

Does Mandatory Attendance and Residence Affect Academic and Gender based Performance in 1st Year Undergraduate MBBS Students?

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ABSTRACT

Introduction: Students attendance is an integral part of achieving medical professionalism but might not be the sole contributor in academic performance. The purpose of this study was to investigate the effect of attendance and impact of gender and place of residence on academic performance in Anatomy in two separate institutions.

Material and Methods: The study was a cross-sectional, comparative study with sample size of 397 students, 145 female and 252 male students belonging to four consecutive academic years. The grades and attendance along with the ratio of male and female students, place of residence were recorded systematically from the responses to Questionnaires. The collected data was statistically analysed and $p < .05$ was considered as significant.

Results: The study revealed that students' attitude towards theory classes is less as compared to practicals which was reflected in the attendance, thus directly affecting the academic result. The results revealed that overall percentage of students with attendance $< 75\%$ was 30% in practical and 40% in theory ($n=398$). The failure rate in theory was 52% whereas in practicals it was 36.18%. The female students were found to perform better with only 29.45% ($n=146$) failure, whereas boys had a failure rate was 65.07%. Failure rate in boarders and dayscholars were 50.39% ($n=252$) and 40.4% ($n=144$) respectively.

Conclusion: Medical educators and those involved in formulating policies should find out means to bring about a positive change in medical education, influencing the attendance on academic performance in Anatomy and its correlation with the residential status and gender of the student.

Keywords: Academic performance, attendance, gender, place of residence

INTRODUCTION

Indian medical curriculum is a field which requires great deal of cognitive and psychomotor abilities, positive attitude and ability to manage time management. Students' motivation is a vital determinant of outcome measure which influences academic performance and achievement since highly motivated students attend more classes and succeed academically.¹ A component of motivation is the right to make choices which is decreased with mandatory attendance. This in turn is a predictor of increased academic performance in areas including course attendance, grades and persistence in course of study. In this electronic age, availability of printed materials, electronic resources, internet and other technologies, raise the issue, whether it's mandatory for students to attend lecture classes? It has been observed that, more male medical students have relatively lower academic performance as compared to female medical students, which may be due to regular attendance of female medical students. Women and men learn differently with differing preferred

ways of learning.² According to Yates, medical students with permanent residence in the place of medical school seemed to have a positive influence on academic performance.

The purpose of this study was to evaluate the effect of absenteeism rate on academic performance in First year MBBS students, observe the impact of gender on the academic performance in Medicine and to identify the role of home environment on academic performance of students

MATERIAL AND METHODS

The study was a causal – comparative, multicentric research, conducted during the years from (2011-2012, 2012-2013, 2013-2014, 2014-2015) among First year medical students in Department of Anatomy, of two Medical Institutions.

Study group: Four batches of first year medical students (2011-2012, 2012-2013, 2013-2014, 2014-2015) belonging to two institutions – College of Medicine and JNM Hospital, Kalyani and ESI Post Graduate Institute of Medical Science and Research and ESI Medical College, Joka were enrolled in this study through face to face sessions. Students were informed about the voluntary participation and purpose of the study. They were assured that their responses would be kept confidential and anonymity was maintained throughout the course of the study. Present study was conducted during the free time of the students when there was no examination. It was also explained that any student could withdraw from the course of the study at any time.

Thus a total of 4 batches of first professional MBBS students i.e. 400 students were initially included in the study which eventually came down to 397 as there were 3 drop outs during the first and second semesters due to personal reasons. In College of Medicine and JNM Hospital, Kalyani there were 100 students in 2011, (39 female and 61 male), 97 in 2012 (33 female and 64 male). In ESI Postgraduate Institute of Medical Science and Research, Joka, there were 102 students in 2013 (42 female and 60 male), whereas in 2014 there were 98 students (31 female and 67 male). Total number of students in Kalyani and Joka was 197 (72 females and 125 males) and 200 (73 females and 127 males) respectively.

