

Original article:

Gender variation in the result of first professional MBBS examination among the students of Gauhati Medical College

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ABSTRACT

A cross sectional study was conducted at Gauhati Medical College. The data of pass students in first MBBS examination were collected. It is correlated with the number of male female students took admission in the corresponding year. From 2011 to 2016, a total of 778 students were admitted, out of these 481 were Boys and 297 were Girls. From the total of 778 students 592 students were declared pass. The pass percentage being 76 percent. Among Boys the pass percentage was 70.9 percent and for Girls the pass percentage was 84.5 percent and for all these data the Z score and p value were also found out. In our study population we found Z score significant ($Z > 3$) in three groups of our population i.e., in 2012- 2013, 2013- 2014 and 2015- 2016. In 2012- 2013, we found the Z score as 4.09, in 2013- 2014 the Z score was 5.95 and in the year 2015- 2016 we found the Z score as 2.30. In all these population the Z score was greater than 3 and the P value was less than 0.01 and all these data were found to be statistically significant. In the year 2011-2012, we calculated the Z value and it was found to be 0.44, and in 2014 -2015 the Z score was 0.90, we found that the value of Z in these two study population were less than 2 and the P value was greater than 0.05 and was found to be statistically insignificant.

Keywords: Male, Female, First professional examination

INTRODUCTION

In the last three decades there has been a large increase in the number of women entering the medical profession. In 2004, 50 percent of the entering class of medical students in the United States and 45 percent of the graduating class were women.¹ There is a common perception that professional education helps in getting good jobs, therefore the trend to go for professional education has surprisingly increased. A host of factors affect the academic performance. These include individual and household characteristics such as motivation from the family and environment provided to student at home, student's ability and the quality of secondary education obtained. Along with other factors, gender of students may also be an important factor in determining student's academic performance. Gender issues are currently a matter of high concern worldwide, especially among academics and policy formulators.² The proportions of female students in medical and other schools is increasing with time, but concerns remain about differing performance in examinations.³

Medical undergraduate education is a long process where students face multiple stressors such as common academic overload, lack of leisure time, emotional pressure to maintain good grades, and specific conditions of learning complex medical procedures while working concurrently with patients^{4,5}. Studies show that female students and residents had higher level of anxiety and depression compared to their male counterparts. Higher anxiety in

female students could be explained by specific psychosocial profiles and warrant further investigation⁶. The fundamental goal of medical education is to produce competent medical practitioners who are equipped with a spectrum of medical knowledge and able to apply them in problem solving, be it at an individual, family or community levels⁷.

AIMS AND OBJECTIVES

The purpose of this study is to find out whether there is gender difference in academic performance among medical students. Such information is useful in improving the learning process.

MATERIALS & METHODS

A cross sectional study was conducted at Gauhati Medical College. After getting institutional ethical clearance, data of pass students in first MBBS examination were collected from the Srimanta Sankardeva University of Health Sciences (SSUHS). It is correlated with the number of male female students took admission in the corresponding year. The study was conducted from 2011 to 2016 and comprised of first year medical students. For evaluating the students' academic performance, male and female students from academic sessions 2011 to 2016 were divided into five groups as 2011- 2012, 2012- 2013, 2013 – 2014, 2014- 2015 and 2015- 2016.

In 2011-2012, a total of 156 students were admitted in the First year MBBS course, out of which 90 were Male and 66 were Female and 121 students passed the exam, 77.56 percent was the pass percentage with females having a pass percentage of 75.7 percent and males having a pass percentage of 78.8 percent.

In 2012- 2013, a total of 156 students were admitted in the first year, 99 were male and 57 were female and a total of 106 students passed the first year MBBS course having a pass percentage of 67.9 percent. Here, females had a higher pass percentage of 85.9 percent than male students having a pass percentage of 57.6 percent. In 2013- 2014, a total of 156 students were admitted with 97 male and 59 female students and 115 students passed the first year MBBS exam with a pass percentage of 73.7 percent and females having a pass percentage of 94.9 percent and males having a pass percentage of 60.8 percent. In 2014- 2015, a total of 154 students were admitted in the first year MBBS course with 93 male and 61 female students, 118 students passed the first year examination with a pass percentage of 76.6 percent with males having a pass percentage of 74.1 percent and females having a pass percentage of 80.3 percent. In 2015- 2016, 156 students took admission in first year MBBS course, with 102 male and 54 female students and 136 students passed the exam with a pass percentage of 87.2 percent with males having a pass percentage of 83.3 percent and females having a pass percentage of 94.4 percent.

