoring in clinical medicine and to ensure the provision of high-quality medical services in the future.

Social support refers to an individual's emotional experience of feeling cared for and supported by society, which positively impacts the prediction of individual mental health (Shi et al., 2021). Accordingly, medical students may need more social support to help them to cope with stress. One factor that influences general social support is gender (Matud et al., 2003; Neff et al., 2005; Zhang et al., 2018; Zhu et al., 2021). Research has considered that perceived gender differences in social support refer to the differences in PSS between men and women. As a result, two main explanations for gender differences in current theories have emerged (Zhang et al., 2015).

First, biologists believe that positive biology, behavioral genetics, evolutionary psychology, and innate biological differences, such as genetic genes, are important reasons for gender differences (Buss, 1995; Wood & Eagly, 2002). The inclination is supported by modern brain science research that there are indeed significant differences between men and women in certain brain functions (De Bellis et al., 2001; Lenroot et al., 2009). Second, behaviorists believe that social cognition and social role theories emphasize the influence of the process of acquired socialization on gender differences (Bandura, 1977; Eagly & Chin, 2010) and that individuals eventually develop certain behaviors with more gender characteristics by imitating individuals of the same sex or adopting gender role standards expected by the society. For instance, the socialization process has different role expectations and requirements for individuals of different genders, which leads to the individual's self-esteem (Feingold, 1994), achievement motivation (Gati & Perez, 2014), moral perception (You et al., 2011), and other significant gender differences (Else-Quest et al., 2006).

Although gender is an essential influence on PSS, current research on medical students' PSS mainly focuses on the understanding of social support on depression, fear, anxiety, self-esteem, and the role of happiness and other indicators of mental health and its interaction with the objective social support mechanism of differences. Nevertheless, the research rarely explores the relationship between medical students, social support, and gender.

This oversight indicates an area for expansion in the research within academia and a need for exploration in this field that conjoins gender studies and mental health. Based on a preliminary search by the authors, the academic literature on the influences of male and female cisgenders on the PSS of medical students has not been systematically mapped out, and the gaps in the literature to direct future research have not been identified. To that end, this scoping review seeks to map out the literature on the male and female genders on the PSS of medical students and identify gaps in the literature for further academic research.

Method

A scoping review was conducted following a systematic process for conducting appropriate protocol (Arksey & O'Malley, 2005) and observing the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) (Tricco et al., 2018). The five-step process by Arksey and O'Malley (2005) was used to structure the process and improve the transparency of the findings. The five steps were: (1) identifying the research question—this step considers which aspects are essential to the research question; (2) identifying the relevant studies—this step looks for evidence from a variety of sources: electronic databases and hand-searching of key journals; (3) study selection—this step needs inclusion and exclusion criteria based on specific research questions to help the authors exclude studies that do not address the purpose of the research; (4) charting the data—the process of charting and categorizing material according to key issues and themes is called "data extraction" and may involve specific statistical techniques; and (5) collating, summarizing and reporting the results—this step provides a comprehensive and systematic study of the collection and review of research processes.

Eligibility criteria

The literature was not limited to any geographic region or developing/developed nations. The time frame of the publication of the articles was between November 2011 and November 2021, as there seems to be an increase in the publication of academic journal articles on this subject in the past ten years, as well as there is an overall increase in the concerns of mental health of adult students. The languages of publication were English and Chinese. Empirical and research studies were included; whereas editorials, articles without full text, articles published in other languages, opinion pieces, and letters to the editor were excluded.

Search strategy

A systematic and comprehensive search of four databases (PubMed, Wiley Online Library, ERIC, and CNKI) was conducted. These databases were chosen as they are related closely to the biological and behavioral sciences, which was a match for the focus of this scoping review. Each database thesaurus (subject headings and related terms) was checked to generate additional search terms. The keywords used for searching the relevant literature were selected to meet the research focus of the scoping review: perceived social support, social network, peer support, family support, gender, male, female, medical student, and medical graduates. Boolean operators were used with these keywords in all the database searches. The reference lists of all articles were searched for additional studies. All citations were exported to the reference manager EndNote X9. Table 1 illustrates the search strategy used for this scoping review.

