

ORIGINAL ARTICLE

Gender and other factors influencing the specialty choice among postgraduate medical students in Bangladesh, 2016–2020

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ABSTRACT

Background: Over the last two decades, there has been a gender shift in undergraduate medical education in Bangladesh with different influencing factors in specialty choice as a career. We aimed to determine the gender and other influencing factors in specialty choice among post-graduate medical students of Bangladesh.

Methods: This cross-sectional study was carried out at Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka. Secondary data regarding students' enrollment from 2016 to 2020 were acquired from the registry of the Information Technology Cell of BSMMU. Face-to-face interviews were conducted with 118 postgraduate medical students to learn about the motivation behind their specialty selections.

Results: From 2016 to 2020, 9,112 postgraduate medical students were enrolled in 73 post-graduate medical programmes across the five faculties (Surgery, Medicine, Basic Science and Para Clinical Science, Pediatrics, and Preventive and Social Medicine) of BSMMU. There was a gradual increase in female students from 41.6% in 2016 to 49.3% in 2020. Male dominance was found in the faculties of Surgery (61.2%) and Medicine (69.7%), whereas the faculties of Basic Science and Paraclinical Science (74.6%), Pediatrics (53.7%), and Preventive and Social Medicine (66.9%) were dominated by female students. Significant differences in the sex distribution among postgraduate medical students were observed in the faculties of Surgery and Pediatrics. The most frequently mentioned influencing factors for medical students' choice of specialization were 'personal interest' (86.3%), followed by 'future career potential' (74.6%) and 'demand for the specialty' (73.7%). Significant gender variations in these influencing factors existed.

Conclusion: Over the years, the percentage of female postgraduate medical students has increased in all five faculties of BSMMU. Gender differences in specialty choice can assist policymakers in making equitable distributions of the healthcare workforce.

Keywords: Postgraduate medical student, faculty, gender, specialty choice, influencing factors

INTRODUCTION

Over the past four decades, a gradual global shift in gender dynamics has been observed in medical education, with the medical profession transitioning from male-dominated to female-leading.¹⁻⁶ This paradigm shift in the medical field is commonly referred to as the feminization of Medicine. Bangladesh has also experienced this trend, with a growing number of females enrolling in medical education over the last two decades.⁶ From 2006 to 2016, a higher percentage of females, compared to males, were admitted to public and private medical colleges in Bangladesh (40.0% and 58.0% in 2006 and 64.0% and 71.0% in 2016). As of

2020, the percentage of registered physicians was 48.0% male and 52.0% female.⁶

Although both male and female students enroll in medical colleges with similar positive motivational factors such as the instinct to help people, social respect, work independence, and fulfilling childhood dreams⁶, many female physicians drop out of work and become inactive in their careers after graduation.^{6,7} Females are often pressured to prioritize their duties towards their families over their careers.⁸

Bangabandhu Sheikh Mujib Medical University (BSMMU) is the only medical university in Bangladesh that produces specialized physicians. To be enrolled in

HIGHLIGHTS

1. The analysis aims to contribute towards the development of a need-based and gender-balanced healthcare workforce.
2. Over the years, the proportion of female postgraduate medical students has increased in all five faculties of BSMMU.
3. Personal interest, future career opportunity, and demand for the specialty were main driving forces for the choice of specialty.

BSMMU, students must successfully pass a competitive entrance examination after graduation. However, choosing a specialty poses a complex decision for medical graduates. It has been observed that physicians exhibit a gender preference in their specialty choices.^{6,9-11} For instance, males have always outweighed surgery, while female physicians prefer obstetrics and gynecology as their career path.⁶ Moreover, disciplines such as Basic Science and Para-clinical Science, Preventive and Social Medicine, and research are among the least favored choices for medical graduates.^{6,11,12} The increasing number of female physicians opting for specific career paths leads to a workforce imbalance in service provision.

Future career opportunities, future income, the demand for a specific specialty, its prestige, workload, the influence of role models, work-life balance, and societal gender norms are all factors that can shape career preferences.^{13,14} Gender disparity exists in learning, wages, promotion, and societal acceptance, and it often leads to a higher female preference for specialization in one-centric fields rather than diverse ones.⁸

It is crucial to have a need-based and gender-balanced healthcare workforce to achieve healthy lives and promote well-being for all at all ages.¹⁵ Achieving gender equality and empowering women and girls, it is important to encourage female physicians to choose diverse specialties, maintain decision-making autonomy, and assume leadership roles across all sectors of the healthcare system. However, no published data is available on the proportion and distribution of male and female postgraduate medical students in Bangladesh. Therefore, we conducted this study to explore the gender and other factors influencing specialty choices among postgraduate medical students in Bangladesh.

