Advances in Medical Education and Practice

Dovepress
Taylor & Francis Group

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ORIGINAL RESEARCH

Career Planning in Medical Students Rotating Through Obstetrics and Gynecology: The Role of Self-Efficacy, Social Support, and Personal Participation

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Purpose: Aimed to examine the relationship between Individual participation, social support, self-efficacy and career planning among medical students of obstetrics and gynecology.

Patients and Methods: Utilizing a cross-sectional survey, We evaluated 292 medical students specializing in obstetrics and gynecology across various educational stages. Questionnaires measured academic self-efficacy, social support, personal involvement, and career planning. We applied descriptive statistics, linear regression, and mediation effect analyses with the SPSS AU tool.

Results: This study evaluated the career planning status of 292 medical students rotating through obstetrics and gynecology at various educational stages using a cross-sectional survey. Linear regression analysis revealed that age has a negative impact on career planning scores, with each additional year reducing the score by an average of 0.065 points. Gender (with males scoring lower) and residence (with students from rural areas scoring higher) also had significant effects (all p <0.05). Positive factors included self-efficacy in academic ability, career planning guidance from parents and friends, participation in career planning-related training, medical practice projects, and medical competitions, all of which significantly and positively influenced career planning scores, the aforementioned factors account for 40.5% of the variation in career planning. Mediation effect analysis showed that social support and personal participation have significant indirect effects on career planning through self-efficacy, accounting for 7.746% and 5.338% of the total effect, respectively, and both have significant direct positive impacts on career planning, with total effects of 0.526 (95% CI [0.393, 0.658], p = 0.000 < 0.001) and 0.470 (95% CI [0.292, 0.648], p = 0.000 < 0.001), respectively. These results highlight the importance of enhancing social support and personal participation to improve career planning capabilities among medical students (all p < 0.05).

Conclusion: Enhancing social support and personal participation can improve career planning capabilities in medical students by boosting self-efficacy.

Keywords: self-efficacy, social support, career development, personal participation, mediation effect

Introduction

Given the dynamic and ongoing nature of career growth in the medical field, it is crucial for individuals to continually refine their professional knowledge and skills while carefully planning their career development. Self-efficacy, a key component of social cognitive theory, has been shown to be an important predictor of medical students' career choices, ability to cope with challenges, and achievement of career goals.[1,2] Students with high self-efficacy tend to exhibit initiative and resilience in their career planning and decision-making processes, ultimately promoting career growth.[3,4]

Received: 6 October 2024
Accepted: 18 February 2025
Published: 21 February 2025

Social support from family, peers, and educational institutions is another essential factor in career development because it can help individuals effectively manage stress, enhance their sense of self-worth, and promote healthy behaviors.[5,6] Additionally, the educational environment and resources provided by medical colleges impact the sense of self-efficacy and social support experienced by these students.[7,8] Specifically, in the context of medical students' career planning, social support can act as both a stress buffer and a provider of necessary resources and information.[9,10]

In China, the medical education system typically includes undergraduate education (a 5-year program, with the first two years focused on general and basic courses such as biology, physics, and chemistry, and the last three years on medical foundation and clinical courses, including teaching internships), and postgraduate education (comprising a 3-year standardized residency training and a 3-year professional degree graduate education, aimed at deepening knowledge and skills, and enhancing research and clinical capabilities). During the last three years of undergraduate study and throughout postgraduate education, students are assigned to rotate through corresponding clinical specialties for internships. Among these students, a portion is assigned to rotate through the obstetrics and gynecology department. The career development of medical students in gynecology and obstetrics is special, especially male students. The career development of male students in obstetrics and gynecology is characterized by unique challenges.[11,12] These include facing gender stereotypes, gender differences in the professional environment, inequalities in career development opportunities, psychological stress, and lower job satisfaction, as well as a lack of social support.[13] These factors collectively impact their career planning and development in the field of obstetrics and gynecology.

This study aimed to investigate the relationships between self-efficacy, social support, and career planning among medical students during their obstetrics and gynecology rotation through empirical research. The goal is to provide valuable insights to medical educators, career counselors, and policymakers on how to better support the career development needs of this specific group.

Materials and Methods

Procedures

This study employed a cross-sectional survey design to assess the current status and influencing factors of career planning among medical students in obstetrics and gynecology. The study population included medical students at various educational stages, such as undergraduates, master's students, doctoral candidates, and those in standardized training programs.

Participants

The data collection period for this study was from March 1, 2024, to June 30, 2024. During this period, we conducted detailed surveys and data collection among medical students rotating through obstetrics and gynecology who participated in the study. The inclusion criteria for this study are students at the undergraduate level (third and fourth years), master's, doctoral levels and students participating in standardized training who are currently rotating through the obstetrics and gynecology department and have voluntarily participated by signing an informed consent form. The exclusion criteria include students who are not majoring in medicine, undergraduates who have not completed their basic medical courses, and students who are not rotating through the obstetrics and gynecology department. When calculating the sample size, we based it on the number of questionnaire items. The sample size was estimated to be 10–20 times the number of items, which ranged from 14 to 20. Additionally, we considered the potential for invalid questionnaires or sample loss, calculated at 10%. Therefore, the estimated sample size ranged between 156 and 445. This study was conducted at specific educational stages and geographical locations, where the number of students available for the survey was limited. We included as many students as we could reach. The study included 292 obstetrics and gynecology medical students who volunteered to participate, and they were considered representative of the population. Of these participants, there were 240 girls and 52 boys. The gender ratio may be due to women being more inclined to choose obstetrics and gynecology than men, resulting in a lower proportion of men in this field. The participants consisted of 48 undergraduate students (16.44%), 184 master's students (63.01%), 14 doctoral students (4.79%), and 46 students in the standardized training stage (15.75%). The mean age of the participants was 25.59 ± 3.27 years.