Table 1: Search strategy

Database	PubMed, Wiley Online Library, ERIC and CNKI
Other sources	None
Key searched terms	perceived social support OR social network OR peer support OR family support AND gender OR male OR female AND medical student OR medical graduates

Language	English and Chinese
Location	Globally
Duration	November 2011 to November 2021
Types of study	Empirical studies
Type of publication	Research articles
Exclusion criteria	Articles without full text, articles published in another language, editorials, opinion pieces, and letters to the editor

Data collection

A descriptive-analytical methodology, adopted by Arksey and O'Malley (2005), was utilized to chart the data. Upon confirmation of relevance, data were extracted using a charting table. A further explanation of the data charting process is explained in the section on a synthesis of the results. The charting table focused on the methodologies used in the relevant literature and subject matter. In line with the focus of the scoping review, the charting table mapped out the influence of gender on the PSS of medical students.

Collating, synthesizing, and reporting the results

A qualitative descriptive approach was used to summarize the results. A descriptive summary of the research using the categories of quantity, focus, the scope of the study, and an overview of research findings was produced. This process aided in the identification of gaps in the research and the development of potential future research directions.

Results

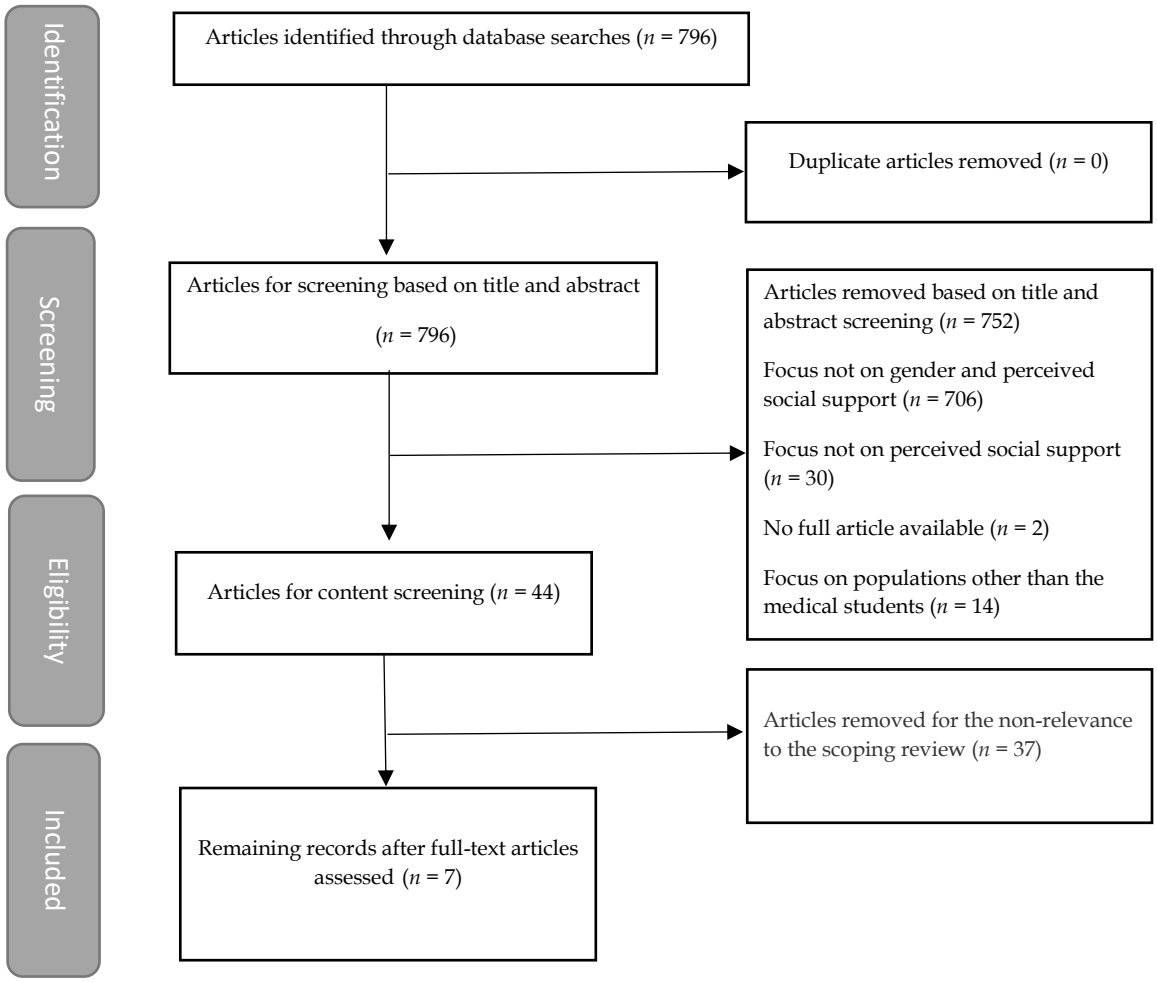
Selection of sources of evidence

A systematic and comprehensive search of four databases (PubMed, Wiley Online Library, ERIC, and CNKI) produced 796 potential articles for the scoping review. The process of selecting the sources of evidence was based on three rounds of exclusion. The first round excluded articles based on duplication. This round of exclusion excluded no articles, as no duplications were found. The second round of exclusion was based on the population focus and the influence of gender and PSS, as shown in the title and abstract of the article. In this round, 752 of the 796 articles were removed for not having a focus on either male or female genders (n = 706), not having an emphasis on PSS (n = 30), not having a full article available (n = 2), or having a population not relevant to the focus of this study (n = 14). The third round of exclusion was based on the focus of the content of the article. In this round, the authors read the articles in detail to determine if the content of the articles suited the focus of the scoping review. The remaining 44 articles underwent screening for relevance to this scoping review. The screening process for relevance removed 37 articles based on non-relevance. Non-relevance meant that upon screening, the articles did not focus on PSS but on areas of research such as the testing of stress, the resilience of medical students, or the association of study difficulties with mental health among medical students. This process left a total of seven finalized articles for this scoping review. The method of selecting sources of evidence is in Figure 1 below.

Characteristics of the sources of evidence

As seen in Figure 1, seven studies published between November 2011 and November 2021 were included in the review.

Figure 1: Prisma Summary Flow Diagram Indicating the Search and Selection Process