METHODS**Study design and population**

This cross-sectional study was conducted at Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka. Data from the Information and Technology Cell of BSMMU from 2016 to 2020 were used to track the trend in postgraduate medical students' (PGMS) choice of specialty. A checklist was used to gather data about each student's sex, field of study, faculty name, and year of admission from 9,112 such records.

A total of 118 PGMS from 37 different disciplines under five faculties—Surgery, Medicine, Basic Science and Para-Clinical Science (BSPC), Pediatrics, and Preventive and Social Medicine (PSM)—were selected for the study. Face-to-face interviews were conducted using a pretested questionnaire from November 2021 to January 2022.

TABLE 1 Trend in enrollment of male and female postgraduate medical students in BSMMU according to the specialty, 2016 – 2020.

Faculty	Sex	Total (n=9,112)	2016 (n=1715)	2017 (n=1998)	2018 (n=1954)	2019 (n=1877)	2020 (n=1667)	P (χ^2)
Medicine	Female	30.3	25.3	32.9	29.4	33.0	30.5	0.10
	Male	69.7	74.7	67.1	71.7	69.3	71.6	
Surgery	Female	38.8	32.6	37.7	37.4	42.9	43.3	0.001
	Male	61.2	67.4	62.3	62.6	57.1	56.7	
Basic Science and Para Clinical Science	Female	74.6	73.7	76.3	72.7	76.8	73.3	0.68
	Male	25.4	26.3	23.7	27.3	23.2	26.7	
Pediatrics	Female	53.7	48.8	63.0	50.0	56.7	48.2	0.02
	Male	46.3	51.2	37.0	50.0	43.3	51.8	
Preventive and Social Medicine	Female	66.9	59.3	65.7	66.2	66.4	75.0	0.12
	Male	33.1	40.7	34.3	33.8	33.6	25.0	
Total	Female	53.7	41.6	47.5	44.4	48.9	49.3	
	Male	46.3	58.4	52.5	55.6	51.1	50.7	

Results are expressed in percentage of total admission in the respective faculties.

The questionnaire

A semi-structured questionnaire was prepared, including participants' sex, age, marital status, job status before enrollment, the name of the specialty and faculty they are enrolled in, as well as various influencing factors and barriers to their choice of specialty. The questionnaire was prepared through a literature review^{4, 13, 16, 17} and consultative meetings, and finalized after a pretesting.

Data analysis

The collected data were analyzed using the Statistical Package for Social Sciences (SPSS-22), and the results were presented as frequency distributions. The chi-square test was used to analyze the association between the dependent and independent variables, with a statistical significance level set at a $P < 0.05$.

RESULTS

The trend in specialty choice

A total of 9,112 PGMS enrolled in 73 disciplines under five faculties of BSMMU, where 53.7% were male and 46.3% were female. There was a gradual increase in the percentage of female student enrollment from 41.6% in 2016 to 49.3% in 2020.

The total PGMS enrollments in the faculties of Surgery, Medicine, BPCS, Pediatrics, and PSM were 43.1%, 23.3%, 17.0%, 9.1%, and 7.5%, respectively. Female enrollment in the faculties of Medicine and Surgery gradually increased throughout these five years, from 25.3% to 30.5% and 32.6% to 43.3%, respectively. The Faculty of BPCS consistently had a female representation above 70%. However, the number of male and female students enrolling in the Faculty of Pediatrics fairly over the years. The proportion of female students in the Faculty of PSM increased from 59.3% to 75.0% (TABLE 1).

BSMMU provides two different programmes: a residency programme consisting of Doctor of Medicine (MD), Master of Surgery (MS), and Master of Philosophy (M.Phil), and a non-residency programme consisting of Diploma, Master of Medical Education (MMed), and the Master of Public Health (MPH) programme under the five faculties. Over the years,

there has been a gradual increase in the number of female students in the MD, MS, Diploma, M.Phil, and MPH programmes, from 40.6% to 45.1%, 31.1% to 42.0%, 34.9% to 43.5%, 76.6% to 78%, and 58.7% to 74.3%, respectively (TABLE 2). Additionally, there has been a gradual increase in the number of male students in the MMed programme, from 54.5% to 66.7%. Statistically significant gender differences were observed in student enrollment in MD, MS, and Diploma programmes.

