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LEARNING STRATEGIES USED BY DENTAL STUDENTS AND DENTISTS USING THE ARK QUESTIONNAIRE.

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ABSTRACT… Objectives: To determine the preferred learning styles of Dental students and Dentists among various dental colleges using the VARK questionnaire. **Study Design:** Cross-sectional study. **Setting:** Various Dental Colleges in Karachi & Rawalpindi using the VARK questionnaire. **Period:** From June 2018 to February 2019. **Material & Methods:** Students, house-officers and demonstrators of dental medical college and hospital were asked to fill the VARK questionnaire which consists of 16 items. Four modes of learning either uni modal, bimodal or trimodal could be identified. The four modes include: visual, aural, reading, kinesthic. **Results:** Kinesthetic mode of learning was used by 24.5% individuals. Aural mode of learning was used by 25.3% individuals. Visual mode of learning was used by 15.5% individuals. Learning by reading was used by 17.7% individuals. Learning by using all modes was used by 1.5% individuals. **Conclusion:** Identifying the effective modes of learning is the first step towards changing the teaching strategy. Training in medicine and dentistry require innovative teaching ideas incorporating all modes for efficient learning of doctors.

Key words: Effective Learning, Learning Strategy, VARK Questionnaire.

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INTRODUCTION

Learning style is person's characteristic manner of acquiring expertise, knowledge and attitudes through education or experiences.[1] A number of factors can affect the learning of any student, which includes, nature of teacher, environmental factors such as, use of unsuitable text books, insufficient school facilities and various others.[2] In the modern world, progress of every remarkable human is because of learning, therefore, improvement in learning and teaching methods is considered as bases of all accomplishments in educational institutes.[3] Identification of students' learning style and teaching them according to their preferred style would result in academic success.[4] In order to increase awareness of teachers' concerning their students' learning style, assessment of students' learning is now considered as compulsory in many medical and dental colleges.[5]

Among the various methods, such as, Vermunt's inventory, Meyer Brigg Indicator and other, VARK is one of the method to detect learning styles.[6] In 2006, Neil Fleming presented the VARK learning style model.[7] The questionnaire can be easily downloaded from the internet and has already been used successfully by many studies.[8,9] Vark questionnaire is composed of 16 questions. Each question has 4 answers or it classifies students into four different groups.

VARK is an abbreviation, which stands for visual, aural, read/write, and kinesthetic preferences. Visual are those who learn best in scenarios such as, visual presentations, graphs, looking at pictures and figures. Aural are those who learn best by verbal directions and through listening. They are more attentive to words conveyed by teachers. They choose to listen than writing down comprehensive lecture notes. They like conferences, discussions and paying attention to mp3 recordings of presenters.[10] Reader/ writer prefer reading written text or handouts. They like writing down notes in class or during lectures to increase their knowledge. Kinesthetic

are individuals who are more attracted in doing practical. They enjoy hands on experiments and real life experience. They like to interact with the environment they are working in.[11]

It is evident from the research that learning style preference differs from one student to other.[12,13] This study was conducted out with the aim of determining the preferred learning style of Dental students (first year till final year) and Dentists (House Officers and Demonstrators) among various dental colleges in Karachi using the VARK questionnaire.

MATERIAL & METHODS

This is a cross-sectional study conducted among students, house officers and demonstrators of dental colleges in Karachi & Rawalpindi using the VARK questionnaire during the time period of June 2018 to February 2019.The purpose of this study is to evaluate the modes of learning among medical students using the VARK questionnaire.

VARK questionnaire was developed by Neil Fleming. It consists of 16 items multiple choice questions. All of these choices analyze the learning modality of the individual by either of four modalities or their combinations: visual, aural, reading and kinesthetic.

This study was conducted during the duration of 9 months i.e June 2018 to February 2019. Sample size was calculated using open Epi software. Inclusion criteria includes students of dental colleges in Karachi. Exclusion criteria includes students of any other department other than dentistry. Informed consent was taken before filling in the questionnaire. After consent individuals were asked to fill the 16 item VARK questionnaire along with some basic information such as age, class of studying. All information was kept confidential.

The collected data was further entered on SPSS and results were analyzed. SPSS v 20.0 was used. P-values less than 0.05 were considered significant.