OBSERVATIONS & RESULTS

From 2011 to 2016, a total of 778 students were admitted, out of these 481 were Boys and 297 were Girls. From the total of 778 students 592 students were declared pass. The pass percentage being 76 percent. Among Boys the pass percentage was 70.9 percent and for Girls the pass percentage was 84.5 percent and for all these data the Z score and p value were also found out (Table 1).

Deviation from the mean in a normal distribution or curve is called relative or standard normal deviate and is given the symbol Z. When Z- test is applied to the sampling variability, the difference observed between a sample estimate and that of population is expressed in terms of SE. The score of value of the ratio between the observed difference and SE is called 'Z'. If the distance in terms of SE or Z score falls within mean \pm 1.96 SE, i.e., in the zone of

acceptance (95 % confidence limits) the H_0 is accepted. The distance from the mean at which H_0 is rejected is called the level of significance. It falls in the zone of rejection for H_0 , shaded areas under the curves and is denoted by letter P which indicates the probability of relative frequency of occurrence of the difference by chance. Greater the Z value, lesser will be the P.

Z value at the significant level will be significantly different, higher or lower, than the hypothetical or theoretical (population) value ⁸. In our study population we found Z score significant ($Z > 3$) in three groups of our population i.e., in 2012- 2013, 2013- 2014 and 2015- 2016. In 2012- 2013, we found the Z score as 4.09, in 2013- 2014 the Z score was 5.95 and in the year 2015- 2016 we found the Z score as 2.30. In all these population the Z score was greater than 3 and the P value was less than 0.01 and all these data were found to be statistically significant (Table 2).

In the year 2011-2012, we calculated the Z value and it was found to be 0.44, and in 2014 -2015 the Z score was 0.90, so we found that the value of Z in these two study population were less than 2 and the P value was greater than 0.05 and was found to be statistically insignificant (Table 2).

YEAR	ADMISSION		RESULT	
	MALE	FEMALE	MALE	FEMALE
2011	90	66	71	50
2012	99	57	57	49
2013	97	59	59	56
2014	93	61	69	49
2015	102	54	85	51

TABLE 1. Male and Female admission and passed from 2011 to 2015.

YEAR	Z VALUE	P VALUE	SIGNIFICANCE
2011- 2012	$Z < 2$	$p > 0.05$	Insignificant
2012- 2013	$Z > 3$	$P < 0.01$	Significant
2013- 2014	$Z > 3$	$P < 0.01$	Significant
2014- 2015	$Z < 2$	$p > 0.05$	Insignificant
2015- 2016	$Z > 2$	$P < 0.05$	Significant

TABLE 2. Z value and P value from academic session 2011- 2012 to 2015- 2016.

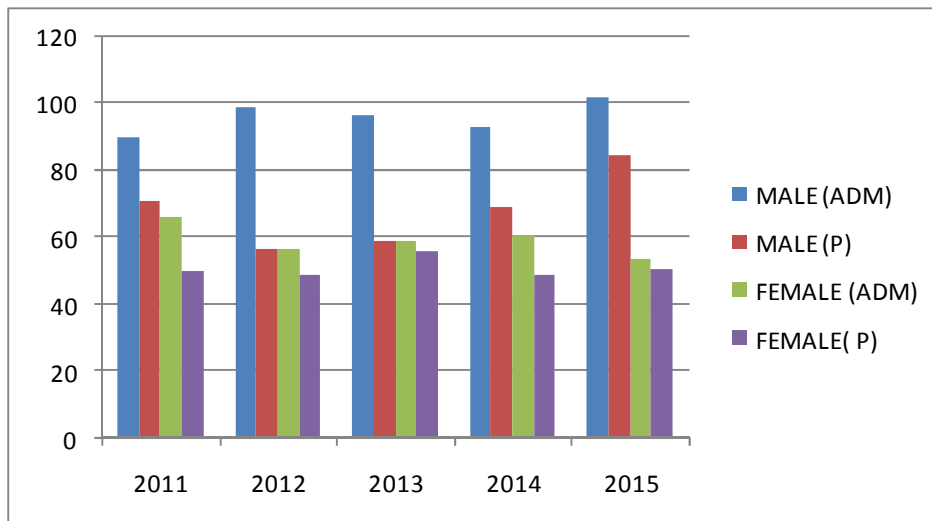


Fig. 1 Number of male and female students admission and passed from 2011 to 2015.