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Data Collection: Student attendance was calculated from attendance registers for both practical and theory classes in Anatomy in each case. It was calculated by comparing the number of classes the student attended with the number of classes the student was expected to attend. The students were assigned to three groups according to the percentage of attendance - < 50% (poor), 50.1% - 75% (moderate) and > 75% (good). However, University requirement is 75% minimum attendance in Theory and Practical separately to be allowed to sit for MBBS examination. Achievement was measured in 2nd semester examination and outcome of the result was considered,

as passing score >50% and failure <50%. The scores in course assessments and percentages of attendance were recorded and summarized during each academic year.

2nd semester examination was selected since it is held at the end of the academic year prior to the summative assessment eg: 1st MBBS examination. Gender based academic performance was calculated by comparing the ratio of male and female students and their subsequent performances in the examination. 1st MBBS students were grouped as boarders and dayscholars and their academic performance in examination were compared. The marks scored by the students were compared in three categories of attendance (good, moderate and poor) and effect of other factors like place of residence and gender were also analysed.

STATISTICAL ANALYSIS

For statistical analysis, SPSS package was used and tests performed were chi square test and student's *t* test.

RESULTS

The study was done involving four batches of first year medical students (n= 397) in Department of Anatomy belonging to two different institutions. The academic performance of the students in both practical and theory exams were tallied with attendance percentage, which was tabulated as <50%, 50.1 – 75% and > 75%. A profile of students attendance is given in Table-1.

It has been observed that percentage of students who failed in practical examination was 28%, 35.7%, 45.9% and 35.3%, whereas in the theory examination the percentage of failure

Batches	% of Attendance	Practical	Theory
2011	<50%	3	3
	50% - 75%	21	20
	>75%	76	77
2012	< 50%	1	2
	50% - 75%	14	30
	>75%	82	65
2013	<50%	6	12
	50% - 75%	46	41
	>75%	50	49
2014	<50%	9	8
	50%-75%	18	43
	>75%	71	47

Table-1: Number of Students and their attendance percentage in practical and theory

Batches	Attendance %age		Practical (Failure)	Attendance %age		Theory (Failure)	Total
	<75%	>75%		<75%	>75%		
2011	24	4	28 (28%)	23	28	51 (51%)	44 (44%)
2012	15	20	35 (35.7%)	32	8	40 (40.8%)	49 (50%)
2013	52	0	45 (45.9%)	53	9	62 (63.3%)	51 (52%)
2014	27	9	36 (35.3%)	51	3	54 (53%)	57 (55.8%)
4 batches	118	33	144 (36 %)	159	48	207 (52%)	201 (50.5%)

Table-2: Percentage of failure in Theory and Practical in relation to attendance

Batches	Gender	Total	Practical (Failure)	Theory (Failure)	Total (Failure)
2011	Female	39	4	14	14 (35.89%)
	Male	61	24	37	37 (60.65%)
2012	Female	34	6	7	7 (18.9%)
	Male	64	29	33	33 (51.56%)
2013	Female	42	9	12	12 (28.57%)
	Male	60	27	42	52 (70%)
2014	Female	31	8	10	10 (22.25%)
	Male	67	37	52	42 (77.65%)
All batches	Female	146	27	43	43 (29.45%)
	Male	252	117	164	164 (65.07%)

Table-4: Gender based performance

Batches	Dayscholar			Boarder		
	Total	Failure	%Age of failure	Total	Failure	%Age of failure
2011	42	17	40.47%	58	29	50%
2012	34	16	45.71%	63	30	48.38%
2013	34	12	40%	68	31	51.66%
2014	33	13	39.39%	65	38	60.31%
All batches	144	58	40.2%	254	128	50.39%

Table-5: Residence versus academic performance

was 44%, 50%, 52% and 55.8% in the years 2011, 2012, 2013 and 2014 respectively. Apart from this, maximum number of students failing in both practical and theory examination had percentage of attendance less than 75%.

