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Approaches to Different Learning Styles in Undergraduate Medical Students of Al-Tibri Medical College Karachi

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Author`s Contribution

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ABSTRACT

Objectives: The purpose of this study was to evaluate the different styles of learning preferred by undergraduate medical students from 1st to 5th year of Al-Tibri Medical College Karachi

Methodology: This was a cross sectional observational study carried out on the undergraduate medical students of Al-Tibri Medical College Karachi from 1st year to 5th year for a period of six months. The sample consisted of 498 participants, distributed across the various academic years: 101 from the first year, 96 from the second year, 101 from the third year, 104 from the fourth year, and 96 from the fifth year. For collecting data, a self-administered and pre-tested questionnaire of VARK learning styles was distributed amongst students. The analysis of data was done using SPSS version 23.

Results: From 498 undergraduate medical students included, mean age was 20.93 ± 2.27 years. Mean score for visual learning style was 2.75 ± 2.5, auditory was 3.4 ± 2.1, reading / writing was 3.9 ± 2.8 and kinesthetic was 4.75 ± 3.2. 56 % of 1st year students opted for uni-modal while 44 % multi-modal learning style. 51 % of 2nd year students preferred uni-modal while 49 % multi-modal learning style. 52 % of 3rd year students chose uni-modal while 48 % multi-modal learning style. 50 % of 4th year students picked uni-modal and multi-modal learning style each. 44 % of 5th year students opted for uni-modal while 56 % multi-modal learning style.

Conclusion: Majority of students approached learning using kinesthetic style followed by reading / writing. A multi-modal mode of learning was preferred where a combination of either of VARK's learning styles were put into practice for attaining and acquiring the best possible knowledge.

Keywords: Learning Styles, Andragogy, VARK, Undergraduate Medical Students

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Introduction

The different styles of learning comprise of various theories that have proposed difference in an individual's capabilities, naturally occurring or habitually acquired, in order to attain and process information for learning.[1] The main concept of learning styles is the different methods of learning that an individual practice for learning purposes. Preferences of different learning styles that students adopt to acquire, analyze and interpret information or knowledge are collectively termed as the preferred learning styles.[2]

Due to rapidly changing and evolving nature of knowledge being provided in the field of medicine possesses a challenging task for encompassing vast areas of knowledge. Therefore, the task to impart the majority of knowledge within specific time frame for both retaining and effectively interpreting is considerate.[3] Lately, a shift

to andragogy (adult, student centered learning) from pedagogy (childhood, teacher centered learning) have been trending in medical education. At present, the published data recommends that in attaining the knowledge of the various learning styles among medical undergraduate students can possibly be used for both the students as well as teachers, so that teachers can adapt curriculum best suited for the student's preferred learning style.[4]

Resultantly, in recognizing the different learning styles that students adapt for medical education should be of utmost importance so institutions to use the appropriate ways of teaching best suited for the students' preference.[5] Studies have observed that a combination of theoretical and clinical knowledge is inter-related to successful attempts in examinations, all associated to the different learning styles of students.[6] Likewise, higher satisfaction in medical education can be achieved by helping students to identify their learning styles that in-turn can aid in empowering them for identifying and using modalities of learning that are best for them to use at an individual basis.[7]

One such hypothesis which is known as Meshing Hypothesis states that learning outcomes can successfully be achieved only when learning is concurrently matched to pre-dominant learning style of students.[8] The studies on determining the use of Visual, Auditory, Reading and Writing and Kinesthetic (VARK) learning styles by undergrad medical students have demonstrated a diversification in the students' preferred learning styles, using both uni-modal or multi-modal or either one of them.[9, 10]

Regarding the use of VARK learning techniques, first developed by Neil D. Fleming in order to improve the development of faculty members and to help students for becoming better learners.[11] The classification of VARK learning model is in line with the instructional preferences model. VARK acronym refers to V for visual, A for aural or auditory, R for reading / writing and K for kinesthetic. These four either singly or in combination are followed by medical students.[12]

The purpose of this study was to evaluate the different style of learning preferred by undergraduate medical students from 1st till 5th year.