Instruments

Self-Efficacy Questionnaire

Questionnaire utilized in this study was developed by Liang Yusong and Zhou Zongkui from Central China Normal University and is based on the work of Pintrich and DeGroot.[14,15] The questionnaire evaluates academic self-efficacy in two dimensions: learning ability self-efficacy and learning behaviour self-efficacy. It comprises 22 questions in total (Cronbach's α=0.89), with each dimension containing 11 test questions. The questionnaire included statements such as "I believe I have the ability to get good grades in learning" and "Compared with other students in class, my learning ability is stronger". The responses are rated on a five-point scale, with four questions requiring reverse scoring. The total academic self-efficacy score is the combined score of learning ability self-efficacy and learning behavior self-efficacy. In this study, the reliability of the questionnaire was demonstrated with a Cronbach's α=0.90. Social support in this study consisted of three multiple-choice questions: "Have your parents, relatives, and friends ever instructed you on your career planning?" with options often, occasionally, or almost not. "Have you ever seen a layout or guidance about career planning in the community (community) or in the countryside?" with options often seen, occasionally, almost not. "Have you ever attended any training or courses on career planning?" Although a professional social support questionnaire was available, this study chose custom questions to assess the social support of obstetrics and gynecology medical students due to the lack of a specific career planning social support questionnaire (refer to appendix).

Personal Involvement

Regarding personal involvement, we also created a homemade questionnaire to gather information about the relevant circumstances. Have you ever participated in medical research, medical practice, or medical competition projects? If you have been engaged in these projects, how do you believe this will aid in your career growth? "What college experiences do you consider most beneficial to your career?" (Refer to appendix).

Career Planning Status Questionnaire: A self-developed questionnaire was utilized to assess the career planning status of medical students. The questionnaire evaluated whether students had a clear career plan, career objectives, and the action plans they had implemented to achieve these goals.

Career Development Experience Questionnaire

This questionnaire assessed students' experiences with career-related activities, such as research projects, clinical internships, academic conferences, and professional competitions, as well as their views on these activities. The questionnaire aimed to explore how these long-term goals affect medical students' career planning and self-efficacy. In addition to the above questionnaire, participant age, gender, learning stage, long-term residence, parents' highest degree, interests, personality, abilities, and basic self-characteristics were also collected to link the results with the background and help compare the findings of this study with those of other studies (Refer to Appendix).

Collection and Analysis

We designed a link on the questionnaire website to gather data and contacted five medical students specializing in obstetrics and gynecology. We explained the purpose of the study to them and asked them to collect data within their classmate group. Once we confirmed their assistance in data collection, we outlined the following data collection procedures to the authors. First, we briefly explained the nature of the study and requested student cooperation. Second, we informed the participants that they could receive a small red envelope ranging from 2 to 5 yuan as a reward for participating. Third, we confirmed that the data would not involve personal privacy and would only be used for this study. Participants who wished to participate in the study were required to provide their responses. The data collection process took approximately 5–10 minutes. We conducted descriptive statistical analyses on the baseline data, current career planning status, social support, and personal involvement of the survey subjects, as well as their self-efficacy. We divided the subjects into two groups based on a career planning score greater than 10 points and compared the differences between the two groups. For quantitative data, we used mean and standard deviation for description and performed independent samples *t*-tests for group comparisons. For categorical data, we used proportions for description and performed chi-square tests for group comparisons. We conducted linear regression analysis with career planning

score as the dependent variable and age, gender, place of residence, educational stage, parents' education level, self-efficacy in learning ability, self-efficacy in learning behavior, career planning guidance from parents and friends, career planning guidance from community or rural areas, participation in career planning-related training, participation in medical scientific research projects, participation in medical practice projects, and participation in medical competitions as independent variables to identify factors affecting the career planning of obstetrics and gynecology medical students. We analyzed the mediating effect of self-efficacy between personal involvement/social support and career planning score, with age, parents' highest education level, educational stage, long-term place of residence, and gender as control variables. If both path coefficients a and b are significant, and c' is also significant, and the signs of ab and c' are the same, this indicates a partial mediating effect. If at least one of a and b is not significant, but the 95% confidence interval of ab does not include 0, and c' is significant, and the signs of a*b and c' are the same, this also indicates a partial mediating effect. All collected data were used for descriptive statistical analysis, linear regression analysis, and mediation effect analysis using the SPSSAU online statistical tool.