The correlation between attendance and GPA was found to be significant $p < .05$. It was observed that the students with attendance $< 75\%$, performed poorly in both theory and practical exams. However, overall performance showed more failure in theory examinations than practical examinations (Figure 3).

To correlate gender based performance, marks both in the practicals and theory was calculated according to their gender. It was observed that female students performed better than the male students ($p < .05$). Result of four batches showed a failure rate of 29.45% and 65% in females and males respectively (table-4).

It was seen in the study that 1st year female medical students performed better in examination (Figure-4). Type of residence, Hostel (Hostelites) or Home (Dayscholar), seems to have an effect on the academic performance of the students. The present study shows significant results (Figure-5) depicting greater failure among boarders than the dayscholars.

In the year 2011 (40.47% of dayscholars and 50% of boarders), in 2012 (45.71% dayscholars and 48.38% boarders), in 2013 (40% dayscholars and 51.66% boarders), in 2014 (39.39% dayscholars and 38% boarders) failed respectively. It was observed that failure rate among dayscholars and boarders was 40.2% and 50.39% respectively, taking all the batches together (Figure-5).

DISCUSSION

The practical and lecture based attendance were positively correlated with overall examination score, showing majority of failure grades (60%) occurring in students with attendance rates lower than 80%. Failure rate was greater in each decreasing category of attendance – 5% among students with 80-89% attendance, 20% with 70-79%, 25% with 60-69% and 100% with 59% or lower.³ An overall correlation coefficient of 0.20 was observed which showed a positive correlation of theory attendance and university marks. Better correlation was observed in case of male students than female students.⁴ This study revealed that percentage of attendance in theory classes was lower than practical classes which was reflected in the academic performance with more failure in the theory papers than the practicals (Table 1, Figure 1). Higher attendance was associated with better marks. Student absenteeism may contribute to low performance in examinations as has been observed in study by.⁵ During the academic year 2010 – 2011, a study in community medicine revealed that 36% of students had an attendance of equal to and $> 75\%$ and 64% had an attendance of $< 75\%$ and test score showed that 58% of students passed their tests and 42% failed their class tests which reflected a positive correlation.⁶ Absenteeism had a significant effect on the level of achievement in medical pharmacology courses and suggested the importance of regular attendance as an effective way of increasing test scores.⁷ Good attendance showed good results during examinations in basic medical sciences.⁸ In the present study, it has been seen that attendance has a correlation with performance, where 80 to 90% of students failing in

theory and 30 – 45% failure in practicals had attendance below 75%. This clearly suggests that self study alone doesn't help a student in examinations. The correlation between students with attendance $> 75\%$ and their academic performance was weak (Table 2, Figures 2a, 2b). Correlation coefficient for percentage of marks against attendance for dayscholars and hostelites was found to be significant, as local students performed better than the hostelites.⁹ Results also revealed that female students performed better than the male students.^{10,11} Out of 256 students, 46.2% males and 39.6% females were placed in the grade point assessment (GPA) bracket '2.01-3.00' (grade C) whereas less than 50% males and 60% females attained GPA bracket above 3 (grade B). In the study by¹² 38% of students were dayscholars. The GPA grade was above 3 in more than 50% of students who were either hostelites or dayscholars, suggesting favourable environment both at home and hostel.

Ronald, in his study found that female students earning a grade above the average attended 89% of classes whereas those attending only 64% of classes earned grade below average. However, this correlation was not observed among male students.¹³ Biological, Gender differences in attitudes and stay in hostel or home may be instrumental in leading to gender differences in achievement in examinations.¹⁴ In UK, girls are found to get better grades than boys – probably it is due to differences in student's attitudes and their goals and aspirations and girl's increased maturity and more effective learning strategies.¹⁵ Studies revealed that females have better study skills than male students and they achieve higher grades than men because they work harder and attend class more frequently.¹⁶