Methodology

This was a cross sectional observational study carried out on the undergraduate medical students of Al-Tibri Medical College Karachi from 1st year to 5th year for a period of six months. After ethical approval from the institute, all undergraduate medical students that voluntarily agreed to participate in the study were included in the research while all those undergraduate medical students that refused to participate were excluded from this research. After including medical students of all the years at Al-Tibri Medical College Karachi, the total number of students amounted to 498 with 101 students from 1st year, 96 students from 2nd year, 101 students from 3rd year, 104 from 4th year and 96 from 5th year.

For collecting data, the use of self-administered and already pre-tested questionnaire that contained demographics such as age and gender which were incorporated to VARK learning style's questionnaire was distributed amongst the students that volunteered for participation in the study. The distribution of questionnaire was done by non-teaching assistant and at the end of the questionnaire; all the students were also given the option to provide feedback regarding their preferred learning styles.

The analysis of data gathered from the VARK questionnaire was done with the help of SPSS version 23. Data included baseline variables such as age and gender while the main data was the data collected from the VARK questionnaire. Quantitative variables such as age and mean scores of different learning styles were reported as mean and standard deviation while qualitative variables such as gender and type of learning style (uni-modal or multimodal) were reported as frequency in percentages.

Results

Out of the total 498 undergraduate medical students included in the study, the mean age was 20.93 ± 2.27 years. In the first year, there were 101 students, with 52 males and 49 females. The second year comprised 96 students, with 47 males and 49 females. The third year had 101 students, including 48 males and 53 females. In the fourth year, there were 104 students, with 78 males and 26 females. The fifth year consisted of 96 students, with 47 males and 49 females. (Table I) In figure I, a box and plot graph of mean VARK score of study participants in demonstrated.

The mean score of study participants with regards to visual learning style was 2.75 ± 2.5, regarding auditory learning style, mean score was 3.4 ± 2.1, with regards to reading / writing learning style, the mean score was 3.9 ± 2.8 and

Table I: Baseline demographics of study participants. (n=498)

Variables	Male	Female
1st year (n=101)	52	44
2nd year (n=96)	47	49
3rd year (n=101)	48	53
4th year (n=104)	78	26
5th year (n=96)	47	54
Age (mean ± SD) in years	20.93	2.27

Table II: Average score of study participants of each sensory modality, (n=498)

Sensory Modality	Mean Score ± SD
Visual	2.75 ± 2.5
Auditory	3.4 ± 2.1
Reading / Writing	3.9 ± 2.8
Kinesthetic	4.75 ± 3.2

for kinesthetic learning style, the mean score of participants was 4.75 ± 3.2. (Table II)

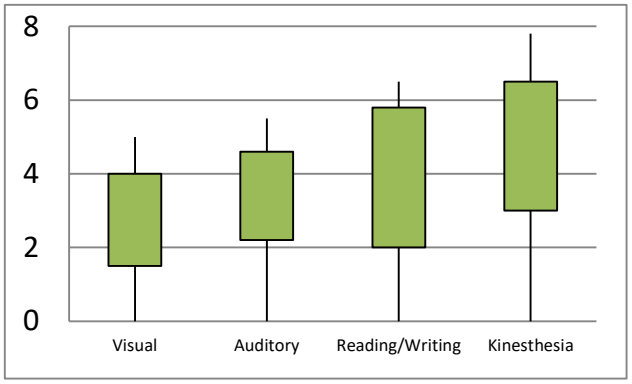

Figure I: Box and plot graph of VARK score of study participants. (n=498)

Figure II illustrates the graphical representation of learning style preferences among the study participants. In the first year, 56% of students favored a uni-modal learning style, while 44% preferred a multi-modal approach. For second-year students, 51% opted for a uni-modal learning style, and 49% favored a multi-modal style. Among third-year students, 52% preferred a uni-modal learning style, and 48% chose a multi-modal approach. In the fourth year, an equal distribution was observed, with 50% of students opting for both uni-modal and multi-modal learning styles. Finally, in the fifth year, 44% of students chose a uni-modal learning style, while 56% preferred a multi-modal approach.