Results

Sample Characteristics

Of the 305 questionnaires distributed, 292 were returned, resulting in a valid response rate of 95.73%. The sample comprised 82.19% female students and 17.81% male students. The educational stage distribution was as follows: undergraduates 16.44%, master's students 63.01%, doctoral students 4.79%, and those in standardized training stages 15.75%. In terms of living areas, 37.67% lived in rural areas, 39.04% in towns/counties, 17.12% in urban areas, and 6.16% in provincial capitals. Regarding parental highest education level, 67.12% had parents with education levels of high school or below, 15.75% had parents with some college education, and 15.07% had parents with a bachelor's degree. There is a significant difference between residence and career planning scores ($\chi^2 = 16.382$, $p < 0.01$), with students living in rural areas having significantly higher career planning scores than students from other regions (46.51% vs 25.00%), while age, gender, education level, parental education level, self-awareness, and hobbies do not have a significant impact on career planning scores. The baseline data in Table 1 shows that the place of residence is an important factor affecting the career planning scores of obstetrics and gynecology medical students, while factors such as age, gender, educational stage, parents' educational level, self-awareness, and hobbies do not have a significant impact on career planning scores.[16]

Table 1 General Situation of the Survey Subjects

Title		Score of Career Planning (%)		χ^2/t	*p*
		≤10 Points (n=120)	>10 Points (n=172)		
Age	–	25.92±3.61	25.36±3.00	1.433	0.153
Gender	Male Female	16(13.33) 104(86.67)	36(20.93) 136(79.07)	2.787	0.095
Residence	Rural Town Urban Capital area	30(25.00) 60(50.00) 24(20.00) 6(5.00)	80(46.51) 54(31.40) 26(15.12) 12(6.98)	16.382	0.001**
Stage	Undergraduate Master's Doctoral levels Standardized training	22(18.33) 76(63.33) 8(6.67) 14(11.67)	26(15.12) 108(62.79) 6(3.49) 32(18.60)	4.097	0.251

(*Continued*)

Table 1 (Continued).

Title		Score of Career Planning (%)		χ^2/t	*p*
		≤10 Points (n=120)	>10 Points (n=172)		
Education of parents	Master Undergraduate College High school and below	4(3.33) 22(18.33) 20(16.67) 74(61.67)	2(1.16) 22(12.79) 26(15.12) 122(70.93)	4.073	0.254
Do you understand your own interests, hobbies, personality, abilities, and other basic traits of yourself?	Understand Basically understand Do not understand	36(30.00) 62(51.67) 22(18.33)	52(30.23) 102(59.30) 18(10.47)	3.930	0.140
What is your greatest interest and hobby in life?	Literature Arts and sports Hands-on operation Others	28(23.33) 32(26.67) 28(23.33) 32(26.67)	32(18.60) 56(32.56) 56(32.56) 28(16.28)	7.386	0.061

Note: $^{**}p<0.01$.

Career Planning Status

As shown in Table 2, 32.85% of the students had a clear career plan. Medical students in obstetrics and gynecology with higher career planning scores demonstrate greater proactivity and clarity in multiple aspects. Students with higher scores are more likely to have a clear career plan, plan to continue their education, participate in internships or practical training, engage in volunteer work, attend career planning-related activities, and join clubs or organizations (all $p<0.05$). Furthermore, when choosing directions for internships or practical training, they prefer clinical medicine; for volunteer

Table 2 Current Situation of Career Planning of the Survey Subjects

Title	Name	Score of Career Planning (%)		χ^2/t	*p*
		≤10 Points (n=120)	>10 Points (n=172)		
Have you made a clear plan for your career?	Yes, very clear Yes, only a little Never	14(11.67) 92(76.67) 14(11.67)	82(47.67) 86(50.00) 4(2.33)	46.127	0.000**
Do you plan to continue your education?	Yes No	60(50.00) 60(50.00)	160(93.02) 12(6.98)	70.428	0.000**
Do you have a plan to participate in internships or practical training?	Yes No	76(63.33) 44(36.67)	168(97.67) 4(2.33)	60.686	0.000**
Do you have a plan to participate in volunteer work?	Yes No	68(56.67) 52(43.33)	154(89.53) 18(10.47)	41.898	0.000**
Do you have a plan to participate in career planning related activities?	Yes No	14(11.67) 106(88.33)	126(73.26) 46(26.74)	107.431	0.000**
Do you have a plan to join a club or organization?	Yes No	28(23.33) 92(76.67)	152(88.37) 20(11.63)	126.458	0.000**

(*Continued*)

https://doi.org/10.2147/AMEP.S494749

Table 2 (Continued).

Title	Name	Score of Career Planning (%)		χ^2/t	*p*
		≤10 Points (n=120)	>10 Points (n=172)		
If you have a plan to participate in internships or practical training, which direction are you more inclined to?	Clinical medicine Medical research Medical education Others	86(71.67) 18(15.00) 4(3.33) 12(10.00)	134(77.91) 22(12.79) 12(6.98) 4(2.33)	9.927	0.019*
If you have a plan to participate in volunteer work, which direction are you more inclined to?	Medical assistance Medical science popularization Public welfare activities Others	36(30.00) 46(38.33) 24(20.00) 14(11.67)	76(44.19) 50 (29.07) 42(24.42) 4(2.33)	16.170	0.001**
If you have a plan to join a club or organization, which direction are you more inclined to?	Academic research Public welfare and volunteering Entertainment Others	24(20.00) 18(15.00) 50(41.67) 28(23.33)	62(36.05) 62(36.05) 42(24.42) 6(3.49)	48.190	0.000**
If you choose to continue your education, which direction are you more inclined to?	Clinical medical research Clinical professional technology Medical education Others	50(41.67) 34(28.33) 8(6.67) 28(23.33)	82(47.67) 62(36.05) 20(11.63) 8(4.65)	23.669	0.000**
If you have a plan to participate in career planning related activities, which direction are you more inclined to?	Occupational planning lectures Occupational planning consultation Occupational planning exchange meeting Others	30(25.00) 36(30.00) 26(21.67) 28(23.33)	46(26.74) 46(26.74) 62(36.05) 18(10.47)	12.629	0.006**