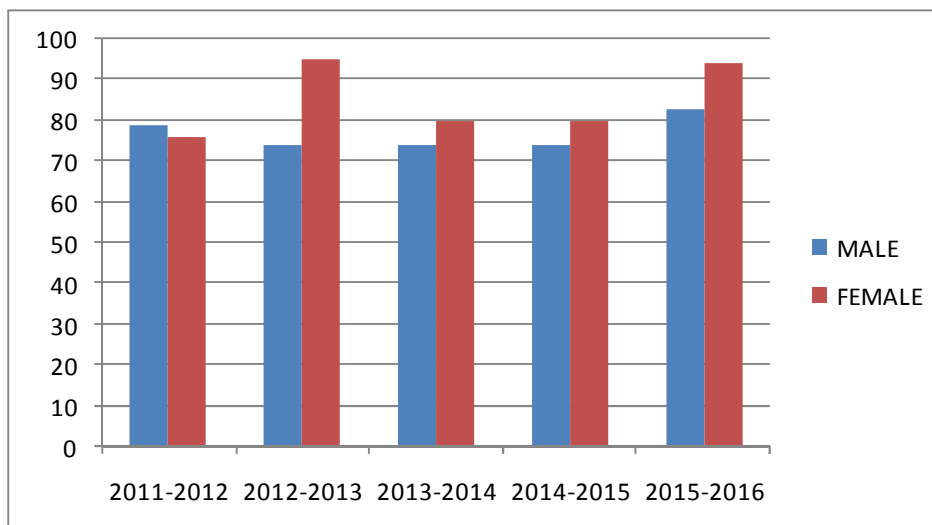


Fig 2. Pass Percentage of male and female students from academic session 2011 to 2016.

DISCUSSION

Education is certainly the supreme instrument and is devised by man for his own progress. Therefore all societies get education in one form or the other but the use in which it is put varies. Over the years, the investigations of the factors that influence academic performance of students have attracted the interest and concern of teachers, researchers and school administrators. Gender is found to be one of the important factors affecting the academic performance and over the last few decades the number of females getting admission in professional schools has risen progressively especially in developing countries⁹.

Prior researches on the differences in classroom performance between male and female students showed mixed results. While no differences existed in some studies, others showed significant differences¹⁰. Results of some studies showed female gender to be better academically while the other suggests the male gender⁹.

One study showed that in overall test assessment female medical students outperformed male students. Although this study suggested an evidence of male dominance in enrolment proportion, but female students were dominant in performance¹¹.

The difference in academic performance might be caused by social and psychological factors. Female students might have problems of adaptation and integration in the new educational environment. Moreover, previous study has shown that female students report more feelings of isolation and discomfort than their male peers¹³. Some gender differences in the self perception of physical health and stress effects of particular academic activities were found. Confirmed sources of academic stress include the exams and elements of assessments from the curricula¹³. Examinations were most frequently perceived as high stressor (in more than half of all observed students), also significantly more in females, and proved as an independent stress factor in multivariate regression analysis particularly in the female student population¹⁴. Female medical students reported higher level of anxiety in multiple-choice examinations¹⁵. Female students manifested more stress effects in communication with the faculty staff and also often stated for contacts with patients to be stressful. Autopsy was considered more than twice as often highly stressful by female students, and appeared to be an independent predictor of stress in the female population. In the recently conducted survey at the School of Medicine in Belgrade, significant interpersonal sensitivity was observed more frequently in female students¹⁶. Our study population consist of first year MBBS students who had taken admission from 2011 to 2016 and consists of a total of 778 students. We then checked their academic performance from their first year MBBS and found that only 596 students cleared their first year MBBS course and out of these 596 students 341 were male and 255 were female students. We divided the data into five groups for evaluating the students' academic performance, male and female students from academic sessions 2011 to 2016 were divided into five groups as 2011- 2012, 2012- 2013, 2013 – 2014, 2014- 2015 and 2015-2016. Then we found out the Z value for all these data and found the value significant for the year 2012- 2013, 2013- 2014 and 2015- 2016.

CONCLUSION

This is one of the studies that reported gender variation in academic performance of both male and female students studying in first year MBBS course in Gauhati Medical College. The result showed that female performed better than male students in the first year MBBS course though their number is less while taking admission in comparison to male students. Further studies is needed to determine the cognition processing changes that leads to the difference in the academic performance in the first year MBBS course though both male and female are equally capable of performing better as they got equal marks in qualifying for MBBS course.

Acknowledgements: Examination branch of Gauhati Medical College & all staff and faculty members of Physiology Dept. of Gauhati Medical College.

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