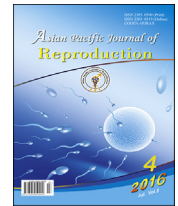


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Evaluation of the academic achievement of rural versus urban undergraduate medical students in pharmacology examinations

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ABSTRACT

Objective: To compare the academic performance of urban and rural students in pharmacology examinations.**Methods:** It was a comparative study of the academic performance of urban and rural students in pharmacology examinations of the sessions 2014 and 2015. For evaluating the students' academic performance, urban and rural students were divided into four groups: Group 1: who got <50% marks in exams; Group 2: who scored between 50% and 69% marks; Group 3: who scored between 70% and 79% marks; Group 4: who got ≥80% marks.**Results:** When the academic performance of the urban and rural students was compared; significant difference was found with *P*-value 0.038. Additional comparison revealed insignificant difference in multiple choice questions (MCQs) with *P*-value 0.152 while significant difference was established in short essay questions (SEQs) with *P*-value 0.043.**Conclusion:** The results of the present study showed significant difference between the academic performance of urban and rural students.

1. Introduction

There is consensus that children's education is one of the key vehicles engendering the development of economies [1]. However, in developing countries the distribution of resources and its consequent effects on rural-urban student performance has remained a grave issue especially in human sciences than physical sciences [2,3]. Despite a rising focus by governments to target rural areas for special assistance, rural-urban disparities in academic performance are still an unresolved problem [2].

A general perception of the comparative inferiority of rural students has prevailed for quite some time. This view implies not only to differences in the academic performance of rural and urban students but also too many other socially desirable outcomes like aspiration, intelligence and aptitude [4]. The concern regarding the academic performance of rural and urban students is not limited to one country but rather it seems to be a global issue [5]. The question whether real educational differences

exist between rural and urban students has been a topic of debate since very long time [6]. Recent educational research has established certain differences in the achievements of rural and urban students and also in their higher education successes [4].

Along with other factors, such as availability of technology, resources and quality of teachers, the geographic location plays a very important role in the grooming, motivation and academic performance of the students [7]. A series of studies have suggested the importance of initial schooling and residential environment on the personality and behavior of an individual [8]. Previously a significant difference was found between the academic performance of rural and urban students. But now with the advancement of the technology this difference seems to be vanishing.

Previous studies have shown that performance of rural students with their urban counterparts showed mixed fashion in results [9]. Felder et al. found that urban students did better in an introductory course than the rural students [10]. Xiato along with his colleagues and Hobbs reported that rural students perform as well as their urban counterparts [6,11].

The rationale of the present study is to somewhat resolve the conflict of better academic performance among rural and urban students. Outcome of the study may form the basis for paying

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much attention and doing more hard work with the weak group in order to improve their academic performance. The study may be helpful for college's policy makers to design and implement the policies to improve the students' performance of the weaker group.

2. Material and methods

It was a comparative study and carried out at Rehman Medical College, Peshawar, after the approval of the ethical committee of Rehman Medical Institute, Peshawar. The confidentiality of the students was maintained as the names of the students were not disclosed. The consent from the students was taken. 200 year 03 MBBS students of the sessions 2014 and 2015 were included in the study by universal sampling technique. The course contents included general pharmacology, autonomic nervous system, cardiovascular system, central nervous system, gastrointestinal tract, blood, autacoids, respiratory system, endocrine system and chemotherapeutic agents. All the pharmacology examinations of year 03 MBBS were evaluated and compared on the basis of previous records of fortnightly, end of module, midterm and end of session examinations. The written theory paper consisted of two components: part-I Multiple Choice Questions (MCQs); single best answer type and part-2; Short Essay Questions (SEQs). Structured key was

provided to the examiners in order to eliminate the bias when the papers were evaluated.

For evaluating the academic performance of rural and urban students, they were divided into 4 groups: Group 1: who got <50% marks in exams; Group 2: who scored between 50% and 69% marks; Group 3: who scored between 70% and 79% marks; Group 4: who got $\geq 80\%$ marks.