Notes: *p<0.05. **p<0.01.

work, they prefer medical assistance; for joining clubs or organizations, they prefer academic research; for continuing education, they prefer clinical medical research; and for career planning-related activities, they prefer career planning exchange meetings (all p<0.05). These results indicate that students with higher career planning scores have clearer plans and higher participation in career development. In contrast, students with lower scores may require more guidance and support to enhance their awareness and capabilities in career planning.

Career Development Support

Students with higher career planning scores exhibit greater proactivity and clarity in Table 3. Specifically, students with higher scores are more likely to frequently receive career planning guidance from parents, relatives, and friends, see career planning layouts or guidance in their community or rural areas more often, and are more likely to participate in career planning-related training or courses (all $p < 0.05$). Additionally, they are more likely to engage in medical practice projects and medical competitions or contests (both $p < 0.05$). Among students who have participated in medical research projects, a higher proportion of those with higher career planning scores believe that such participation helps improve practical skills ($p = 0.472$), although this difference is not significant. Among students who have participated in medical practice projects, those with higher career planning scores significantly believe that such participation helps improve practical skills. Among students who have participated in medical competitions or contests, those with higher career planning scores significantly believe that such participation helps enhance professional skills and teamwork abilities. Among students who have participated in career planning-related training or courses, those with higher career planning scores significantly believe that such participation helps improve career planning abilities (all $p < 0.05$). These results

Table 3 Social Support and Personal Participation of the Survey Subjects

Items	Options	Score of Career Planning (%)		χ^2/t	*p*
		≤10 Points (n=120)	>10 Points (n=172)		
Have your parents, relatives, and friends provided you with career planning guidance?	Frequently Occasionally Never	22 (18.33) 54 (45.00) 44 (36.67)	48 (27.91) 82 (47.67) 42 (24.42)	6.411	0.041*
Have you seen career planning layouts or guidance in your community (neighborhood) or rural area?	Frequently Occasionally Never	6 (5.00) 18 (15.00) 96 (80.00)	14 (8.14) 46 (26.74) 112 (65.12)	7.664	0.022*
Have you participated in career planning-related training or courses?	Yes No	48 (40.00) 72 (60.00)	132 (76.74) 40 (23.26)	40.363	0.000**
Have you participated in medical scientific research projects?	Yes No	74 (61.67) 46 (38.33)	102 (59.30) 70 (40.70)	0.165	0.685
Have you participated in medical practice projects?	Yes No	60 (50.00) 60 (50.00)	134 (77.91) 38 (22.09)	24.688	0.000**
Have you participated in medical competitions or contests?	Yes No	28 (23.33) 92 (76.67)	72 (41.86) 100 (58.14)	10.775	0.001**
If you participated in medical scientific research projects, how do you think this would help your career development?	Improved practical skills Increased clinical experience Conducive to further education Conducive to job hunting Others	46 (38.33) 94 (78.33) 70 (58.33) 66 (55.00) 18 (15.00)	92 (53.49) 130 (75.58) 104 (60.47) 92 (53.49) 22 (12.79)	3.540	0.472
If you participated in medical practice projects, how do you think this would help your career development?	Improved practical skills Increased clinical experience Conducive to further education Conducive to job hunting Others	76 (63.33) 64 (53.33) 46 (38.33) 44 (36.67) 36 (30.00)	154 (89.53) 132 (76.74) 88 (51.16) 82 (47.67) 12 (6.98)	33.624	0.000
If you participated in medical competitions or contests, how do you think this would help your career development?	Improved professional skills Improved teamwork ability Increased competition experience Conducive to further education Conducive to job hunting Others	58 (48.33) 54 (45.00) 56 (46.67) 32 (26.67) 24 (20.00) 46 (38.33)	108 (62.79) 112 (65.12) 108 (62.79) 88 (51.16) 56 (32.56) 44 (25.58)	15.297	0.009
If you participated in career planning-related training or courses, how do you think this would help your career development?	Improved career planning ability Helped with career positioning Provided job search skills Others	74 (61.67) 68 (56.67) 38 (31.67) 38 (31.67)	130 (75.58) 106 (61.63) 82 (47.67) 30 (17.44)	11.494	0.009
Which experiences during your college years do you think are most helpful for your career development?	Academic research Medical practice Medical competitions Volunteer work Career planning related activities Participation in clubs or organizations	2.18±1.28 1.78±0.94 3.45±1.21 4.07±1.16 4.45±1.44 5.07±1.36	1.88±1.33 2.00±1.03 3.30±1.17 4.10±1.14 4.57±1.10 5.14±1.33	1.927 −1.840 1.049 −0.278 −0.770 −0.457	0.055 0.067 0.295 0.781 0.442 0.648

Notes: *p<0.05. **p<0.01.

https://doi.org/10.2147/AMEP.S494749

indicate that students with higher career planning scores have clearer plans and higher engagement in career development, while students with lower scores may require more guidance and support to enhance their awareness and capabilities in career planning.