TABLE 2 Trend in enrollment of male and female postgraduate medical students of BSMMU according to the programmes, 2016 – 2020 (n=9,112)

Program	Sex	Year of admission					P*
		2016	2017	2018	2019	2020	
MD	Female	40.6	48.7	41.4	45.4	45.1	0.03
	Male	59.4	51.3	58.6	54.6	54.9	
MS	Female	31.1	37.3	34.3	42.0	42.0	0.01
	Male	68.9	62.7	65.7	58.0	58.0	
Diploma	Female	34.9	40.8	42.1	44.6	43.5	0.01
	Male	65.1	59.2	57.9	55.4	56.5	
MPhil	Female	76.6	77.8	71.2	78.6	78.0	0.51
	Male	23.4	22.2	28.8	21.4	22.0	
MMed	Female	45.5	33.3	25.0	45.5	33.1	0.87
	Male	54.5	66.7	75.0	54.5	66.7	
MPH	Female	58.7	66.1	67.1	69.2	74.3	0.14
	Male	41.3	33.9	32.9	30.8	24.7	

Results are given in percent

MD indicates Doctor of Medicine; MS, Master of Surgery; MPhil, Master of Philosophy; MMed, Master of Medical Education; and MPH, Master of Public Health.

There are 23 disciplines under the Faculty of Surgery. Most of the disciplines are predominated by male students, and in a few disciplines, the majority of the students were female. For instance, 98.2%, 68.1%, 89.7%, 60.3%, 54.7%, and 95.5% female students' enrollment in Obstetrics and Gynecology, Radiology and Imaging, Reproductive Endocrinology and Infertility, Community Ophthalmology, Ophthalmology, and Feto-maternal Medicine, respectively (TABLE 3).

There are 22 disciplines in the Faculty of Medicine where most of the enrolled students were male. However, there was female dominance in Nuclear Medicine (76.2%), Transfusion Medicine (62.2%), Blood Serology and Transfusion (68.8%), and Child and Adolescent Psychiatry (70.4%). There were 11 disciplines in the Faculty of BPCS, where most of the students were female in all disciplines except for Medical Education (38.3%). There are eight disciplines

TABLE 3 Proportion of female postgraduate medical students enrollment in BSMMU according to the discipline, 2016 – 2020 (n=9,112)

Discipline	Percent ^a
Faculty of Medicine (n =2,123)	
Cardiology	15.0
Internal Medicine	22.0
Nephrology	28.0
Neurology	18.6
Pulmonology	20.2
Gastroenterology	13.3
Blood Serology and Transfusion	68.8
Oncology	35.6
Physical Medicine and Rehabilitation	30.2
Psychiatry	28.4
Nuclear Medicine	76.2
Transfusion Medicine	62.2
Hepatology	5.7
Rheumatology	25.6
Palliative Medicine	69.1
Child and Adolescent Psychiatry	70.4
Tuberculosis and Cheat Disease	6.7
Faculty of Surgery (n=3,931)	
Anesthesiology	31.2
Obstetrics and Gynecology	98.2
Orthopedic Surgery	1.3
Otolaryngology	5.7
General Surgery	30.7
Pediatric Surgery	31.0
Urology	6.9
Radiology and Imaging	68.1
Cardiovascular and Thoracic Surgery	14.4
Neurosurgery	4.0
Critical care medicine	34.6
Community Ophthalmology	60.3
Plastic Surgery	62.7
Colorectal	28.0
Hepatobiliary Surgery	6.1
Thoracic Surgery	13.6
Gynecological Oncology	95.5
Fetometarnal Medicine	95.8
Surgical Oncology	35.7
Reproductive Endocrinology and Infertility	89.7
Vascular Surgery	0.0
Faculty of Basic Science and Para Clinical Science (n=1,549)	
Anatomy	76.9
Physiology	80.1
Microbiology and Immunology	78.1
Biochemistry	81.5
Pathology	75.4
Laboratory Medicine	74.2
Medical Education	38.3
Clinical Pathology	81.0
Virology	64.5
Faculty of Preventive and Social Medicine (n=682)	
Community Medicine	71.4
Reproductive and Child Health	84.0
Epidemiology	62.0
Health Promotion and Health Education	64.5
Occupational and Environmental Health	60.7
Health Service Management and Policy	48.1
Medical Education	38.3
Faculty of Pediatrics (n=827)	
Pediatric Hematology and Oncology	75.0
Pediatric Gastroenterology	71.4

^a of the respective specialty

in the faculty of Pediatrics, and female student leads in all the disciplines. There are nine MPH programmes under the Faculty of PSM where females lead in all disciplines except Health Service Management and Policy (48.1%) (TABLE 3).