Of the finalized articles, three articles were from China, two were from South Korea, one was from the Czech Republic, and one was from Romania. All of the seven articles used quantitative approaches, namely, cross-sectional studies (n = 3), cluster sampling method (n = 2), randomly selected study (n = 1), and convenient sampling method (n = 1). Data analysis for the included articles utilized independent sample T-test, one-way analysis of variance, non-parametric Wilcoxon tests, logistic regression, Pearson correlation analysis, and Stepwise multiple linear regression analysis. Software such as SPSS 22.0 and STATISTICA version 9 was used in the finalized articles.

The subject matter of the finalized articles covered the assessment of the learning perception of undergraduate medical students on three types of teaching (classical/online/hybrid) in relation to coping strategies, stress, and social support; exploration of gender differences and the perceived usefulness of teaching, evaluation of the role of peer social support at medical schools in the association between psychological distress and academic self-perception; and

identification of the relevant factors related to the quality of life (QoL) changes in medical students, examination of the relationship between stress, social support, and empathy among medical students.

The finalized articles also covered the subject matter of comprehension of medical students' interpersonal trust and PSS. They explored the relationship between social support and interpersonal trust to provide a basis for the development of mental health education for college students. The finalized articles also included the subject matter of exploration of the influence of social support on alexithymia (difficulty identifying and expressing emotions) of female medical students to promote their physical and mental health development, exploration of the differences in understanding social support among medical students with different genders, different grades, and whether the medical students are the only child in the family.

Gender-based family support of medical students

In terms of PSS expressed as family support of the medical students, the data of the finalized articles indicated that women scored higher on PSS. However, the support received from the family is an exception, where their scores were similar to those of men. This finding may correspond to a natural phenomenon and represent an effect of greater attention paid to receiving support in a stressful professional context (Popa-Velea et al., 2021). In the finalized articles, female medical students perceived that family and other social support could negatively predict their alexithymia. In contrast, friend support was not an influential factor, which may be related to the fact that individuals were reluctant to turn to friends for help due to the frequent reports of hurting roommates and disharmonious dormitory relationships in recent years, so understanding social support gradually improved.

Female medical students perceived that family support and other support in social support could negatively predict their alexithymia. Suppose they get more apparent feelings from the family, teachers, and social support. In that case, this reassurance can improve their stress response and emotional behavior regulation and is also conducive to reducing the occurrence of alexithymia (Zhang et al., 2020). Finally, the total score of comprehended social support of female medical students was significantly higher than that of male students. The total score and dimensions of comprehended social support of medical students from non-only-child families were higher than those from only children (Liang et al., 2020).