Career Planning and Self-Efficacy

The results of Table 4 show that students with higher career planning scores exhibit greater proactivity and clarity in multiple aspects. Specifically, students with higher career planning scores have significantly higher scores in overall self-efficacy (76.57±8.20 vs 72.98±8.00), self-efficacy in academic ability (40.30±6.33 vs 37.43±6.38), self-efficacy in academic behavior (36.27±2.67 vs 35.55±2.56), social support scores (5.23±1.29 vs 4.47±1.08), and personal participation scores (4.79±0.93 vs 4.35±0.88)(all $p<0.05$). Additionally, the career planning scores themselves are significantly different, with students having higher scores averaging 11.87±0.76 compared to 9.05±0.99 for those with lower scores ($p<0.05$). These results indicate that students with higher career planning scores have higher performance in self-efficacy, social support, and personal participation, and these factors may collectively promote their positive attitude and clear goals in career planning.

Influencing Factors of Career Planning

The linear regression analysis revealed several significant factors influencing career planning scores among medical students in obstetrics and gynecology in Table 5. Age was found to have a negative impact, with each additional year reducing the career planning score by an average of 0.065 points. Gender also significantly affected career planning scores, with male students (coded as 1) having an average score 0.541 points lower than female students (coded as 0). Students residing in rural areas had a lower career planning score by an average of 0.196 points compared to those from other regions. This result suggests that when formulating career planning intervention measures, we should pay special attention to students from rural areas. Compared with urban students, they may face more challenges and pressures in the process of career planning and need more targeted guidance and help to better plan their future career paths. On the positive side, self-efficacy in academic ability was a significant predictor, with each unit increase raising the career planning score by an average of 0.035 points. Career planning guidance from parents and friends had a positive impact, increasing the score by an average of 0.309 points for each unit increase. Participation in career planning-related training had a strong positive effect, with each unit of participation increasing the score by an average of 1.205 points. Engagement in medical practice projects also significantly positively influenced career planning scores, increasing them by an average of 0.794 points per unit of participation. Lastly, participation in medical competitions had a significant positive impact, raising the career planning score by an average of 0.500 points for each unit of participation. These findings highlight the importance of self-efficacy, social support, and specific participatory activities in enhancing career planning among medical students.

Table 4 Social Support and Personal Participation of the Survey Subjects

Items	Career Planning Score (%)		χ^2/t	*p*
	≤10 Points (n=120)	>10 Points (n=172)		
Self-efficacy score	72.98±8.00	76.57±8.20	−3.714	0.000**
Self-efficacy of academic ability	37.43±6.38	40.30±6.33	−3.798	0.000**
Self-efficacy of academic behavior	35.55±2.56	36.27±2.67	−2.300	0.022*
Social support score	4.47±1.08	5.23±1.29	−5.347	0.000**
Personal participation score	4.35±0.88	4.79±0.93	−4.075	0.000**
Career planning score	9.05±0.99	11.87±0.76	−26.186	0.000**

Notes: *$p<0.05$. **$p<0.01$.

Table 5 Linear Regression Analysis of Factors Related to Career Planning

	Unstandardized Coefficients		Standardized Coefficients	*t*	*p*	Collinearity Diagnostics	
	B	*Standard Error*	*Beta*			VIF	Tolerance
Constant	7.251	1.371	–	5.288	0.000**	–	–
Age	−0.065	0.026	−0.130	−2.513	0.013*	1.256	0.796
Gender	−0.541	0.204	−0.127	−2.646	0.009**	1.069	0.935
Residence	−0.196	0.095	−0.106	−2.067	0.040*	1.238	0.808
Stage	0.172	0.095	0.094	1.803	0.072	1.280	0.781
Education level of parents	0.164	0.108	0.082	1.516	0.131	1.379	0.725
Self-efficacy of academic ability	0.035	0.017	0.141	2.130	0.034*	2.036	0.491
Self-efficacy of academic behavior	−0.006	0.036	−0.010	−0.179	0.858	1.574	0.635
Career planning guidance by parents and friends	0.309	0.131	0.138	2.362	0.019*	1.589	0.629
Career planning in the community or rural areas	0.254	0.158	0.094	1.607	0.109	1.600	0.625
Participated in career planning-related training	1.205	0.166	0.358	7.259	0.000**	1.139	0.878
Participated in medical scientific research projects	−0.311	0.165	−0.093	−1.891	0.060	1.136	0.881
Participated in medical practice projects	0.794	0.170	0.229	4.670	0.000**	1.128	0.887
Participated in medical competitions	0.500	0.170	0.145	2.939	0.004**	1.142	0.876
R^2	0.405						
Adjusted R^2	0.377						
F	*F*(13,278)=14.547, *p*=0.000						
D-W value	1.624						

Notes: *p<0.05. **p<0.01.