Discussion

The results of this study reported that majority of the students' preferred kinesthetic style of learning followed by reading / writing. A multimodal sensor modality of learning showed more inclination than uni-modal sensory modality. To describe the four set of learning styles is as follows; the visual modality, students gain information through seeing, for example pictures, flowcharts and graphs.[13] The auditory of aural learners prefer hearing information and processing it best through listening the sessions or lectures, attend tutorials or use playback learning through voice recorders.[14] In the reading / writing modality, students prefer reading the text and then taking notes simultaneously.[15] In the kinesthetic modality of learning, the students tend to acquire information via experiencing and practicing and preferring to learn by being connected to real-life.[16] The classification of uni-modal or multi modal refers to the students that practice more (uni-modal) or more than one (multi-modal) sensory modality of the VARK learning styles.[17]

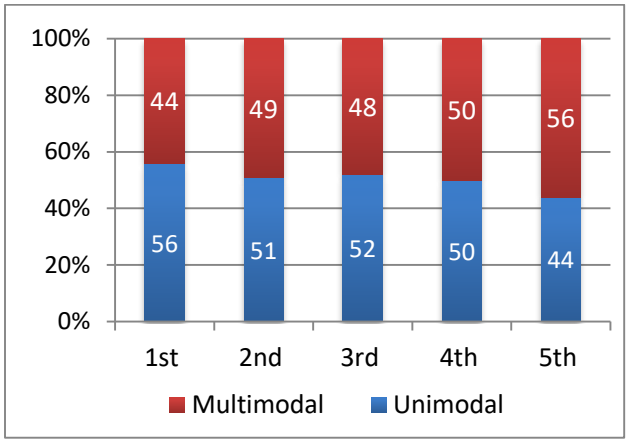

Figure II. Graphical representation of learning style preference of study participants. (n=498)

Various researches have observed that the students prefer a multi-modal style of learning rather than uni-modal style.[18] However, there is few instances where uni-modal style of learning has been preferred over multi-modal style. In one such study, as high as 82 % of students practiced a uni-modal style of learning, while only 18 % followed multi-modal style of learning.[19] Nonetheless, the preference of learning styles has been observed to vary depending not only upon the routine culture of students previously adopted in pedagogy but also depends upon the levels of medical education. In another research, it was found that the modality of learning was in-consistent among as year medical students, as reported in our study as well.[20]

Although in our study, in majority of the years except 3rd year students, a multi-modal approach was preferred over uni-modal, yet the findings remained inconsistent throughout the students. But overall preference was given to multi-modal set of learning. Similarly, other studies

from South East Asia and other countries have also observed that multi-modal approach to learning was highly preferred by the medical students.[21, 22] Furthermore, in our study, the most common approach used by students for learning was the kinesthetic style of learning. From this, it can be deduced that for learning, teacher-learner blended approach is the best way to cater students with such learning style preferences. Overall in the uni-modal learning style, the most commonly employed style was kinesthetic, showing that student might perform better using activities and manipulating techniques like bedside teaching, simulations and role playing. Likewise, a study reported that kinesthetic style of learning was the most predominant learning style in medical education through VARK model.[23]

The findings of our research demonstrate that through usage of teaching methodologies targeting VARK's learning styles might help in enhancing the level of understanding among the students. By using visual aids like videos, multimedia projectors, model, small group discussions, illustrations, simulations, bedside teaching and practical, students can be more engaged and become active learners rather than the passive traditional lectures, which ought to be highly discouraged.

This research can help students in showing awareness regarding their strengths and weaknesses which can help in motivating them for adapting and using a combination of different learning styles for best gathering of knowledge. Medical institutions should consider adopting VARK questionnaire for the purpose of checking and informing the newly admitted students regarding their preferred style of learning which will definitely help them in improving their understanding of learning and make them better performing students.

Conclusion

According to the results of the study, majority of the undergraduate medical students approached learning by using the kinesthetic style of learning followed by reading / writing. A multi-modal mode of learning was preferred by the students where a combination of either of VARK's learning styles were put into practice for attaining and acquiring the best possible knowledge.

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