Gender-based peer support of medical students

In terms of PSS of medical students as expressed as family support of the medical students, the data of the finalized articles indicated that older, male, and higher academic grade students were likely to have a lower quality of life, and also revealed that friends are the primary support source affecting medical students. Medical students also strongly resist seeking help due to the negative stigma of weakness in competitive medical school environments (Hwang et al., 2017). The included studies indicated that female students had a higher score on social support than male students.

Similar to a survey of female physicians, male students and undergraduate students had lower levels of social support than their respective counterparts. The mean score on the social support scale was lowest among male undergraduate students, for most male undergraduate

students enrolled in medical school immediately after graduating from high school. This data adds to being easily socially isolated once in medical school, causing male students to possibly have difficulties establishing intimate relationships, unlike female students (Park et al., 2015). Finally, female medical students are sensitive and have more profound emotional experiences than male medical students. They are more susceptible to a bit of help from others. They are more likely to regard other people's seemingly casual behavior as their support, thus gaining higher PSS. Female medical students of the same age are more mature, stable, and delicate than males and reported higher levels of social support (Liang et al., 2020).

Gender-based significant others' support of medical students

In terms of medical students' PSS expressed through the significant others of the medical students, the data included in the finalized articles suggested that higher levels of social support outside medical school were associated with poorer academic performance among women. The finding may also be related to medical students' frequent contact with significant others experiencing significant psychological distress, so the role of social support needs to be further investigated (Yamada et al., 2014). The female students had greater family support, friends support, other support, and total social support than male students. This insight shows that male students have higher interpersonal trust but less social support than female students. This difference may be because the personality of male students is generally rough and strong. They choose to bear things by themselves, so the results showed that social support, especially emotional support and assistance from other close people other than family and friends, affected the level of interpersonal trust of medical students (Peng, 2015).

In the included studies, female medical students were more willing to confide in others when dealing with alexithymia. At the same time, the family is not the primary source for confiding their worries, which may be related to the personality of female medical students. This avoidance may also be due to the female medical students not wanting to let family members worry or not letting friends know their shortcomings, so they choose to talk to others to relieve the pressures they face as medical students (Zhang et al., 2020).

Finally, the total social support scores perceived by female medical students were significantly higher than those of male students. Female students are better at communicating and need more psychological support and help; therefore, they are more likely to experience support from others. On the other hand, male students are not good at communication, like to do things alone, and are less likely to perceive social support (Liang et al., 2020).

Synthesis of the results

The included articles presented a variety of research priorities, with all seven finalized articles using quantitative research methods. The different authors of the finalized articles had various interpretations of PSS. Usually, the male or female gender was not the only concept studied or the primary variable in the article. Instead, males and/or females tended to be one of the variables studied along with other variables such as grades, race, and whether they were the only child in the family. Therefore, PSS may have been difficult to determine or judge due to the influence of the male and female genders.

Male medical students were reported to have similar support scores received from their families to those of females (Popa-Velea et al., 2021). Male medical students were likely to

have a lower quality of life, and the analysis revealed that friends are their primary support source (Hwang et al., 2017). Male students and undergraduate students had lower levels of social support than their respective female counterparts. The mean score on the social support scale was lowest among male undergraduate students, and male students might have difficulties establishing intimate relationships, unlike female students (Park et al., 2015).

Male students had higher interpersonal trust but less social support than female students (Peng, 2015). Male students are not good at communication, like to do things alone, and are less likely to perceive social support (Liang et al., 2020). The data also suggested that male medical students may need more intervention measures than female medical students (Liang et al., 2020). Female medical students were more likely to possess PSS than male medical students (Liang et al., 2020; Park et al., 2015; Peng, 2015). Gender differences were also affected by sociocultural, sociodemographic, and personality factors (Peng, 2015). This synthesis of the data suggested that male students were more likely to need PSS than their female counterparts and that being male is a detriment to the PSS of male students. This finding contrasts with female students, as shown in the next paragraph.

Female medical students perceived that family and other support within the confines of social support could negatively predict their alexithymia. They acquired more obvious feelings from the family, teachers, and social support. This awareness can improve their stress response and emotional behavior regulation and is also conducive to reducing the occurrence of alexithymia (Zhang et al., 2020). The total score for comprehending the social support of female medical students was significantly higher than that of male students (Liang et al., 2020). Female students had a higher score on social support than male students, similar to a study on female physicians (Park et al., 2015).