Mediating Effect Analysis

The relationship between individual participation, social support, self-efficacy, and career planning were shown in Table 6 and Figure 1. The results show that social support has a significant indirect effect on career planning through self-efficacy, with the mediating effect accounting for 7.746% of the total effect. Social support has a significant positive impact on self-efficacy, and self-efficacy also has a significant positive impact on career planning. In addition, social support has a significant direct positive impact on career planning, with a total effect of 0.526 (95% CI [0.393, 0.658], p = 0.000). Similarly, personal participation also has a significant indirect effect on career planning through self-efficacy, with the mediating effect accounting for 5.338% of the total effect. Specifically, personal participation has a significant positive impact on self-efficacy, and self-efficacy also has a significant positive impact on career planning. In addition, personal participation has a significant direct positive impact on career planning, with a total effect of 0.470 (95% CI [0.292, 0.648], p = 0.000). Social support and personal participation significantly promote career planning in medical students of obstetrics and gynecology by enhancing self-efficacy. Therefore, enhancing social support and personal participation may play an important role in improving the career planning capabilities of medical students.

Discussion

The findings of this study align closely with the study's objectives and contribute valuable insights to the broader context of medical education research. Our results highlight the significant roles of self-efficacy, social support, and personal

Table 6 Test of Mediating Effect

Item		Significance	Effect Value	95% CI		Standard Error	*z /t value*	*p* value	Conclusion
				Lower	Upper				
SS ≤ SE ≤ CP	a*b	Indirect effect	0.041	0.001	0.067	0.017	2.427	0.015	Partial mediation
SS ≤ SE	a	X≤M	1.829	1.103	2.555	0.370	4.936	0.000	(7.746%)
SE ≤ CP	b	M≤Y	0.022	0.001	0.043	0.011	2.069	0.039	
SS ≤ CP	c'	Direct effect	0.485	0.348	0.622	0.070	6.928	0.000	
SS ≤ CP	c	Total effect	0.526	0.393	0.658	0.068	7.780	0.000	
PP ≤ SE ≤ CP	a*b	Indirect effect	0.025	−0.000	0.038	0.010	2.505	0.012	Partial mediation
PP ≤ SE	a	X≤M	1.127	0.152	2.102	0.498	2.265	0.024	(5.338%)
SE ≤ CP	b	M≤Y	0.022	0.001	0.043	0.011	2.069	0.039	
PP ≤ CP	c'	Direct effect	0.445	0.267	0.624	0.091	4.888	0.000	
PP ≤ CP	c	Total effect	0.470	0.292	0.648	0.091	5.180	0.000	

Notes: Adjust age, gender, duration of residence, academic stage, and the highest degree attained by parents. The letters of a, b, c′, and c represent different path coefficients.

Abbreviations: SS, Social support; SE, Self-efficacy; CP, Career planning; PP, Personal participation.

participation in the career planning of medical students specializing in obstetrics and gynecology. These findings are consistent with the broader literature on career development in medical education, emphasizing the importance of these factors in fostering effective career planning and professional growth.[17,18] Our study's findings are in line with previous research that has identified self-efficacy as a critical predictor of career choices and professional development among medical students.[1,2,4]

Students with higher self-efficacy exhibit greater initiative and resilience in their career planning processes, ultimately promoting career growth. This aligns with the social cognitive career theory, which posits that self-efficacy beliefs influence career-related behaviors and outcomes.[19,20] Social support, another key factor identified in our study, has been widely recognized as essential in career development. It helps individuals manage stress, enhance their sense of self-worth, and promote healthy behaviors.[5,6] Our results confirm that social support acts as both a stress buffer and a provider of necessary resources and information, which is crucial for medical students' career planning.[9,10] Personal participation in career-related activities, such as research projects, clinical internships, and professional competitions, was also found to significantly enhance career planning according to social cognitive career theory.[2,10,21] These studies highlight the universal importance of these factors across different medical specialties and educational stages. Medical

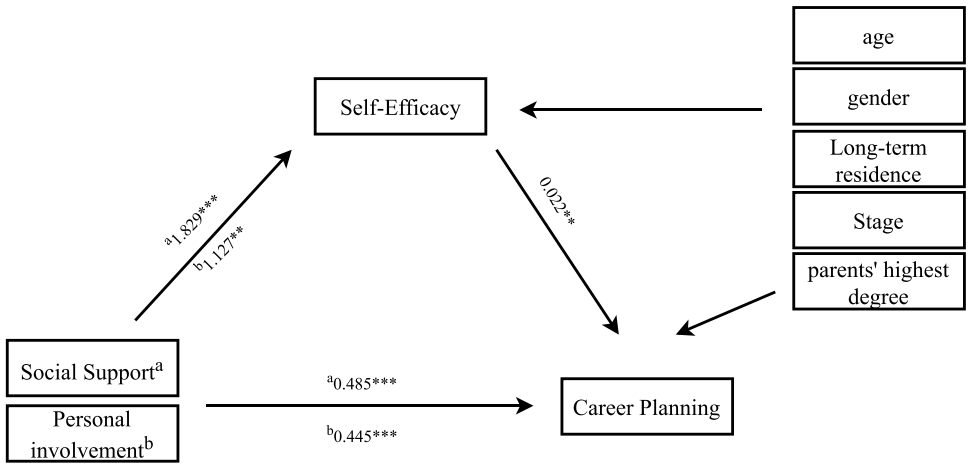

Figure 1 The mediation role of self-efficacy in the impact of personal engagement and social support on career planning.The notation *** indicates statistical significance at the rigorous 0.01 level, whereas ** denotes significance at the conventional 0.05 threshold. In this figure, 'a' represents the analytical path that stems from social support, and 'b' signifies the route that initiates with individual engagement. Variables such as age, gender, duration of residence, academic stage, and the highest degree attained by parents are controlled for in the analysis.

schools and training programs should focus on enhancing social support and encouraging personal participation among students. This can be achieved through mentorship programs, career counseling, and opportunities for involvement in research and clinical projects. By implementing these strategies, educational institutions can better prepare students for their future careers in obstetrics and gynecology.

