

Assessment of Learning Styles in Final Year Medical Students: Comparison of Private and Government Medical College

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Abstract

Objective: To make a comparison of preferred learning style of final year MBBS medical students of a private medical college with that of Government sector institution.

Method: Participants of this observational study were final year students of Services Institute of Medical Sciences Lahore (SIMS) and Lahore Medical and Dental College (LMDC) Pakistan. Fifty Final year students from each college filled the Visual Auditory Read/Write Kinaesthesia (VARK) Questionnaire. They were assessed according to their favorite method of learning and were classified as kinesthetic, visual, auditory, or read/write. Comparison of (VARK) scores between colleges was done by Independent Sample T-Test.

Results: There was no significant difference in preference of learning styles among students of both medical colleges. Majority students of both colleges preferred Unimodal style (LMDC-78% vs SIMS-74%). Multimodal style was seen in the rest of students. Read/writing was common among the students of both colleges (20%). Kinesthetic style was preferred by 34% of students of private vs 20% from Government institution.

Conclusion: Teaching should involve all sensory modality so that all types of students can actively participate in learning session.

Keywords: Learning styles, Medical students, Visual Auditory Read/Write Kinaesthesia (VARK)

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Introduction

Learning styles describes the association between student, context and task.¹ Medical students diversify in their approach to learning for processing information.² Learning style is the fusion of intellectual, affective, and physiological characters that gives information of perception, interaction and response of a learner to the learning environment.^{3,4,5} It is the approach by which a student prefers to process, comprehend and

retain knowledge.⁶ Dunn et al defined it as different techniques used by students to learn and recall information.⁷ As medical teachers we need a better understanding of students' approach to learning as it impacts the educational outcome.⁸ Honey and Mumford classified learners as reflectors, activist, pragmatist and theorists. Neuro-linguistic Program theory recommended visual, auditory, read/write and kinesthetic style to learn.⁹

Learning styles have an influence on learning and performance. The learner does not realize his or her mode of learning. An effective and correct learning style can help student to gain achievement in better understanding.¹⁰ Studies have shown that identifying learning styles can help in selection of teaching methods that can be most effective and will result in better performance and educational outcome.⁵

Variation among the learning style and teaching methodology is a basic reason for lack of interest by students. Thus, the teaching-learning process can be strengthened

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by detection of styles of learning and selecting the most suitable teaching methods.¹¹ Differences in learning process among students can promote deeper learning and improve the acquisition of knowledge, which is essential for the understanding and practice of medicine.³ Research has shown significant value in aligning dominant learning styles of students and teaching styles of instructor for better academic performance.¹² The modalities of learning in students is assessed at a regular interval in most medical institutions. Thus the teachers become aware of their students' ability to learn.¹⁰ Students' attention and motivation improve when the facilitator molds the lecture according to their ideal learning style.¹³

Studies done earlier have shown different modes of learning among medical students in different parts of the world. Various questionnaires have been used to assess the style to learning. In 1987, Neil Fleming developed The VARK questionnaire. It is a simple questionnaire that identifies four sensory modalities: visual, aural, read/write, and kinesthetic.¹³ Students learn by diagram and charts in visual method and by listening to the information in aural modality. In read/write mode the primary way to assimilate knowledge is read and write. The kinesthetic learner uses practice and simulation for learning.¹³ The creation of private medical colleges in Pakistan has given a chance to study in exclusive situations and presentation methods. Thus the teachers and students need to constantly update about the best ways of learning to bring a constructive change in medical education. This will help to identify students at risk and carry out attributional retraining along with teaching and learning methods to ensure achievement of deep learning and competency based outcome in these students. As the students entering in Private and Government medical colleges are from different schools, there is a need to know if there is a variation in their learning styles because of schooling system. Few studies are available in Pakistan comparing medical students of a government institution with a private institution. Thus, this study was conducted to determine and compare predominant preferred learning style of final year MBBS medical students of a private medical college with that of Government sector institution.

Materials and Method

This cross sectional study was conducted in Services Institute of Medical Sciences Lahore (SIMS) and Lahore Medical and Dental College (LMDC), Pakistan after approval of the Institutional Review Board. A sample

size of 100 students was taken by non-probability purposive sampling technique. Fifty students of Final year from each medical college were included after written informed consent. VARK questionnaire 7.1 was used to assess the choice of learning style. It consisted of 16 multiple choice questions each having four options. Each option is associated with one of the following learning modes (visual, aural, read/write, kinesthetic). The students were asked to make one or more choices that best explained their preference. The preferred learning mode was indicated by the highest marks. The names were not recorded on questionnaire to preserve anonymity. VARK score were calculated and the preferences were obtained from the score. Those who had one preference were considered as unimodal learner. Bimodal learners were those who chose two preferences and those with three preferences were trimodal and lastly the quad-modal learners preferred all four components. SPSS V.25 was used to analyze the data statistically. Distribution of learning modes in students are expressed as percentages in each category. Scores of individual VARK components are expressed as mean \pm SD. Comparison of VARK scores among the two institutions was done by independent sample T-test. $P < 0.05$ was taken significant.

