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Research article

EVALUATION OF UNDERGRADUATE MEDICAL STUDENTS' LEARNING ENVIRONMENT IN GOA: A CROSS-SECTIONAL STUDY

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ABSTRACT

Background: An increase in the medical student intake capacity from 100 to 150 seats in Goa Medical College during the academic year 2012-2013, led the author to assess the undergraduate Medical students' learning environment with a view to suggest policy changes that enhance learning experience.

Objective: To describe some of the preferences of the undergraduate Medical students regarding their learning environment with the aim of making the environment more conducive to learning. **Methods:** A cross sectional study design was used. Student volunteers from all the three phases of MBBS course were invited to participate in the study and after obtaining informed consent, data was collected through pre-designed pretested self administered structured anonymous questionnaires. Of the total 446 undergraduate students from various semesters, 387(86.77%) students participated in the study. Data were entered in SPSS software (version.17) and analyzed using descriptive statistics. **Results:** For lectures 53.7% of the study participants preferred small group teaching (20-30 students). Most (62%) believed that 30-45 minutes was the ideal duration for a lecture, the attention span during lecture classes as admitted by 44.2% was only 20-30 minutes. Most of the students (66.9%) thought multimedia to be the most effective teaching tool followed by traditional blackboard teaching and transparencies. Most students (62.5%) favored the multiple choice question and short question system of assessment. **Conclusion:** Duration of lectures should be reduced to 30-45 minutes. More of multiple choice and short questions rather than long questions need to be part of our student assessment.

Keywords: Medical students, Attention span, Medical education, Learning environment, Teaching methods.

INTRODUCTION

The Bachelor of Medicine and Bachelor of Surgery (MBBS) course in India is about four and a half years' duration which is followed by one year of compulsory rotational Internship.

The period of four and a half years is divided into three phases covering nine semesters: Phase I (two semesters) where Pre-clinical subjects such as Human Anatomy, Physiology,

Biochemistry and Introduction to Community Medicine including Humanities are taught. Phase II (three semesters): During this phase Para-clinical and clinical subjects namely Pathology, Pharmacology, Microbiology, Forensic Medicine including Toxicology and part of Community Medicine are taught. In Phase III (four semesters) subjects taught are Medicine and its allied specialties, Surgery and its allied specialties, Obstetrics and Gynecology and Community Medicine.

The learning environment of a medical school has a significant impact on students' achievements and learning outcomes^{1,2}. Students' experiences of the learning environment 'are related to their achievements, satisfaction and success'^{3,4}. Therefore a feedback from students on their learning environment plays an important role in the teaching learning process so as to achieve the desired Institutional objectives. Medical education is a dynamic process and modifications in teaching-learning methodology should be periodically considered⁵. An increase in the number of seats for medical students from 100 to 150 during the academic year 2012-2013 led the author to assess the learning environment with a view to planning for the future. The Objective is to describe some of the preferences and perceived difficulties of the undergraduate Medical students regarding their learning

environment so that remedial measures could be taken to enhance students' learning experiences.

MATERIALS AND METHODS

A cross sectional study was conducted at Goa Medical College, Goa, India from November 2012 to January 2013. Student volunteers belonging to all the three phases of Bachelor of Medicine and Bachelor of Surgery (MBBS) course were invited to participate in the study and after obtaining informed consent, data was collected using predesigned, pretested self administered structured anonymous questionnaires. Enrollment of students during the academic year 2012-2013 in the first semester was 150 students, third semester was 100 students, and 98 students each in the fifth and seventh semesters. The clinical phase students of eighth and ninth semesters were not part of this study. Of the total 446 registered in Pre and Para clinical phases, all students (149 males and 238 females) present on the day, volunteered to participate in the study with a total of 387(86.77%) respondents. The study received approval by the Institutional Ethics Committee. Data were entered in a Statistical Package for Social Sciences (SPSS trial version.17) and analyzed using descriptive statistics. Chi square test was used to assess differences between the genders, with a significance level set at $p < 0.05$.

RESULTS

Table: 1. Preferences of students pertaining to their learning environment.