Female medical students are sensitive and have a more profound emotional experience than male medical students. Female medical students of the same age are more mature, more stable, and more dedicated than male medical students and reported higher levels of social support (Liang et al., 2020). Higher levels of social support outside medical school were associated with poorer academic performance among female medical students (Yamada et al., 2014). Female students had higher scores on family support, friends support, other support, and total social support than male students (Peng, 2015). Female medical students were more willing to confide in others when dealing with alexithymia (Zhang et al., 2020). The total score and social support scores perceived by female medical students were significantly higher than those of male students. Moreover, female students communicate better and need more psychological support and help (Liang et al., 2020).

Overall, a summation of the data extracted from the finalized articles suggested that being male cisgender was detrimental to the PSS of medical students, and being female cisgender allowed medical students to use PSS to navigate better the stresses associated with their field of study. The mapping, analysis, and synthesis of the included sources of evidence are presented in Table 2 below.

Table 2: Mapping, analysis, and synthesis.

No	Reference	Country	Methodology	Subject	Gender and PSS (Family support)	Gender and PSS (Peer support)	Gender and PSS (Significant others support)
1	Popa-Velea et al. (2021) [27]	Romania	The study design was cross-sectional, with a single survey administration comprising 11 questions and a series of standardized psychometric instruments. 201 students (48 men, 153 women, mean age = 22.9, *SD* = 2.83) agreed to participate in the study. Multidimensional Scale of Perceived Social Support (MSPSS) Brief COPE Scale contains 28 items Student-life Stress Inventory (SSI) were used in the study. The statistical analysis included computing non-parametric Wilcoxon tests, multinomial logistic regression, t-tests, and a MANOVA analysis.	This study assessed the learning perception of undergraduate medical students on three types of teaching (classical/online/hybrid) about coping strategies, stress, and social support. Additionally, it explored gender differences and the perceived usefulness of teaching.	Women scored higher on perceived social support (except for the support received from the family, where their scores are similar to those of men). This finding could correspond to a natural phenomenon, but at the same time, it may represent, especially in the context of self-reporting, an effect of greater attention paid to receive support in a stressful professional context (university studies).	NA	NA
2	Yamada et al. (2014) [32]	Czech Republic	Participants were 235 medical students attending a medical degree program exclusively for foreigners and taught in English at Palacky University in Olomouc, Czech Republic. The medical students completed a web-based Survey. T-test, one-way	The study evaluated the role of peer social support at medical schools in the association between psychological distress and	NA	NA	This finding is in line with Rospenda et al. (1994), who found that, among women, higher levels of social support outside of medical school were associated with worse academic performance. This finding may also be

No	Reference	Country	Methodology	Subject	Gender and PSS (Family support)	Gender and PSS (Peer support)	Gender and PSS (Significant others support)
			analysis of variance, and logistic regression were used for the study. Logistic regression was performed with academic self-perception as the dependent variable using STATISTICA version 9 (StatSoft, Inc.).	academic self-perception.			related to our previous results that medical students having frequent contact with significant others experienced significant psychological distress. The role of social support from significant others for medical students must be investigated in further studies.
3	Hwang et al. (2017) [30]	South Korea	This study is based on a prospective survey of medical students enrolled at the Gachon School of Medicine. The paper-based questionnaire, the World Health Organization(WHO) QoL scale abbreviated version (WHOQOL-BREF), and the Korean version of the multidimensional scale of perceived social support (MSPSS) were used to assess perceived social support in this study; was administered to 109 students from a Korean medical school. The study used the Pearson correlation analysis to examine the relationships	This longitudinal study aimed to identify the relevant factors related to quality of life (QoL) changes in medical students.	NA	Older, male, and higher academic grade students were likely to have a lower quality of life. However, these observations did not reach statistical significance, excluding the gender effect in social relations. Multivariate regression analysis revealed that friends are the primary support source affecting medical students overall. Nonetheless, medical students also showed a strong reluctance to seek help due to the negative stigma of weakness in	NA