¹⁷ A cross-sectional study among 300 students showed that students without a history of absenteeism had a higher mean GPA (4.05) in comparison to those with absenteeism, (3.75).¹⁸ Study among first year medical students in Bhopal, comprising of 57 male and 78 female students, showed significant difference in marks with respect to attendance e.g, 76.1% of the students with good, 71.4% of students with moderate, and 42.1% of students with poor attendance could score more than 75% marks.¹⁹ The present study spanning four batches revealed that the percentage of failure among female and male students was 20 to 30 % and 25 to 40% in practicals respectively. In theory, the failure among female and male students was 40 to 50% and 80 – 90 % respectively, which was found to be significant at $p < .05$ (Table 4, Figure 4). Among preclinical subjects, male undergraduates did not show better performance than females in any preclinical subjects 68 – 67.48 vs, 67.47 – 7.01 respectively. Female students showed overall better performance in theory than males.²⁰ The correlation coefficient between percentage of marks secured against attendance though weak was statistically significant. The t-test showed that dayscholars consistently performed better than hostelites with a significant level of $p < 0.01$. Studies have revealed that residence has a significant effect on academic performance.²¹ This may be due to boarders residing in hostels, encounter various problems that add to their stress and time wastage and lack of self study. Stress generated while staying in hostel has been implicated as the main factor for under performance of medical students, while day scholars study in caring home environment.²² Those students who live at their homes with their family members are more emotionally stable and confident as compared to boarders. Residential care

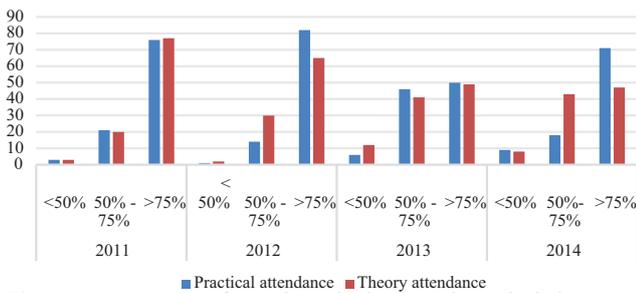


Figure-1: Percentage of attendance in theory and practical classes

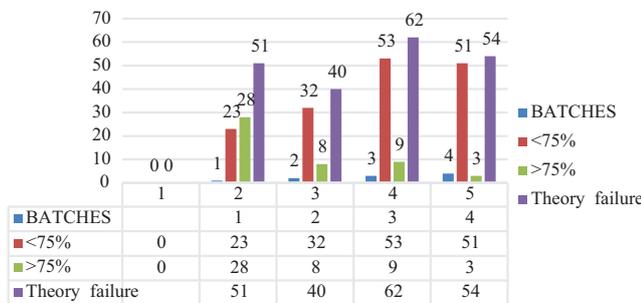
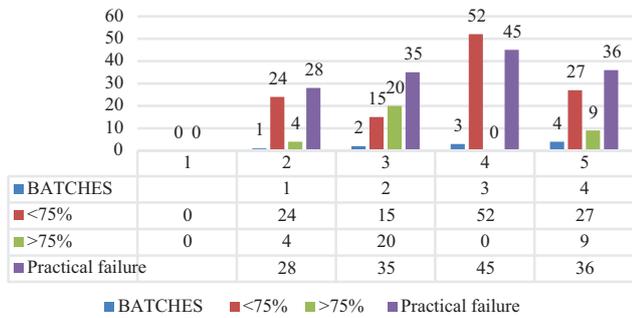


Figure-2: (A) Failure in practical in relation to attendance; (B) Failure in theory in relation to attendance