Results

Table 1 shows the mean score and standard deviation of each VARK component among the final year students of both medical colleges. Kinesthetic mode has the highest mean in students of the two medical colleges (5.48 vs 4.64) but it is not statistically significant.

No significant difference was seen in preference of learning styles among students of both private (Lahore Medical & Dental College) and Government sector medical colleges (Services Institute of Medical Sciences) ($p > 0.05$). Students of both medical colleges showed preference of unimodal learning style (LMDC-78% vs SIMS-74%). In multimodal category, Bimodal was the largest. 20% students of LMDC preferred bimodal style versus 16% students of SIMS. Trimodal style was seen in 6% students of SIMS while no student of LMDC preferred it. Quadmodal learning style was represented by 4% students of SIMS and 2% students of LMDC. (Figure. A & B) Among the unimodal group of private medical college (Lahore Medical and Dental College), majority preferred kinaesthetic (34%) followed by reading/ writing (20%), aural (18%) and the least preferred was visual (6%). Bimodal learners preferred six

combinations out of which read-kinesthetic was the most common (8%). Quadmodal learners were 2%. (Figure A & B) Students of Government medical college (Services Institute of Medical Sciences) who preferred unimodal style showed predominance of read/writing (22%). Equal percentage of students preferred aural and kinesthetic modality (20%) while 12% preferred visual learning. Read-kinesthetic mode was represented by 8% bimodal learners followed by quadmodal preference (4%). Preference of three combinations was seen in trimodal learners that was 2%. (Figure A & B)

Distribution of Learning styles

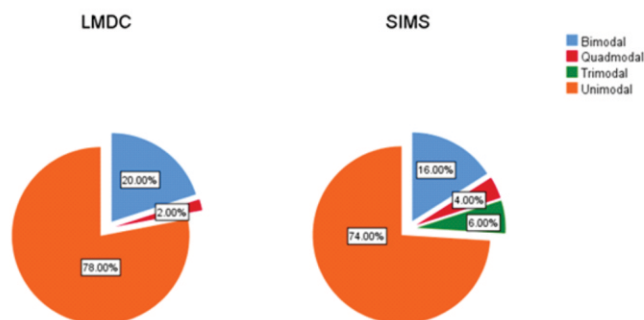


Figure A

Distribution of Learning Styles

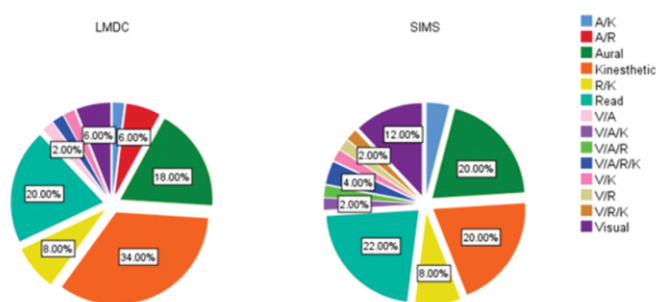


Figure B

Discussion

In Pakistan the present medical education system is changing from traditional teacher centered to active student centered learning. Active learning strategies promote thinking and improve the ability to identify problem and making a decision to solve it. Students learn in different ways to convert the information to long term memory. Knowledge and identification of learning styles may help teachers to solve learning problems in students and thus helping them to become effective learners.^{10,14} This creates a better learning environment and help students to develop and use appropriate strategies in different medical situations.¹² The structure of education can be improved by recognition of different learning styles which will help teachers to modify their teaching methods according to the needs of students. This study was done to find the distribution of learning preferences in medical students of a private and Government sector college. The results of this study found that many students of both medical colleges selected to learn by one mode but the modalities were different. Kinesthetic mode was adapted by students of private medical college while preference was Read/Write style in Government sector medical college. The reason behind difference in preferred unimodal style in the two institutions may be due to teaching methodology used and learning environment. Another factor for this variation among the institutions could be the premedical education system as students are admitted from different schools. Bimodal learners were present in both medical colleges with read-kinesthetic mode being common among the students. This could be attributed to teaching of practical sessions as laboratory experiments, tutorials, anatomy dissections along with routine didactic lectures. Few quadmodal learners were observed in both colleges. Consistent with results of our study El Sayed et al also found unimodal learning style in Graduate

Table 1: Group Statistics: Mean score of VARK Components.