The results of interview of 118 PGMS are given in TABLE 4. Their distribution across faculties was proportionate to the total enrollments: 37.3% were from the Faculty of Surgery, 33.9% were from the Faculty of Medicine. More than seven in 10 (73.0%) of them graduated from government medical colleges. Half of them was female. Most participants fell within the age range of 25 to 36 years (87.3%), and 59.3% were married.

TABLE 4 Demographic characteristics of post-graduate medical student interviewed for specialty choice (n=118)

Characteristics	Percent
Sex	
Male	50.0
Female	50.0
Age	
25- 36 years	87.3
36-46 years	12.7
Faculty	
Surgery	37.3
Medicine	33.9
BPCS	11.9
Pediatrics	11.0
PSM	5.9
Undergraduate medical college	
Government	73.0
Private	27.0
Marital status before enrollment	
Married	59.3
Unmarried	39.8

*Results are given in percent. BPCS indicates Basic Science and Para Clinical Science; PSM, Preventive and Social Medicine.

Influencing factors in specialty choice

When choosing a specialty, students' primary considerations were personal interest (86.3%), future career opportunity (74.6%), and the demand for that particular specialty (73.7%). Additional factors taken into account included the potential for higher income in the future (59.3%) and the prestige associated with the specialty (59.3%). Female participants exhibited higher percentages in factors such as gender, avoiding night duties, seeking less competition in the entrance exam, and a desire to avoid direct patient contact (TABLE 5).

TABLE 5 Influencing factors in specialty choice among male and female postgraduate medical student of BSMMU by sex (n=118)

Factors	Total (n=118) %	Male (n=59) %	Female (n=59) %	P (χ^2)
Personal interest	86.3	88.1	84.7	0.59
Future career opportunity	74.6	79.7	69.5	0.20
Demand for the specialty	73.7	79.7	67.8	0.14
Future income opportunity	59.3	66.1	52.5	0.13
Prestige of the specialty	59.3	64.4	54.2	0.26
Flexible working hours	58.5	44.1	61.0	0.07
Work-family balance	58.5	55.9	61.0	0.50
Career advancement in the specialty	50.0	44.1	55.9	0.20
Avoid emergency duties	44.1	35.6	52.5	0.06
Gender preference	40.7	25.4	55.9	0.001
Avoid night duties	39.0	28.8	49.2	0.02
Less competition in the entrance exam	30.5	18.6	42.4	0.005
Avoid dealing with patient	19.5	11.9	27.1	0.03
Religion	5.9	5.1	6.8	0.57

Barriers to pursuing a desired specialty

Out of the 118 respondents, 59 indicated that they switched their initial choice of specialty and pursued a different one. The majority of participants identified the primary obstacles to pursue their desired specialty as the 'extreme competitive entrance exam' (n=19) and the 'heavy workload' (n=10). In the case of female; challenges included the lack of family support (n=5), gender roles (n=4), and inflexible working hours (n=4).

DISCUSSION

Enrollment in BSMMU by 2020 has achieved a gender balance. However, disparities between specialties are prevalent between male and female postgraduate students. The choice of specialty has been dominatal by personal preferences in Bangladesh.

The health workforce is the core component of the health care system. An adequate, effective, and efficient health workforce is crucial in achieving universal health coverage (UHC) and SDG-3.¹⁵ However, a shortage of skilled resources, maldistribution in specialization, imbalanced gender distribution, unsatisfactory working conditions, imbalance in geographical retention, and

limited access of data regarding the health workforce are the challenges in achieving SDG-3. Health strategy addresses ending the challenges health human resource planning team, in collaboration with policymakers, must emphasize a need-based, skilled balanced, and gender-balanced workforce.¹⁵ On that concern, the Ministry of Health and family welfare of Bangladesh adopted a health workforce strategy addressing capacity development and production, identifying the shortage, and determining the needs of the health workforce.¹⁸