No	Reference	Country	Methodology	Subject	Gender and PSS (Family support)	Gender and PSS (Peer support)	Gender and PSS (Significant others support)
			between social support and QoL. It also used a multivariate regression model to estimate the associations between support sources and QoL. Using a stepwise variable selection procedure. All statistical analyses were performed using SPSS statistical software v.16.02 (SPSS/IBM).			competitive medical school environments	
4	Park et al. (2015) [31]	South Korea	This cross-sectional study was approved by the institutional review board for human research at Inje University Busan Paik Hospital, South Korea. The Jefferson Scale of Empathy (JSE) was developed to measure physician empathy. The Perceived Stress Scale (PSS) and the Multidimensional Scale of Perceived Social Support (MSPSS) are used to evaluate the degree of perceived stress in daily life in all first- to fourth-year medical students at 20 medical schools in South Korea. The t-test, analysis of variance (ANOVA), Dunnett's T3 test, Pearson's correlation	To examine the relationship between stress, social support, and empathy among medical students.	NA	Female students had higher social support than male students, similar to a previous study on female physicians. Twenty-five male students and undergraduate students had lower levels of social support than their respective counterparts. In addition, the mean score on the social support scale was lowest among male students enrolled in an undergraduate program. Most undergraduate students enroll in medical school immediately after graduating from high school, quickly becoming	NA

No	Reference	Country	Methodology	Subject	Gender and PSS (Family support)	Gender and PSS (Peer support)	Gender and PSS (Significant others support)
			analysis the Statistical Package for the Social Sciences (Version 20.0, SPSS) were used for the analyses.			socially isolated once in medical school. In addition, male students might have difficulties establishing intimate relationships, unlike female students.	
5	Peng (2015) [33]	China	In this study, 617 medical students from a medical college in Anhui province were investigated by cluster sampling using PSSS (Perceptive Social support Scale) and ITS(Interpersonal trust Scale). T-test, one-way analysis of variance, and logistic regression were used for the study. EpiData 3.1 was used for dual input, and SPSS 13.0 was used for statistical data analysis.	To comprehend the situation of medical students' interpersonal trust and perceived social support, and to explore the relationship between social support and interpersonal trust, to provide the basis for the development of mental health education for college students.	NA	NA	Female students had higher family support, friends support, other support, and total social support than male students. The study showed that male students have higher interpersonal trust but less social support than female students. This result may be because the personality of male students is generally rough and strong, and they choose to bear things by themselves. The results showed that social support, especially emotional support and assistance from other close people other than family and friends, affected the interpersonal trust of medical students.

No	Reference	Country	Methodology	Subject	Gender and PSS (Family support)	Gender and PSS (Peer support)	Gender and PSS (Significant others support)
6	Zhang et al. (2020) [28]	China	Six hundred thirty-three female medical students were selected from a medical college in Jinan City using a convenient sampling method. They were assessed with the Perceived Social Support Scale (PSSS) and the Chinese version of the twenty-item Toronto Alexithymia Scale (TAS-20). SPSS 22.0 statistical software was used for analysis, measurement data was described as x ± S, counting data were expressed as the number of cases or percentage, independent sample T-test or one-way analysis of variance was used for comparison between groups, and Pearson product difference correlation analysis was used to study the correlation between variables. Stepwise multiple linear regression analysis was used to analyze the influencing factors.	To explore the influence of social support on alexithymia of female medical students to promote their physical and mental health development.	Female medical students perceived that family support and other support in social support could negatively predict their alexithymia. In contrast, friend support was not an influential factor, which may be related to the fact that individuals were reluctant to turn to friends for help due to the frequent reports of hurting roommates and disharmonious dormitory relationships in recent years. Understanding social support gradually improved. Female medical students from the family, teachers, and social support more obvious feelings and improve their stress response, and emotional behavior regulation is conducive to reducing the occurrence of alexithymia.	NA	The study indicated that female medical students were more willing to confide in others when dealing with alexithymia, followed by friends. At the same time, the family was not the main target of confiding, which may be related to the personality of female medical students. To avoid letting family members worry or not want to let friends know their shortcomings, choose to talk to others to relieve the pressure.