Gender differences play a crucial role, with female students often outperforming male students academically and clinically.[22–25] However, male students report more negative experiences and less interest in the field, possibly due to gender stereotypes and patient refusal. To address these issues, mentorship programs, bias training, patient education, and curriculum design focusing on gender sensitivity are recommended. These strategies can create a more inclusive environment, improving the educational experience and career development for all students. Future research should explore these factors in diverse contexts to enhance our understanding of career development in medical education.

The mediation effect analysis conducted in this study highlights the significant role of self-efficacy in mediating the relationship between social support and personal involvement and its impact on the career planning of obstetrics and gynecology medical students. This finding aligns with the fundamental principles of social cognitive career theory, which suggests that an individual's self-efficacy serves as a crucial link connecting external environmental factors and career-related behaviors.[26,27] Specifically, the presence of social support and personal involvement positively influences the self-efficacy of medical students, ultimately leading to favourable attitudes and proactive actions in relation to career planning.

The results of the mediation effect analysis demonstrate that personal involvement and social support have a positive impact on career planning scores by enhancing self-efficacy. The mediation effect proportions for personal involvement and social support are 9.603% and 5.385%, respectively. This suggests that by improving their self-efficacy, medical students can effectively utilize the resources and opportunities provided by personal involvement and social support for their career planning.[28,29] To ensure the robustness of the mediation effect, future studies should employ various methods, such as latent variable path analysis or structural equation modelling (SEM), to examine the mediating role of self-efficacy. Furthermore, considering that self-efficacy can be influenced by various individual and environmental factors, future research could explore other potential mediating variables, such as career interests, career values, or career decision-making difficulties, and investigate how they interact with self-efficacy to jointly affect career planning.[30] Additionally, the mediation effect analysis conducted in this study suggested that medical educators and career counselors should employ a comprehensive range of strategies when designing career development interventions. These strategies may include strengthening social support networks, providing practical and participatory opportunities, and conducting self-efficacy enhancement training to enhance the career planning capabilities of medical students.[31,32]

This study has several limitations that need to be addressed in future research. First, the cross-sectional design of this study restricts the ability to establish causal relationships. To overcome this limitation, future studies should adopt a longitudinal design to track changes in self-efficacy, social support, and personal involvement over time and to assess their long-term impact on career planning. Second, this study did not implement any specific intervention measures to improve self-efficacy or career planning. Therefore, the effectiveness of different intervention strategies cannot be assessed. Future research should consider designing and evaluating targeted intervention measures to promote the career development of medical students. Furthermore, the sample used in this study mainly consisted of medical students from China, which may limit the general ability of the findings to obstetrics and gynecology medical students globally. Future studies should consider cultural differences and geographical diversity to enhance the universality and applicability of the research findings.

Conclusion

In conclusion, this study highlights the crucial role of self-efficacy in the career planning of medical students and emphasizes the importance of social support and personal involvement in enhancing self-efficacy. Medical education strategies should take into account gender differences, career development experiences, and the influence of family and social environments to foster the overall career development of obstetrics and gynecology medical students. Future research should continue to explore these factors in different contexts and populations to further enhance our understanding of career development in medical education.

Disclosure

The authors report no conflicts of interest in this work.