Our study focused on identifying the production, distribution, and gender balance of the future skilled health workforce. Our study revealed that the percentage of female students has grown in residency and non-residency courses over the years. Still, most students are male in the Faculties of Surgery and Medicine. The ratio of female students in the Faculty of Surgery would be much less if the maternal specialties (Obstetrics and Gynecology, Gynecological Oncology and related subjects) were separated from the faculty. A similar pattern of specialty preference was observed in a study where male dominance in Surgery and female dominance in Gynecology and Obstetrics.¹⁹ Females seem less enthusiastic about choosing Surgery as their career due to heavy workload and the desire to have a balanced family life. Gender bias and burnout in surgical units are the major issues for female physicians to be consistent and retain in their surgical careers.²⁰ Our study trend showed that in the last five years, a small proportion of female student enrolled in male-dominated specialties such as neurology surgery, orthopedics, otolaryngology, urology, indicating that self-motivation and career counseling in specialty choice can influence female PGMS in diverse specialty choices. If effective mentorship, improved post-graduate opportunities, and reduced workload are ensured, females will be encouraged to build careers in male-dominated specialties.⁹

Our research identified a gender disparity in the representation of PGMS within the BPCS and PSM faculties, with females being more prominent in these areas. A similar trend was observed in a separate study examining career preferences among Bangladeshi

female medical students, where a significant interest in pursuing a career in basic science medical education was found.¹⁴ In a study conducted by Hannan Mone et al. (2019), it was revealed that some female physicians opt for basic medical subjects to steer clear of clinical chaos and ensure a secure working environment.⁸ In contrast, our study emphasizes that "avoiding night duties" and "avoiding patient interaction" are significant factors influencing female students' career choices.

Over these years at BSMMU, there was an unequal number and gender imbalance of PGMS across the disciplines. However, there is no national document to compare the population's needs with the production of each specialization. The health human resource (HHR) planning team of Bangladesh must be concerned that the deficit and imbalance of the health workforce are the obstacles to achieving UHC.¹⁵

The study revealed that 52.1% of students enrolled as private candidates, indicating that after completing their post-graduate studies, they will either seek employment in private institutes or face unemployment. A study conducted in Mexico revealed that the unemployment rate and wastage of labor are higher among female physicians.⁷ HHR should concentrate on the proper utilization of the resources within the system. Our study revealed that in the last five years, the majority of PGMS were graduates from government medical colleges. However, the enrollment of undergraduate students is higher in private medical colleges than in public medical colleges.⁶

In our investigation of the factors influencing specialty choice, we identified students' interest as the most frequently mentioned factor, as was reported from Iran¹³ and Bangladesh¹⁴. While specialty choice is a personal decision and individuals should prioritize their own preferences, it is important to consider the potential impact of personal choices on the labor market. An approach that solely focuses on producing human resources based on individual preferences may result in imbalances, with certain specialties becoming oversaturated while others remain undersaturated. Early career counseling in medical education could

motivate students to consider a diverse range of specialty choices.⁹

This study found multiple factors influencing specialty selection, with gender differences in motivational factors. Among men, career-related factors such as future opportunities and income had a stronger influence. However, women were more concerned about personal factors like working hours and work-family balance. Female participants showed a greater influence of professional factors such as avoiding emergency duties, night duties, and patient interactions. Similar patterns were observed in other studies.^{13, 21} Over half of the female students considered their "gender" as an important factor in career choice. On the other hand, the society tends to perceive male physicians as more intelligent and accomplished in certain specialties.⁶ Workplace security, promotions, wages, familial pressure, and societal acceptance are all linked to gender in the medical profession.²

Ultimately, it is possible to establish a need-based skilled health workforce by allocating postgraduate seats based on the requirements of the healthcare system. The medical colleges should provide career counseling during undergraduate medical education, taking into account the career development, and requirements in the healthcare system. To achieve a gender-balanced health sector, efforts should be made to minimize gender preferences in specialty choices. This can be achieved by ensuring flexible working hours, providing childcare facilities, ensuring workplace safety, and promoting improved status for women in the family and society.

Conclusion

The proportion of female postgraduate medical students has been increasing in all five faculties of BSMMU. By 2020, an overall gender balance has been achieved. Personal interest in the specialty, future career opportunity, and demand for the specialty dominate the specialty choice of the doctors. Moreover, a substantial gender preference persists to influence their choices. The gender-based choices could probably be minimized with relevant interventions.

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Author Contributions

Conception and design: EBA, FH, BKD. Acquisition, analysis, and interpretation of data: EBA, MAH, BKD. Manuscript drafting and revising it critically: EBA, MAH, MIIT, BKD. Approval of the final version of the manuscript: EBA, MAH, MIIT, MMHK, MS, FH, KF, BKD. Guarantor accuracy and integrity of the work: MAH.

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Conflict of Interest

The authors have no conflict of interest to declare.

Ethical Approval

Ethical approval was obtained from the Institutional Review Board of BSMMU (Ref no. BSMMU/2021/8458).

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