ORIGINAL ARTICLE

Learning environment, approaches to learning and learning preferences: medical students versus general education students

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Abstract

Objectives: The main objective of the study was to see whether medical students use more desirable approaches to studying than general education students.

Methods: Survey method was used to collect data from both the medical students and the general education students. The survey of the medical students was carried out between January and March, 2012. The survey was administered to all the medical students present in lecture halls on day of data collection, while general education students were randomly selected from four subject areas at two universities.

Results: In total, 976 medical students and 912 general students participated in the study. Of the general students, 494(54%) were boys and 418(46%)were girls with an overall mean age of 20.53±1.77 years (range: 17-27 years). The medical students' perceptions of their learning environment and their learning preferences were broadly similar to that of general education students with the exception of workload. The medical students perceived the workload to be less appropriate (Mean = 2.06±0.72) than the students in general education (Mean = 2.84±0.90).

The medical students were more likely to use the deep approach to studying (Mean = 3.66±0.59) than the students in general education (Mean = 3.16±0.91). The students in general education were slightly more likely to use the organized studying (Mean = 3.44±0.90) than the medical students (Mean =3.23±0.90). Both medical students and the students in general education tended to use the surface approaches along with other approaches to studying.

Conclusions: There was not a great difference between the medical students and the students pursuing general education with regard to perceptions of the learning environment and approaches to learning.

Keywords: Approaches to learning. Perceptions of the learning environment, Learning preferences, Medical students, General education students. (JPMA 66: 541; 2016)

Introduction

Approaches to learning are ways of studying and learning. Research on student learning has identified three main approaches to learning among higher education students. Two of them are called deep approach and surface approach to studying.[1] The deep approach is characterised by attempts to understand the meaning of the text and to integrate the new knowledge to one's previous knowledge and experience. Students who use the deep approach try to apply what they study to real-life situations. Surface approach, on the other hand, is characterised by attempts to memorise the text for reproduction in the assessment. Later on, a strategic approach to studying was identified whereby a student attempts to achieve highest grades with cost-effective use of time and effort.[2]

Quality of learning is associated with approaches to learning;[3-6] the deep approach leads to better quality learning and the surface approach to poor quality learning outcomes.[3,6]

Surface approaches are used to accumulate information for assessment that does not involve efforts for understanding and application of knowledge to the real life. The material learned in this way is forgotten soon and never becomes part of students' way of interpreting the universe. The deep approach, on the other hand, involves understanding of the material and its application, and is associated with qualitatively superior learning outcomes.[6]

Approaches to learning are influenced by the characteristics of the learning environment. Students respond to the demands of the learning environment. In other words, students' approaches to learning are influenced by the content, context and demands of the learning environment.[7]

Medical students in Pakistan are high academic achievers and experience a slightly different learning environment than the students in general education (i.e. social sciences, natural sciences, humanities and business and management sciences). The medical students experience a partially problem-based learning (PBL) curriculum. They work with patients in wards in the last three years, in

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addition to the course work. Medical students in Pakistan perceived PBL to be useful.[8] After the introduction of PBL in Ziauddin Medical College, the students perceived that it promoted information management, critical thinking and skills in team-work.[9] Teachers in medical education in Pakistan have also realised the importance and usefulness of the PBL. However, there are some problems in introducing PBL curriculum at medical colleges in Pakistan.[10] Untrained faculty, large classes and lack of initiative are some obstacles in the way of implementing PBL curriculum at public-sector medical colleges. The students perceived the learning environment at Benazir Bhutto Shaheed Medical College, Karachi, to be moderately satisfactory, but the students were found to be under stress. The learning environment needed improvement according to the students' perceptions.[11]

The current study was planned to see whether medical students used more desirable approaches to studying than the general education students.

Subjects and Method

The survey was carried out to collect data from students at one medical college and two general education institutions in Lahore, Pakistan, between January and March, 2012, using a structured questionnaire. The first study was conducted with students taking BS Honours or Master's degree courses at two public-sector universities, using stratified samples in 22 departments across four subject areas: social sciences; science and technology; business and management sciences; and humanities. Within each department, samples were selected that were proportional to the total class size. The students and the institutions were assured of confidentiality of the collected data.

The second study was conducted with the students following bachelor's degree in medicine and surgery (MBBS) at the Allama Iqbal Medical College, Lahore. A survey was administered to all students in all five years present in the lecture halls on the day of data collection. The questionnaire consisted of three parts. The Course Experience Questionnaire (CEQ)[12] was used to measure the students' perceptions of the learning environment. It was named Part A. Main components of a learning environment are curriculum, teaching and assessment practices. The items in Part B were developed to measure the students' preferences for the learning environment that supports understanding or the learning environment that supports transmission of information.[13] Approaches to Learning and Studying Inventory (ALSI)[14] was devised to measure the students' approaches to learning, and was named Part C.

The questionnaire was pilot-tested to check its suitability to the Pakistani educational context. The pilot-testing identified some problems with the wording of some items; those items were reworded to make them suitable for use in the new context.

Formal permission was sought, and was granted by the relevant authorities at the medical college and the universities. Items were presented in a single questionnaire that also asked information about basic demographic and course-related variables. The students were asked to respond by choosing one option on a five-point scale consisting of 'definitely agree', 'agree', 'don't know', 'disagree' and 'definitely disagree'. The questionnaire was administered to all the medical students during their regular classes. Similarly, the questionnaire was administered to the students in general education at the two universities. Most students completed the questionnaire in their regular classes. Attempts were made to contact the students who were absent on the day. However, if a student was not contactable, he was replaced with another student from the same class.

