

Factors associated with performance of second year student in pharmacology examinations

Sir,

Good knowledge of pharmacology is essential for clinical practice. So like other basic science subjects it should be taught in such a way that students can get adequate knowledge about the subject. It is the duty of a teacher to find the innovative methods of teaching and evaluation to make the subject more interesting. One method of improvement of pharmacology teaching is taking regular feedback from students to know the quality of teaching and changes should be done accordingly. It is been observed that some factors are there, which are associated with the good academic performance of students.

These factors should not only be identified but students should be counselled about them.^[1] Our department (Department of Pharmacology, Govt. Medical College, Surat) is following small batch, teacher-assisted learning since long time and time-to-time regular feedbacks were taken from students to improve the existing method.^[2,3] To continue this improvement, it was decided to do a action research to find the factors associated with the good academic performance of the second year students in pharmacology so that some negative factors can be modified if they are modifiable and extra efforts in teaching and counselling can be done for the students where factors cannot be modified.

The entire second year student (150) of batch no. 81 were given a proforma in which information related to some factors which may affect the academic performance was asked. To analyze the effect of previous academic performance on second year pharmacology, marks information related to previous academic performance were asked in that proforma. The previous academic performance was measured by the marks obtained in 10th, 12th, and first year. Students were also supposed to mention their gender so that effect of male or female gender on marks obtained in pharmacology can be understood. Information related to the background of students (rural/urban), place of residing (local aid/hostel aid), and medium of schooling (English medium or non-English medium (Gujarati, Hindi, other)) were included in that proforma. Information related to attendance is collected from the department attendance register. Criteria for academic performance was cumulative marks (both theory and practical) in first internal, second internal, and prelim examination in second year pharmacology. This information was taken from department files. This proforma was given to student before the final university exam.

Analysis of data was done by SPSS Vs 12. Distribution of data (cumulative marks obtained in second year) was checked by histogram, skewness, kurtosis, Komolgorov–Smirnov, and Shapiro–Wilk test. As the data were distributed normally, unpaired *t*-test was used to analyze continuous variables (cumulative marks) and Pearson correlation was calculated to find associations. Two-tailed *P*-value less than 0.05 considered significant.

Out of 150 students, 141 (94%) students returned the proforma. Results are mentioned in Table 1. One factor for consideration was attendance in class. In a guidelines issued by Veer Narmad South Gujarat University, Surat, attendance in the class should be at least 75% of the total classes, and demand is made time-to-time to make this limit mandatory for all students. We divided students into two groups, one group whose attendance was 75% or more and other group whose attendance was less than 75%. Both the groups were compared for cumulative marks. It was observed that there was statistically significant difference

Table 1: The performance of second year students in pharmacology

Variable	Subsample	N	Mean	S.D.	t-value	Significance at 5% level
Attendance	>75%	75	121.5	16.4	5.1	$P < 0.05$
	<75%	66	107.7	15.6		
Medium of Instruction	English	51	121.9	15.1	3.7	$P < 0.05$
	Non-English	90	111	17.4		
Sex	Male	83	112.3	17.0	1.1	$P > 0.05$
	Female	58	115.6	17.7		
	Local	54	113.8	17.7	0.2	$P > 0.05$
	Hosteller	87	.2	17.0		

between two groups for mean marks. Means marks were more in the group where attendance was 75% or more (Unpaired *t*-test, $P = 0.0067$). Moderate correlation was observed between attendance and cumulative marks obtained by the students (Pearson correlation coefficient = 0.578, $P = 0.00$). Attendance in class plays a very important role in academic performance, and our findings are confirmed by studies done for medical students of other countries not only for academic performance in pharmacology but also for other subjects.^[4-7] In a study done by Hammen *et al.*, it was observed that examination score in physiology was inversely related to the absenteeism in class.^[8] Though the correlation between absenteeism and examination score was weak ($r = -0.33$), similar findings were observed in study done by Riggs *et al.*, where it was observed that higher absence rate (>30%) was associated with the poor performance in examination and can predict the performance of students.^[6]

Other important factor was medium of schooling. Here cumulative marks were compared between English medium and non-English medium students. Marks of English medium students were significantly more than non-English medium students. ($P = 0.002$) [Table 1]. In a study done by Chur-Hansen *et al.*, in 149 third-year medical students, it was observed that poor knowledge of English language was associated with poor performance in examination.^[9] In a study done by Surya Raj Niraula *et al.*, for 86 medical students of Nepal, it was observed that medium of schooling was associated with the high school marks, but it has no effect on marks obtained in any MBBS level.^[10]

Previous academic performance is also considered as an important factor. We tried to find association between cumulative marks in second year and marks obtained in matriculation, higher secondary, and first year of MBBS. Weak positive correlation was found between marks in matriculation and cumulative marks in pharmacology (Pearson correlation coefficient = 0.231, $P = 0.009$) and marks in higher secondary and cumulative marks in pharmacology (Pearson correlation coefficient = 0.396, $P = 0.00$). Moderate correlation was observed between marks in first year and cumulative marks in pharmacology (Pearson correlation coefficient = 0.458, $P = 0.00$). Previous academic performance contributes in academic performance in various

subjects in medical graduations and this finding is confirmed by some studies.^[11,12] According to this study, out of 10th, 12th, and first year marks most important factor which may influence the second year performance is marks in first year. This finding is also found in some other studies.^[13]

Gender is considered to be contributing to academic performance in undergraduate and postgraduate. Some studies favors female gender and some studies male gender.^[14] In this study we found no statistically significant difference between male and female students academic performance ($P = 0.29$). Similar observations were made in study done by Surya Raj Niraula *et al.*^[10] We also found no statistical significant difference between hostel aid and local aid students ($P = 0.8$). Because of less sample size of students from rural background, we were not able to see the difference between students from rural and urban background.

This study has some limitations. Because this was the first step of our action research, we focused on few factors only. In the latter stage, we are also going to see the effects of factors like writing skill, memory, coping pattern for stress, study techniques, etc. This study is bivariate analysis and bivariate analysis has some limitations, a multivariate analysis could have been more valid.

On the basis of this study, some important factors which may affect students' performance in pharmacology exam is attendance, medium of schooling and marks in first year. Marks obtained in the first year are not a modifiable factor but other two factors can be taken care off. As this is a pilot study, a study based on data collected from more batches (more sample size), having more factors and analyzed by multivariate method can give more validity to observed results.

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