ORIGINAL ARTICLE

UNDERGRADUATE MEDICAL STUDENTS' APPROACHES TO LEARNING ANATOMY: A CROSS-SECTIONAL STUDY

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ABSTRACT

Learning approaches are the thinking process used for recalling information. Better learning of human Anatomy is essential for practising efficiently in all clinical specialities. This study was planned to identify the learning approaches among the undergraduate medical students for the subject of Anatomy in our institution.

Methods: This cross-sectional study was conducted in Anatomy Department, Shaikh Khalifa bin Zayed Al Nahyan Medical College, Lahore. One hundred students from the first year & 98 students from second year MBBS were included. Participation was purely on a voluntary basis. Approaches and Study Skills Inventory for Students (ASSIST) was used to categorize students' learning approaches towards anatomy as surface, deep or strategic. The data was analyzed using SPSS version 20. Shapiro Wilk test was used to check the normality of the data. Data were normally distributed. Scoring for three learning approaches was described by using mean ± SD. P- Value ≤ 0.05 was considered statistically significant.

Results: Overall, 116 (58.9%) students practised the deep approach, 53 (26.9%) students practised the strategic approach, and only 28 (14.2%) showed the surface approach. No significant difference was found in practising different learning approaches between first-year and second-year students. The deep learning approach to anatomy was the most frequently adopted approach by both males as well as female students.

Conclusion: The majority of the students showed a predominant deep approach towards learning Anatomy, followed by a strategic learning approach, which is quite promising and reflects the satisfactory alignment of teaching and assessment techniques

Keywords: Learning, students, anatomy, education

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INTRODUCTION

Approaches to learning are the thinking process used for getting, arranging, and recalling the information more effectively.[1] According to Perry, during school years students considered learning just as a game of memorization, it become more rewarding when they approach colleges. Now they can transform the new concepts in terms of their previous understanding.[2] So the conceptions of learning are mainly based on the

evolutionary changes in students' thinking, as shown in Fig. 1.

Asikainen et al. reported that students' approaches toward learning varied from subject to subject at the same time. They developed a deep approach to the subjects of their own interest and a superficial approach towards non-favorite subjects, knowing no escape without passing all the subjects.[4] In the light of research over the last four decades, the learner has got fundamental importance in the process of teaching and learning.[5] Multiple factors have been explored that can influence the learning approach of a student, like teaching techniques, examination demand, student's own interest & motivation, and gender as well.[6]

Students enter medical institutions after experiencing different schooling systems, having different levels of intelligence, hard work, learning thrill and learning approaches. Their learning approaches are not fixed, but there is a tendency to use a specific learning approach for most of the times as a predominant learning approach.[7] Students having intrinsic motivation are always ready to do a lot. They relate bits of information and memorize facts after having understood them, and they always try to gain knowledge in a systematic way. Contrarily, the students with a surface approach have utilitarian motives leading to a poor academic outcome.[2]

Anatomy is a challenging subject; with its own specific terminology to describe the organization and structural relationship among various body organs. Its sound knowledge is mandatory for practicing safely and efficiently in many clinical specialties.[8,9] For learning such subjects, understanding, as well as memorization, is required, depicting the use of both deep and surface approach.[10] Most of students feel weighed down by increasing burden of Anatomy and acquire surface approach which is not good. Being teachers it's our responsibility to find out those students and help them out. Only few studies are available in local literature regarding students learning approaches and none about particular for Anatomy. So given study was planned to identify the learning approaches among the undergraduate medical students for the subject of anatomy in our institution.

METHODS

This cross-sectional study was conducted in Anatomy Department, Shaikh Khalifa bin Zayed Al Nahyan Medical College, Lahore to determine the undergraduate medical students' learning approaches towards anatomy.

Sample size of 197 is calculated with 95% confidence level with 7% margin of error and taking percentage of students i.e. 47.1% for using strategic approach.[1] The following formula was used;

$$n = \frac{Z^2_{1-\alpha/2} \, P \, (1 - P)}{d^2}$$

(Sample Size determination in health studies version 2.0.21 WHO)

Medical students of Year 1 & 2 were invited. Participation was purely on voluntary basis. Students who provided informed written consent were included. The students who were absent, not willing and couldn't be contacted during the process of data collection were automatically excluded from this study. Following these criteria, the total number of 198 medical students, 100 students from the first year & 98 students from second-year MBBS were included.