	Institution	N	Mean	Std. Deviation	Std. Error Mean
Visual	Lahore Medical & Dental College (LMDC)	50	3.70	1.787	.253
	Services Institute of Medical Sciences (SIMS)	50	3.80	1.863	.263
Aural	Lahore Medical & Dental College (LMDC)	50	4.34	2.488	.352
	Services Institute of Medical Sciences (SIMS)	50	4.52	2.384	.337
Read	Lahore Medical & Dental College (LMDC)	50	4.54	1.740	.246
	Services Institute of Medical Sciences (SIMS)	50	4.52	1.854	.262
Kinesthetic	Lahore Medical & Dental College (LMDC)	50	5.48	2.509	.355
	Services Institute of Medical Sciences (SIMS)	50	4.64	1.613	.228

year students of Inaya Medical College (70.9%). The difference was in mode of unimodal learners. 38% were aural learners as compared to kinesthetic and read/write learners in our study.¹⁰ Comparable to our results a study by Shahriki et al indicated Read/write to be the most preferred choice of learning.¹¹ In a similar study by Karthika on medical students of Government medical college, Central Kerala, single sensory modality was seen in 56.1%. Auditory style was preferred among students of unimodal style. 40.9% were multimodal and 3% bimodal.¹⁴ Liew.SC et al reported unimodal (81.9%) was the preferred style and among unimodal 30% had kinaesthetic mode.¹⁵

In agreement to our findings, a study conducted by Razeqalla et al at the College of Medicine, University of Bisha, Saudi Arabia categorized learning patterns into unimodal (86.2%) and multimodal (13.2%). The difference was in dominant learning style. 55.9% students used aural as their preferred learning mode and 32.2% were kinesthetic while visual was the least presented (6.8%). As data was collected from male students only so that could be reason for the variation in dominant learning style in our study.¹⁶ Fahim A et al studied the distribution of learning style in medical students and found unimodal style to be predominant in 39.37% (580) and 60.62% (893) to be multimodal.¹⁷ Qahtani et al distributed a survey among the dental undergraduate students of King Saud Medical University and found unimodal learning preference in 38% of final year students.¹⁸

Different results have been published earlier regarding dominant style of learning. Chaudhry MH et al assessed the preferred learning styles and determined their association with the academic performance of 597 undergraduate medical students in various medical colleges in Pakistan. In contrast to our study results, they found unimodal modality in 27.6% students. Most preferred single mode of learning was auditory (10%) followed by kinesthetic (8.4%), visual (6%) and read/write (3%).⁵ The reason could be the participation of all medical students in a college while our study was confined to only the Final year participants.

A study by Chouhan N et al on medical students of a college in Jammu revealed 53% to be multimodal and 47% adopted a single sensory modality to learn. They found 31%, 21% and 1% were bimodal, trimodal and quadmodal, respectively.¹⁹ Marzo et al studied clinical students of three medical colleges in Malaysia and found unimodal learning in 45.07% and remaining

54.93% preferred multimodal learning. Regarding multimodal learning style bimodal was preferred in 52.6%.²⁰ This variation from our study could be due to vast involvement of students in new technology. In a study by Nagesh et al, 73% of final year students preferred multimodal learning versus 27% who were unimodal. He also found that kinesthetic style was most common among students.²¹ Sinha et al in his study on medical students of Malaysian medical college showed that 45% were monomodal and 55% were multimodal. In monomodal category kinesthetic preference was strongest (45%) in students.²² Daud S et al analysed students of first year to fourth year and found unimodal style in 31% and multimodal in 69%. The dominant style was aural (14%) in unimodal learners which was followed by kinesthetic (13%).²³ A study by Bokhari et al revealed majority (13.4%) of final year students of Sialkot medical college, Pakistan were multimodal and 5% were unimodal. 31.26% of these multimodal learners were in favor of kinesthetic learning.²⁴ The differences observed from our study may be due to the preparatory classes before entering the medical school.

The findings of the current study provided an insight into ways that our medical students learn in different medical colleges. Majority favored kinesthetic and read/write followed by aural in unimodal learners. Read-kinesthetic was common among the six combinations of bimodal learners. This showed that how students have different approaches to make their brains work during learning. In this study we did not provide students with specific teaching and learning methodologies that were according to their learning preference styles. Teachers and facilitators need to familiarize with all modes of learning modes to capture the interest of students and to maximize learning and outcome. They need to adapt active strategies that could benefit all types of learners and will facilitate better learning process.

Certain limitations of our study were that we did not compare the preference of learning style among males and females. Also the influence of learning style on academic performance was not determined. Future studies can be done regarding this taking a larger sample size.

Conclusion

According to results of this study, students of the two different institutions did not show significant difference in the modes of learning. Unimodal learning style is preferred by majority of medical students though the

choice of modality is different among them. There is a need to conform instructional methods according to the learning styles. This will make learning better and might enhance student's performance.

Conflicts of Interest

None

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None

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Authors Contribution

- NA:** Conceptualization of Project
- NN:** Data Collection
- NA:** Literature Search
- NA:** Statistical Analysis
- NA:** Drafting, Revision
- NA:** Writing of Manuscript