Student preferences	Male n=149(%)	Female n=238(%)	Total n=387(%)	p value
Preferred strength of (20-30) students for lecture	73(48.9)	135(56.7)	208(53.7)	0.137
Break between lectures >15 minutes	19(12.8)	13(5.5)	32(8.3)	0.011
Lab coat required during practicals	133(89.3)	227(95.4)	360(93)	0.021
Attendance be made Compulsory	46(30.9)	104(43.7)	150(38.8)	0.011
Web enabled e-learning practical sessions	66(44.3)	81(34)	147(38)	0.042

Multiple responses taken into consideration hence the total of percentages do not add to 100. $p < 0.05$ taken as statistically significant.

Table: 2. Student preferences for teaching methods and assessment.

Student preferences	Male n=149(%)	Female n=238(%)	Total n=387(%)	p value
Quiz as beneficial method of learning	23(15.4)	13(5.5)	36(9.3)	0.001
Use of projector with LCD for teaching	87(58.4)	172(72.3)	259(66.9)	0.004
Use of blackboard	57(38.2)	68(28.6)	125(32.3)	0.047
Multiple choice questions	107(71.8)	135(56.7)	242(62.5)	0.002
Short questions	58(38.9)	119(50)	177(45.7)	0.033

Multiple responses taken into consideration hence the total of percentages do not add to 100.

P <= 0.05 taken as statistically significant.

DISCUSSION

The study comprised of 149(38.5%) males and 238(61.5%) female student participants from the Pre and Para clinical semesters. First semester n=138 (52males vs.86 females), third semester n=83(32 males vs. 51 females), fifth semester n=85(32 males vs. 53 females) and seventh semester n=81 (33 males vs. 48 females) volunteered to participate in the study. Ages ranged between 17 and 24 years (mean age 18.9 years), with 68.5 % of males vs. 73.9% of females coming from urban backgrounds, whereas 31.5% males vs. 26.1% of females came from a rural background. Male to female ratio of the study respondents was 1:1.6. Around 39.6% of males and 41.6% of female students reported having at least one doctor in their family (mother, father, sibling or a close relative). This finding in our study was higher compared to another study ⁶ which reported 29% of students having a doctor parent. More than half of the study participants opted for medical profession due to interest in the field (50% males vs. 69.8% females, p=0.02), a good proportion reported they chose Medicine “to be of service to the people” (36.5% males vs.59.3%, p=0.009). More males (32.7%) than females (12.8%) chose Medicine for social recognition which was similar to findings of other similar study ⁷ and the difference was statistically significant (p=0.004). Multiple responses were taken into

consideration hence the total of percentages does not add to 100. Around 19.2% males and 15.1% females from first semester felt that they were at a disadvantage with the increase in the number of MBBS seats from 100 to 150.

Almost half the participants (53.7%) preferred the classroom strength of only 20-30 students for a lecture session, however 30.2% vs. 20.6% female participants were comfortable with the class strength of 120-150 students, this difference between the genders was found to be statistically significant (p= 0.03). Most (62%) believed that 30-45 minutes was the ideal duration of a lecture session, similar findings were reported by yet another study ⁸, understandably so since the attention span during lecture classes as admitted by 44.3% of the male students vs. 44.1% of the female students was only 20-30 minutes. A small proportion of students (17.4% among males and 10.1% among females) agreed to their attention span being less than 20 minutes and this difference between the genders was found to be statistically significant (p=0.03). A 10-15 minutes break between lecture classes was wished for by 39.6% males and 48.7% female participants, however a break of more than 15 minutes was favored by a few students and this difference between the genders was found to be statistically significant (table 1). Lecture classes at 12 noon and 2 pm (immediate pre and post

lunch periods respectively) were acceptable only to 24% of the study participants. Interestingly 71.1% males and 62.6% females preferred technology enabled e- learning for lectures, whereas it was 38% for practical sessions and this difference between the genders was statistically significant (table 1).

About 45.6% males preferred Group Discussion, while 47.5% of females felt that Demonstrations were a beneficial method of learning but Quiz was favored by 9.3% and this difference among the genders was statistically significant (table 2). The conventional lecture method was preferred only by 25% of the students. The debate was also mentioned by a few students (10% males vs. 5.9% females) as a beneficial method of learning. Most of the students (66.9%) favored the use of multimedia and a projector with liquid crystal display (LCD) as an effective supporting teaching aids as compared to traditional blackboard teaching (32.3%) and use of transparencies (6.6%). Similar results have been documented by other authors⁸. Most students (62.5%) favored the multiple choice question (MCQ) and short question system of assessment; this finding was comparable to another study conducted in India⁹

A good proportion of participants (38.8%) agreed with attendance being made compulsory and the difference among the genders was found to be statistically significant (table1). The majority of the students (79.9% males vs. 89.9% females) found that the seating capacity in the college library was adequate and this difference among the genders was statistically significant ($p=0.005$). About 61% male's vs. 70% females found that there were adequate number of reference books in the library.