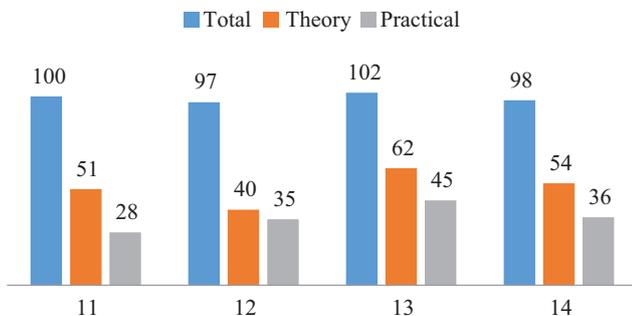


Figure-3: Percentage of failure in theory and practicals

has a great impact on class attendance, attitudes, study strategy and academic performance.^{23,24} In the present study, the localities performed better than the hostellites in each of the batches – 50% of boarders and 30-40% of dayscholars failed to perform in examinations (p value is < .00001 and result is significant at p < .05). This study also confirms that family and homestay does have a positive influence in academic performance (Table 4, Figure 5). But some of the studies done previously, showed either a better performance by the boarders or there was no significant disparity in performance in relation to place of residence. A family however can contribute in many ways towards a student’s academic performance by providing financial, moral, and other necessary support.²⁵ Riggs and Blanco et al, 1994.²⁶ found that students with less than 70% attendance could potentially not do

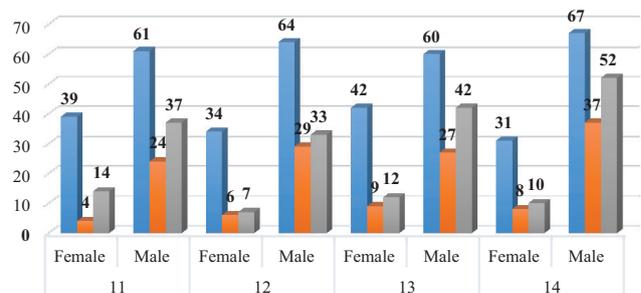


Figure-4: Academic performance of male and female students

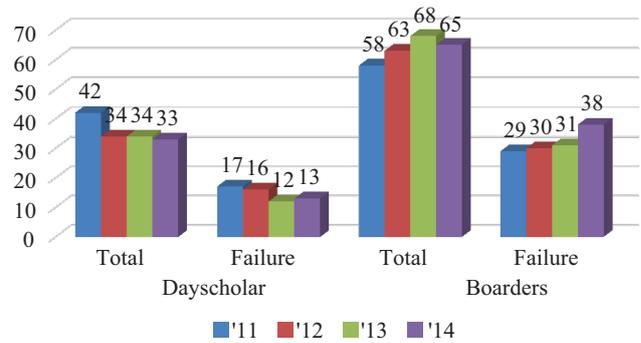


Figure-5: Performance of boarders and dayscholars in four batches

well. Effect of attendance on student performance in Statistics course showed student performance was better when class attendance was higher.²⁷ According to Mohammad Eid Aburaz et al, 2015²⁸ students who had higher absenteeism rates have lower Grand Point Average (GPA) regardless to academic level. Students who attend classes were able to take class notes, which had shown to have positive learning benefits.²⁹ The present study revealed a direct relationship between attendance and academic performance where 40-50% of students in each batches with lack of attendance fared poorly which was significant at p< .05 which conforms to most of the studies done before. Apart from this the academic performance of Dayscholars and Female population was found to be significantly better with p < .05 than the Boarders and Male population. Chen et al, 1999³¹ reported that the female students performed better in their classes. Thus Previous studies are in conformity with the present study supporting the views of better performance by females and the dayscholars with better attendance.

CONCLUSION

The study showed a strong correlation between the percentage of attendance and academic performance, which was clearly reflected in the academic results. An exploration of the factors influencing attendance may be undertaken, to find out the motivational factors behind attending classes or otherwise. Higher education is associated with significant stressors including emotional disturbance being away from home and transition from school to the less structured environment of medical college. Further students may also have difficulty in applying principles of adult learning. Females and day scholars were found to perform much better than their male counterparts and the Boarders. Since gender and place of residence have an impact on the examination results and attendance, the Medical educationists and curriculum planners should take into account stress of medical life while designing curriculum. They should also build strategies for prophylactic action for prevention of

such problems faced by MBBS students. Future study can be performed to identify counselling strategies, motivational factors, medical school curricular design and educational policies along with possible interventions in order to improve the present scenario of medical education in India.

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