Approaches and Study Skills Inventory for Students (ASSIST), an excellent tool for determining the information related to the learning strategies, by Entwistle and Ramsden, was used in this study with due permission. ASSIST proforma comprised of 52 statements.[12] This inventory has three main scales: surface, strategic, and deep, and each scale have four or five subscales. This questionnaire inquires the students about their study habits, and categorizes their responses according to the three approaches to learning, i.e., surface, deep and strategic.

After approval from the institutional review board, all the students were briefed about the study and were invited to fill in a close-ended questionnaire (ASSIST). Questions consisted of statements describing what the students usually do when they learn, on a five-points Likert scale (1 = disagree, 2= somewhat disagree, 3=unsure, 4=agree somewhat, 5=agree). They were provided thirty minutes to complete this questionnaire in a comfortable environment. The completed ASSIST questionnaires were assessed by calculating the responses on all the items, producing a total score, to determine whether the students adopt surface, deep or strategic learning approach for the subject of anatomy.

The data was analyzed using SPSS (Statistical Package for Social Sciences) version 20. Shapiro Wilk test was used to check the normality of the data. Data was normally distributed. Scoring for three learning approaches was described by using mean ± SD. P-Value ≤ 0.05 was considered as statistically significant.

RESULTS

Overall, 116 (58.9%) students practiced deep approach, 53 (26.9%) students practiced strategic approach and only 28 (14.2%) showed surface approach (Table 1).
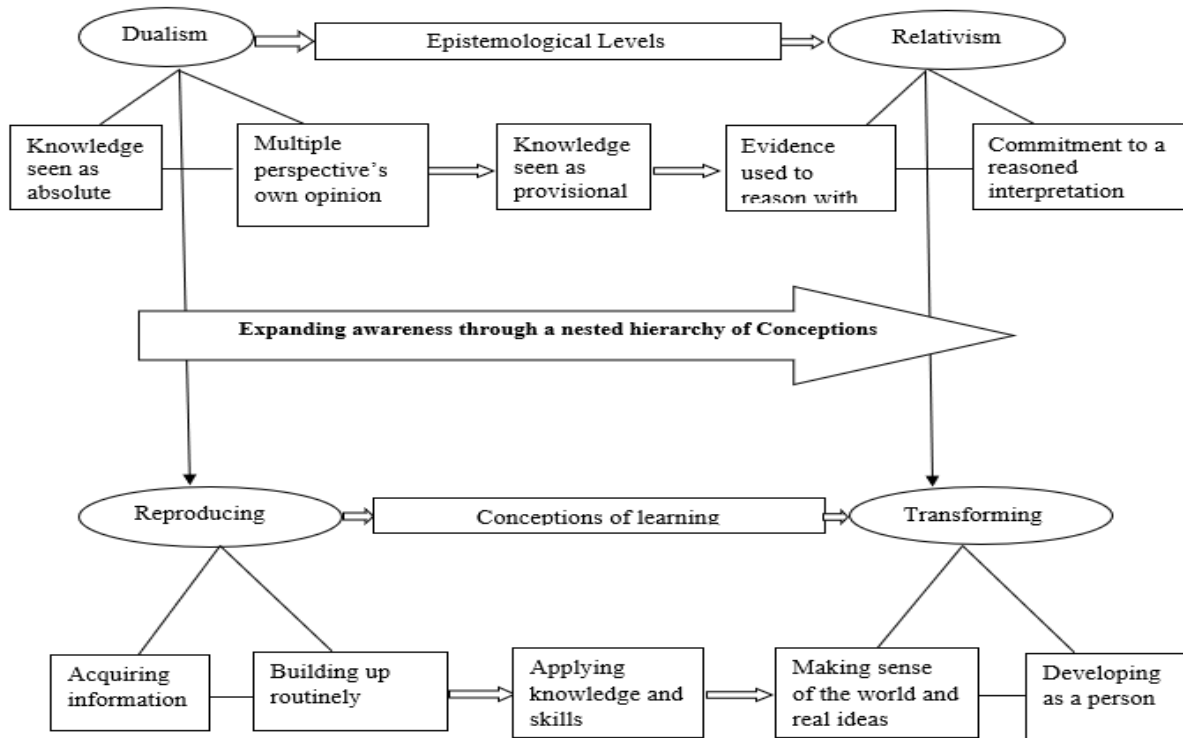
Figure-1: Conceptions of learning and epistemological levels[9]

Table-1: Distribution of learning approaches among undergraduate medical students

Learning Approach	Frequency	Percentage
Deep	116	58.9%
Strategic	53	26.9%
Surface	28	14.2%
Total	197	100.0%

Pearson Chi square test was used to compare the learning approaches between first- and second-year students. Results showed that there is no significant difference in practicing different learning approaches between first- and second-year students (Table 2).