Statistical analysis: The data were entered and analyzed by using SPSS 20.0. Data for MCQs and SEQs marks was described by using mean, SD, median, IQR, frequency and percentages. Three ways ANOVA was used to see for any interaction effect of gender, residential status and attendance on exam performance but was found to be insignificant. Then the only main effects were compared by using Mann Whitney U test. Tukey's test was used for *post hoc* analysis. Chi-square analysis was used to see any difference among marks categories for locality. *P*-value of ≤ 0.05 was considered significantly different.

3. Results

Total 200 MBBS students of the sessions 2014 and 2015 were enrolled in the study. When the academic performance of the rural and urban students was compared; significant difference was found with *P*-value 0.038. When further comparison was done; insignificant difference was found in MCQs with *P*-value 0.152 while significant difference existed in SEQs with *P*-value 0.043 (Table 1). In MCQs, 22.9% urban students scored <50% marks, 60% were found in the range of 50%–69%, 16.0% got marks between 70% and 79% and 1.1 scored $\geq 80\%$ marks. The distribution of urban students according to the categories of marks in SEQs is as follows; 30.3% in <50%, 41.1% in 50%–69%, 20.6% in 70%–79% and 8.0% in $\geq 80\%$. Similarly in MCQs, 8.0% rural students scored <50% marks, 68.0% were found in the range of 50%–69%, 24.0% got marks between 70% and 79% and none of the students scored $\geq 80\%$ marks. The distribution of rural students according to the categories of marks in SEQs is as follows; 16.0% in <50%, 32.0% in 50%–69%, 36.0% in 70%–79% and 16.0% in $\geq 80\%$ (Figure 1).

When pair wise comparison was made between the groups; the difference was significant for only two groups. The rural students with marks $\geq 80\%$ were with significantly higher ratio as compared to group with marks <50% with *P*-value 0.017 (Table 2).

The effect of attendance on the academic performance of the rural and urban students was evaluated; result was found to be insignificant with *P*-value 0.496 (Table 3). Similarly the effect of

Table 1

Comparison of academic performance of rural and urban students in MCQs & SEQs examination.

Academic performance		Area		P-value
		Rural	Urban	
% MCQs	Mean	61.6	56.9	0.152
	SD	10.0	13.6	
	Median	63.0	58.0	
	Q1	53.0	50.0	
	Q3	68.0	68.0	
%SEQs	Mean	63.8	55.0	0.043*
	SD	18.6	19.9	
	Median	70.0	55.0	
	Q1	50.0	40.0	
	Q3	78.0	70.0	
Overall total	Mean	63.0	55.7	0.038*
	SD	13.4	15.9	
	Median	64.3	56.4	
	Q1	51.8	44.6	
	Q3	73.8	70.9	

* = *P*-value ≤ 0.05 .

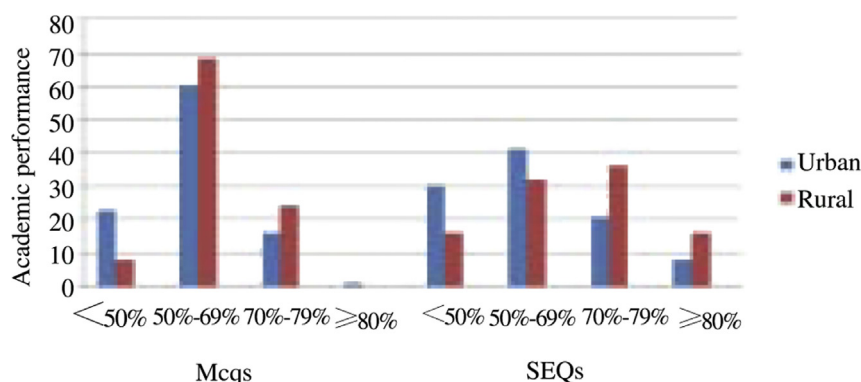


Figure 1. Comparison of the academic performance of rural and urban students in MCQs & SEQs exams.

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