Around 46.9% males vs. 58.8% females in our study agreed with the existing duration of four and half years for entire MBBS course and the difference among genders was statistically significant ($p=0.02$), while the others (26% males vs. 16.8% females) opined that the duration of entire MBBS course should be less than four and

half years, this difference among genders was also found to be statistically significant ($p=0.02$) a significant proportion (49.1%) was of the opinion that the duration of first year MBBS course should be of one year whereas 46.8% agreed with the existing duration of one and half years. The inclusion of Preventive and Social Medicine subject in the first MBBS curriculum was agreed upon by almost half of the study participants (49.4%). Around 14 males and eight females out of 387 voiced a regret for having joined MBBS and the difference among the genders was statistically significant ($p=0.01$).

The questionnaire for seventh semester students also sought additional information on their post graduate career preferences. The fields of specialization chosen in order of preference were General Medicine (24.7%), Obstetrics and Gynecology (20.9%), Pediatrics (16%), and Ophthalmology (14.8%). The specialties of Surgery, Orthopedics, Dermatology, Otolaryngology, Radiology, Pharmacology and Psychiatry were chosen by only 6-8% of the students, while other subjects (1-2%) seemed unattractive to the respondents at this point in time. However 23% of respondents thought it was too early to decide and 9.9% were willing to take up any subject offered to them as per the merit list. Results of a Nigerian study revealed similar preferences by students towards Pre and Para clinical subjects¹⁰.

Although 79% of the study participants showed an interest in research activities, only 16 males and 11 females out of 387 participants had heard of Short Term Studentship research program for undergraduate medical students initiated by the Indian Council of Medical Research (ICMR) and this difference between the genders was statistically significant ($p=0.02$). Medical research, which on paper is an integral part of medical education, is perhaps the most neglected field in a large majority of colleges¹¹ which is also true in our setting. The focus should be on strengthening the "short term studentship" program for the students¹¹.

A significant proportion (84.9% females and 69% males) found the overall environment in the Medical college conducive to learning, and the difference among the genders was statistically significant ($p=0.0002$).

CONCLUSIONS AND RECOMMENDATIONS

Based on the study findings small group teaching for lectures in batches of 20-30 students would be preferable, with the average duration of lecture not exceeding 30-45 minutes since the attention span as voiced out by the students was not more than 20-30 minutes. There is a felt need expressed for a short break of 10-15 minutes in between lecture classes by a significant majority of students which can be easily implemented. Teaching faculty may use Group discussions and Demonstrations as a teaching method more often than the conventional lecture method. Multimedia and projector with LCD screen may be used whenever possible as a supporting teaching tool to make learning more attractive to the present day undergraduate students as a significant majority of students favored e-learning as a beneficial method of learning. More of Multiple choice and short questions could be incorporated into our student assessments. The majority seemed satisfied with the adequacy of reference books and seating capacity in the college library. There needs to be a re-thinking on the inclusion of Preventive and Social Medicine subject in the first MBBS curriculum as the students are already burdened with preclinical subjects and tend to pay less attention to subjects that are not part of the syllabus for first MBBS exams, so also the existing duration of MBBS course needs re-thinking. Significant proportion found the overall environment in the Medical College conducive to learning. Based on the present study findings one can conclude that the teaching learning environment should be re-evaluated in our University with specific attention to the class size, duration of lectures as well as the methods used for teaching and assessment. To increase the exposure of students

to medical research, the Department of Preventive and Social Medicine encourages the undergraduate students to take up guided research projects as part of their training in Community medicine. The ICMR short term studentship research program needs to gain popularity in our setting. Given the proper environment students could contribute in a major way to scientific research. The study highlights some aspects of the curriculum the faculty needs to address so to make the teaching learning environment more acceptable to the Medical students.

The clinical phase (Eighth and ninth semester students) could also be included in the study so as to complete the representation of the undergraduate student population. This study may be replicated in other Medical colleges in the country with larger sample size to make recommendations for policy changes at the level of the Medical Council of India regarding the teaching curriculum that is being followed by all Medical colleges in India

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