Table-2: Frequency distribution of learning approaches according to studying years

Year	Learning approach			Total	p-value
	Deep	Surface	Strategic		
First year	57 (57%)	12 (12%)	31 (31%)	100 (100.0%)	
Second year	59 (60.8%)	16 (16.5%)	22 (22.7%)	97 (100.0%)	0.352
Total	116 (58.9%)	28 (14.2%)	53 (26.9%)	197 (100.0%)	

Deep approach was most frequently adopted approach by both males as well as female students. No significant difference was found in practicing other learning approaches between them (Table 3).

Table-3: Frequency distribution of learning approaches according to gender

Gender	Learning approach			Total	p-value
	Deep	Surface	Strategic		
Male	73 (56.2%)	20 (15.4%)	37 (28.5%)	130 (100.0%)	
Female	43 (64.2%)	8 (11.9%)	16 (23.9%)	67 (100.0%)	0.550
Total	116 (58.9%)	28 (14.2%)	53 (26.9%)	197 (100.0%)	

DISCUSSION

Quality of learning is mainly determined by the students' studying approach. The approach towards learning is a dynamic process, which can be modified conforming to the students' perceptions of the learning environment.[13] The results of this study proved that most undergraduate preclinical medical students (58.9%) at SKZMDC used deep approach while learning anatomy. Second predominant learning

approach was strategic (26.9%). Only 14.2% students were found to have surface approach for learning Anatomy. These results are quite consistent with those of previous studies done by Liew et al.[14] and McWatt et al.[15] These studies showed that the most prevalent approach of the undergraduate medical students was deep for learning Anatomy. However, Mahmoodzadeh et al.[16] reported that the most preferred learning approach among medical students was the surface approach. The contrast among students' predominant learning approaches might be due to the cultural variations and the study experiences which they have had before coming to the medical institute. However, the best anatomy learning demands a combination of memorization, comprehension, and visualization.

When the data collected from first year and second year was analyzed separately, no significant difference was found in practicing different learning approaches. Same trend was found in both the years, majority of the students having deep approach of learning followed by strategic and minimum number of students had superficial approach of learning. Usually, the first-year students are intrinsically motivated; though they did not have sufficiently developed self-regulatory skills to help them cope with the challenging course and extensive workload of Anatomy, they, still, tried to maintain their level of deep approach to learning.

Approaches to learning and the elements leading to the selection of these approaches are quite complicated and need consideration to enhance the process of learning. Wilson and Fowler suggested that deep learners may remain consistent in their deep approach to learning.[17] Gijbels, Segers, and Struyf reported that the stronger one's initial approach (whether deep, strategic or superficial) is, the less likely it is to change.[18] Smith et al. contradicts our study by suggesting that some maturation related to learning approaches may occur over the period of time and by experiencing through the curriculum.[19]

When the learning approaches between male and female students were compared, the results showed no significant difference in the practice of different learning approaches between them. Our study finding is consistent with the studies done by May et al[20] and Mahmoodzadeh et al,[16] which were also unable to establish any gender difference in learning approaches. In contradiction, Heijne-Penninga et al.[21] reported that females were more likely to use deeper learning approaches compared to males. According to Tarabashkina and Lietz, female students are less likely to use superficial learning approach.[22] These findings can be justified by considering that females may have more tendencies to relate ideas as compared to male students, who, in turn, have more chances of scoring

higher on their extrinsic motivation. Learning discipline does play a vital role in determining these gender differences in learning approaches.

This study was conducted in a single medical institution of Lahore, representativeness of these findings for the entire medical students' population is not possible. In addition, only the subject of anatomy was focused, because of author's own interest and feasibility, while predominant learning approach of a medical student may vary from one subject to other.

CONCLUSION

Majority of the students showed predominant deep approach towards learning Anatomy, followed by strategic learning approach which is quite promising and reflecting the satisfactory alignment of teaching and assessment techniques. Finding no variation in the learning approach preferences among genders and the studying years is thought provoking and provide opportunity for further exploration. Instructional methodologies and assessment techniques that inculcate the deep learning approach among students and minimize the role of surface learning approach are advisable.

ETHICAL APPROVAL

The study was approved by the Ethical Review Committee of University of Health Sciences, Lahore

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AUTHOR'S CONTRIBUTIONS
TM: Manuscript writing, Editing
MS: Data collection, Editing
SA, SM: Literature search
FI: Data collection
MUH: Supervision, Guidance