References

1. Lent RW, Brown SD, Hackett G. Social cognitive career theory. In: Hartung PJ, Savickas ML, Walsh WB, editors. *APA Handbook of Career Intervention*. Vol. 1. American Psychological Association; 2016:95–114.
2. Brown SD, Lent RW. Social cognitive career theory. In: Brown SD, Lent RW, editors. *Career Development and Counselling: Putting Theory and Research to Work*. Wiley; 2019:147–183.
3. Richardson M, Abraham C, Bond R. Psychological correlates of university students' academic performance: a systematic review and meta-analysis. *Psychol Bull*. 2012;138(2):353–387. doi:10.1037/a0026838
4. Klassen RM, Klassen JRL. Self-efficacy beliefs of medical students: a critical review. *Perspectives Med Edu*. 2018;7(2):76–82. doi:10.1007/S40037-018-0411-3
5. Li W, Wang J, Shi J. Parental expectations and student career development: a cross-cultural study. *J Career Dev*. 2023;40(4):347–363.
6. Zheng Z, Liu W, Wang Y. The association between teacher competence and college students' academic achievement: the mediating role of college students. *Mental Health Asia-Pacific EdU Res*. 2024. doi:10.1007/s40299-024-00861-2
7. Zhou N, Meng H, Cao H, Liang YT-M-O-A-G-T. The curvilinear associations among Chinese adolescents' perceived parental career expectation, internalizing problems, and career development: a three-wave longitudinal study. *J Couns Psychol*. 2023;70(5):605–618. doi:10.1037/cou0000687
8. Akkermans J, Tims M. Career competencies and the role of career education and social support in career development. *J Vocational Behav*. 2017;103:86–98.
9. Smith LC, Stovall TS, Thompson M. Gender bias in medicine: why we need to address it. *AMA J Ethics*. 2018;20(7):E674–E685.
10. Jones MD, Latif DA, Duffy A. The impact of research exposure on medical student career choice and research productivity. *J Surg Educ*. 2020;77(6):1320–1325.
11. Dyrbye L, Shanafelt T. A narrative review on burnout experienced by medical students and residents. *Med Educ*. 2016;50(1):132–149. doi:10.1111/medu.12927
12. Craig LB, Buery-Joyner SD, Bliss S, Everett EN, Forstein DA. To the point: gender differences in the obstetrics and gynecology clerkship. *Am J Clin Exp Obstet Gynecol*. 2018;219(5):430–435. doi:10.1016/j.ajog.2018.05.020
13. Zhu L, Lei L, Lang J. Gender differences in workplace violence against physicians of obstetrics and gynecology in China: a questionnaire in the national congress. *PLoS One*. 2018;13(12):e0208693. doi:10.1371/journal.pone.0208693
14. Liang YS. *A Study on Achievement Goals, Attribution Styles, and Academic Self-Efficacy Among College Students* [Master's thesis], Central China Normal University, Wuhan, China; 2000.
15. Pintrich PR, Groot E. Motivational and Self-regulated learning components of classroom academic performance[J]. *J Educ Psychol*. 1990;82(1):33–40. doi:10.1037/0022-0663.82.1.33
16. Green D, Agarwal G, Lichtstein DM, Knickerbocker CB, Maguire M, Shaya GE. Characteristics of academic medicine change agents as revealed by 4th-year medical students' reflections-on-practice. *Med Sci Educator*. 2022;32(1):91–102. doi:10.1007/s40670-021-01498-2
17. Cook DA, Erdal K, Brutus S. Medical education research: a guide to methods, measures, and metrics. *Medical Teacher*. 2019;41:497–504. doi:10.1080/0142159X.2018.1552784
18. Wu H, Li S, Zheng J, Guo J. Medical students' motivation and academic performance: the mediating roles of self-efficacy and learning engagement. *Med Educ Online*. 2020;25(1):1742964. doi:10.1080/10872981.2020.1742964
19. Bandura A. *Self-Efficacy: The Exercise of Control*. New York: Freeman; 1997.
20. Heinen I, Bullinger M, Kocalevent RD. Perceived stress in first year medical students - associations with personal resources and emotional distress. *BMC Med Educ*. 17(1):4. doi:10.1186/s12909-016-0841-8. 2017
21. Evans TM, Bira L, Gastelum TD, Weiss LB, Vanderford NL. Influence of executive functions and achievement goals on medical student career choice and specialty selection. *Acad Med*. 2019;94(5):721–727.
22. Chang JC, Odrobina MR, McIntyre-Seltman K. The effect of student gender on the obstetrics and gynecology clerkship experience. *J Women's Health*. 2010;19(1):87–92. doi:10.1089/jwh.2009.1357
23. Zahid AZM, Ismail Z, Abdullah B, Daud S. Gender bias in training of medical students in obstetrics and gynaecology: a myth or reality? *Eur J Obstet Gynecol Reprod Biol*. 2014;186:17–21. doi:10.1016/j.ejogrb.2014.12.018
24. Bibbo C, Bustamante A, Wang L, Friedman F, Chen KT. Toward a better understanding of gender-based performance in the obstetrics and gynecology clerkship: women outscore men on the NBME subject examination at one medical school. *Acad med*. 2015;90(3):379–383. doi:10.1097/ACM.0000000000000612
25. Craig LB, Smith C, Crow SM, Driver W, Wallace M. *Obstetrics and Gynecology Clerkship for Males and Females: Similar Curriculum, Different Outcomes?* Medical education online; 2013:18.
26. Phan LT, Leksansern A. An application of career decision self-efficacy scale - short form among Vietnamese medical students. *J Educ Health Promot*. 2021;10:415. doi:10.4103/jehp.jehp_307_21
27. McCarthy EM, Feinn R, Thomas LA. Self-efficacy and confidence of medical students with prior scribing experience: a mixed methods study. *Med edu online*. 2022;27(1):2033421. doi:10.1080/10872981.2022.2033421
28. Shipper ES, Miller SE, Hasty BN, Merrell SB, Lin DT, Lau JN. Evaluation of a technical and nontechnical skills curriculum for students entering surgery. *J Surg Res*. 2017;219:92–97. doi:10.1016/j.jss.2017.05.105
29. Feakes AM, Palmer EJ, Petrovski KR, Thomsen DA, Hyams JH. Predicting career sector intent and the theory of planned behaviour: survey findings from Australian veterinary science students. *BMC Vet Res*. 2019;15(1). doi:10.1186/s12917-018-1725-4
30. Zhou N. Perceived parental career expectation and adolescent career development: the mediating role of adolescent career-planning and goal-setting self-efficacy and the moderating role of perceived parent-adolescent career congruence. *J Couns Psychol*. 2024;2024:1. doi:10.1037/cou0000736
31. Xin L, Feng S, Guo S-G, Qin M-B, Liu X-N. Development of an intensive simulating training program in emergency medicine for medical students in China. *World J Emerg Med*. 2022;13(1):24.
32. Fernández A, Chen V, Quan J, Martinez A, Flowers L, Aronson L. Evaluation of a medical student research and career development program to increase diversity in academic medicine. *Acad med*. 2019;94(8):1220–1228. doi:10.1097/ACM.0000000000002760