Exploratory factor analysis was carried out on the students' responses (to the items in each part of the questionnaire) to examine the construct validity of the instruments, and to construct factor-based scales.[15] The number of factors to be extracted was determined by comparing the Eigen values of the correlation matrix among the individual items with those produced by the parallel analysis of 1,000 random correlation matrices using the programme written by O'Connor).[16] Principal axis factoring was used to extract the relevant number of factors, and these were then subjected to oblique rotation using a direct oblimin procedure. Loadings greater than 0.30 in absolute magnitude were regarded as salient for the purposes of interpretation, and the factors were labelled on the basis of the items that showed the highest loadings. Students were assigned scores on factor-based scales according to the means of their scores on the salient items in each of the factors.

Results

There were 976 medical students and 912 general students in the study. Of the medical students, 359(37%) were boys and 592(63%) were girls with an overall mean age of 20.2±1.71 years (range: 16-25 years). Of the general students, 494(54%)were boys and 418(46%)were girls with an overall mean age of 20.53±1.77 years (range: 17-27 years). Medical students' perceptions of different dimensions of their learning environment were almost similar to that of students in general education (Tables-1-

Table-1: Descriptive statistics related to medical students.

Names of the scales	Number of items	Mean	Standard deviation	Coefficient alpha
Perceptions of the Learning Environment				
Generic Skills	9	3.24	0.73	0.78
Appropriate Assessment	8	2.51	0.64	0.65
Good Teaching	9	2.69	0.76	0.81
Appropriate Workload	5	2.06	0.72	0.62
Learning Preferences				
Supporting Understanding	4	3.71	0.75	0.58
Transmitting Information	4	3.56	0.80	0.57
Approaches to Learning and Studying				
Deep Approach	10	3.64	0.59	0.76
Surface Approach	4	3.31	0.78	0.56
Organized Studying	3	3.23	0.90	0.65

Table-2: Descriptive statistics related to students in general education.

Names of the scales	Number of items	Mean	Standard deviation	Coefficient alpha
Perceptions of the Learning Environment				
Generic Skills	12	3.33	0.72	0.79
Appropriate Assessment	3	2.56	0.87	0.41
Good Teaching	13	2.60	0.89	0.89
Appropriate Workload	4	2.84	0.90	0.57
Learning Preferences				
Supporting Understanding	4	3.71	0.75	0.58
Transmitting Information	4	3.52	0.87	0.65
Approaches to Learning and Studying				
Deep Approach	8	3.16	0.91	0.59
Organized Studying	3	3.44	0.90	0.65
Surface Approach	3	3.06	0.88	0.48
Monitoring Studying	3	3.65	0.84	0.47

2) with the exception of workload. Both the medical students and the students in general education evaluated their learning environments more favourably in terms of generic skills that they acquired during their study than in terms of teaching and assessment practices. The medical students evaluated the workload less favourably with a mean score of 2.06±0.72 than the students in general education who had a mean scores of 2.84±0.90.

Medical students tended to give slightly more preference to the learning environment that supports understanding than the learning environment supporting transmission of information. Similarly, students in general education also tended to give slightly higher preferences to the learning environment that supports understanding. Both types of students tended to use all the three approaches to learning. However, the medical students were slightly more likely to use the deep approach mean = 3.64±0.59than organised studying mean = 3.23±0.90 and the surface approach mean = 3.31±0.78.The medical students were slightly more likely to use deep approach with a mean of 3.64±0.59 than the students in the general education who had a mean of 3.16±0.91. The students in general education were slightly more likely to use the organised approach than the deep approach and the surface approach.

Discussion

Medical students in Pakistan are high academic achievers. They follow a curriculum that is a combination of some problem-based activities and conventional lecture-based teaching. However, it was observed that the size of the classes ranged from 300 to 400 students. The classes take place in large lecture halls and interactive learning in such classes is virtually impossible. The students stated informally that they preferred to study in the library and considered presence in the classes as wastage of their time. It also emerged that during clinical phase of the MBBS programme, students avoided working with patients and preferred to study independently to prepare for the examination because clinical work does not carry marks to their final cumulative grade point average (CGPA). So, lack of a significant difference between the medical students and those in general education with regard to perceptions of the learning environment (with the exception of workload), learning preferences and approaches to learning is understandable in this context. The medical students complained about their heavy workload. They had the lowest mean score on the Appropriate Workload scale. This seems to be in line with a previous study[11] that found the medical students to be under stress. Major concern of both the medical students and those in general education seemed to be the marks in the examination that does not demand critical reasoning and application of knowledge to the practical problems. Thus, there seemed to be lack of constructive alignment between the objectives of the curriculum, teaching learning activities and assessment.[17] In constructive alignment, the objectives of the curriculum are stated clearly, and teaching is designed to achieve those objectives, and assessment evaluates whether the objectives have been achieved or not.

The results of the study showed that medical students were more likely to use the deep approach than the surface approach and organised studying, whereas, the students in general education were slightly more likely to use organised studying than the deep approach and the surface approach. This may be attributed to some PBL activities. Despite some PBL activities, the curriculum cannot be regarded as a PBL curriculum because it is not

implemented in letter and in spirit. As a result, there was not a sizeable difference between the medical students and the students in general education in regard to perceptions of the learning environment, approaches to learning and the learning preferences. This is in contrast to previous studies carried out in other countries, especially in the West.[18,19]

Conclusion

Both the medical students and the students in general education had similar perceptions of the learning environment except perceptions of the workload. The medical students evaluated the workload less favourably than the general education students. With regard to the approaches to learning, medical students were slightly more likely than the general education students to use the deep approach to studying. The large class size may be reduced to around 50 where interactive learning may become possible. The reduction in class size can also enhance students' interest in the classes.

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