No	Reference	Country	Methodology	Subject	Gender and PSS (Family support)	Gender and PSS (Peer support)	Gender and PSS (Significant others support)
7	Liang et al. (2020) [29]	China	A total of 325 medical students were randomly selected from four grades of medical majors in a university in Hebei Province for the questionnaire survey. The medical support scale of college students was used to investigate 300 medical students in a medical university, and the data were analyzed by SPSS 17.0 software. Independent sample T-test and one-way ANOVA were used for the study.	To explore the differences in understanding social support among medical students with different genders, different grades, and whether they are only children.	The total score for comprehending the social support of female medical students was significantly higher than that of male students. The total score and dimensions of comprehended social support of medical students from non-only-children were higher than those from only children. The reason may be that non-only-children have siblings and have more family communication in daily life, making them feel more supported by the family. Therefore, non-only-children are likelier to perceive social support and family support than only children.	Female medical students are sensitive and have more profound emotional experiences than male medical students. They are more susceptible to a bit of help from others. They are more likely to regard other people's seemingly casual behavior as their support, thus gaining higher perceived social support. Female medical students at the same age are more mature, stable, and delicate than boys. Female medical students reported higher levels of social support.	The results of this study showed that the total score and scores of social support perceived by female medical students were significantly higher than those of male students. Female students were better at communicating and needed more psychological support and help, so they were more likely to experience support from others. In contrast, male students are not good at communication, like to do things alone, and are less likely to perceive social support.

Discussion

Summary of evidence

In the included literature, male and female genders as different influencing factors of perceived social support (PSS) have not been extensively explored. This gap suggests that PSS studies from a gender perspective are lacking and that further studies to address this gap are necessary to further add to the body of universal knowledge on the subject. Male medical students may need more PSS attention from the relevant authorities, especially when seeking a relationship with family, peer groups, and significant others. The included articles pointed out that female medical students may perceive more social support than male medical students, and male medical students need more intervention than female medical students to promote PSS. Therefore, the question of how the intervention needs differ between male and female medical students can be addressed systematically and effectively by future research. More research should be done on male and female medical students to analyze how their gender may be utilized to generate more PSS that will allow them to address their PSS needs more effectively.

The finalized articles also indicated that sociocultural (e.g., race, ethnicity, cultural expectations), sociodemographic (e.g., geographic location, income, grades, whether they are the only child in the family), and personality (e.g., temperament, character, dignity, emotion, cognition) differences may influence the PSS of the medical students. This conclusion indicates a gap where male and female medical students of different sociocultural, sociodemographic, and personality characteristics would require their PSS to be studied and addressed separately. Additionally, the included articles published in non-Asian countries are rare. This occurrence could be caused by Asian cultures being collectivist. As such, studies on the topic are more comparatively available, whereas non-Asians tend to be more individualistic and independent, so there are fewer studies on PSS among them. Further research may need to be conducted in these non-collectivist settings.

The analysis also identifies gaps in the quantitative research methods used in all the finalized articles. Future research could also consider the broader use of qualitative methods, mixed methods, and longitudinal studies to get a more in-depth analysis of the gender-based differences in PSS between male and female medical students. These methods may also increase PSS capacity by conducting a campus-wide long-term project to further analyze the relationship between gender and PSS in medical students. Additionally, all the research in the included articles was conducted in a single university or school; however, larger sample sizes across more than one university or school may be suggested for future research. Moreover, the articles did not conduct stratified analyses of different majors.

Perceived social support may vary widely between academic majors. For example, the proportion of men who study nursing is low, which could be influenced by traditional customs and social status. Hence, men engaged in nursing work face more prejudice (i.e., nursing is unsuitable for men, as their social status cannot be accepted), and they may be under much pressure from society and family. Male nurses are not confident and feel inferior in regular social communication, so they are unwilling to talk to others and ask for help when they encounter problems or troubles. They are not good at controlling and utilizing the surrounding social support resources. Some results show that the social support utilization of male nursing students is significantly lower than that of male medical students of other majors

(Wan et al., 2010). Therefore, these feelings also affect the PSS of gender differences in medical students, indicating that further research needs to be conducted on gender differences in the PSS of medical students according to major fields of concentration or medical specialization.

Limitations

There are several limitations to this scoping review. First, only seven included articles on the topic were located and summarized, which limited a pluralistic analysis of this field. Second, the finalized articles focused on academic articles published in Asia and Europe. In the future, another scoping review may be undertaken to focus on specific geographic locations not covered in this scoping review, i.e., Africa, Australasia, and South America. Third, this study was limited to English and Chinese, and countries that speak other languages were not included in the scoping review. Fourth, this article did not include grey literature, which should also be included to help enrich the research. Fifth, the scoping review was limited to academic articles that used cisgender medical students in the sample and did not include academic articles that included transgender medical students as the only part of the sample.

Conclusions

With the global advance of medical education, many social and psychological studies on medical students have emerged. Thus, perceived social support is a practical and effective tool in addressing the mental health of medical students of both male and female genders. Focusing on this phenomenon will assist in better interventions and create the availability of empirical knowledge on the subject.

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