RESULTS

Our sample size comprised of 593 individuals consisting of students, house officers and demonstrators. There were 101 males (17%) and 492 females (83%) (Figure-2). The mean age of individuals was 19.14 ± 6.57.

91 (15.3%) students were from first year of school of dentistry, 138 (23.3%) from 2nd year, 100 (17%) were from 3rd year, 94 (16%) from 4th year, 126 (21.2%) were house officers, 44 (7.4%) were demonstrators.

Kinesthetic mode of learning was used by 24.5% individuals. Aural mode of learning was used by 25.3% individuals. Visual mode of learning was used by 15.5% individuals. Learning by reading was used by 17.7% individuals. Learning by using all modes was used by 1.5% individuals. Rest of the individuals used bimodal and tramadol models in different combinations of the four aspects (Figure-1).

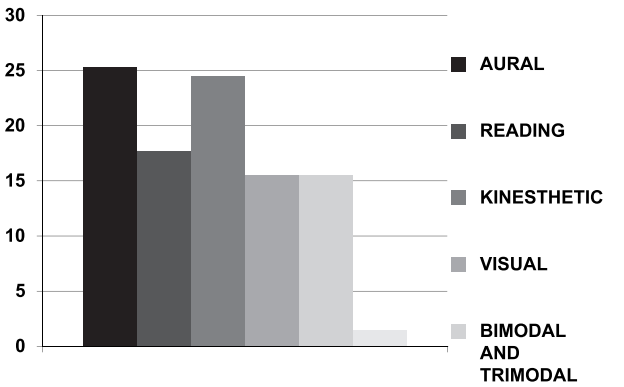

Figure-1. modes of learning in our distribution.

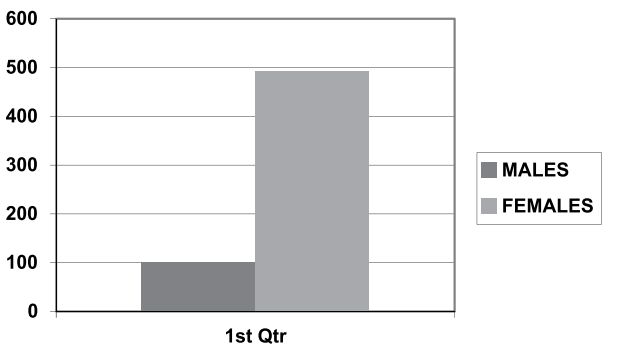

Figure-2. Gender distribution.

DISCUSSION

In our study, 83% of individuals used unimodal pattern of learning and 1.5% used quada model pattern on learning while the rest of 16.5% individuals used bimodal and tri modal methods in different combinations. Peyman et al conducted a similar study in 2010 in a university located in the west of Iran. His study reports 41.6% individuals having unimodal pattern of learning.[14] Another study conducted in Michigans shows that 36.5% individuals showed unimodal learning strategy while 43.5% individuals showed quad model of learning. This study was conducted only among first year medical students. By this study it can be concluded that during the initial days of medical school multiple learning methods can help students build good concepts which will help them during their entire medical career.[15] Salilthap et al reports 35% individuals with unimodal pattern of learning whereas majority preferred quada model pattern of learning. He further reported that learning strategies are associated with interpersonal problems.[16]

Many studies have reported that aural and kinaesthetic are the most common modes of unimodal learning.[17-20] These results are consistent with the results of our study. When a person reads something there is 20% chance of remembering the content. If reading is followed by listening the chances are increased to 30%. If reading, listening and watching occur simultaneously, the chances are increased to 40%. The chances of remembering the content are 60% if reading, listening, watching are followed by performing. If all of these tasks are performed simultaneously in a sequel the chances of remembering the content further increase to 90%.[21]

Some studies have found a relationship between identifying the learning preferences and improvement of grades.[22] However other studies have concluded that that's not always true.[23] An analysis of the learning techniques in our population can help us understand the technique by which teaching methods could be modified for improved results.[24] The limitation of our study includes small sample size and restriction to students from dental college. Further studies among medical students of Pakistan are required to analyze the different learning strategies among medical students. Analysis of the problem is the first step towards its solution. Medical school teaching strategies need advancement to better results in medical universities. This in the longer term can help create better doctors and improve the entire health system of this country.

There are certain limitations of the VARQ questionnaire. It can assess the learning strategies used by a person but it cannot analyze other factors which can either positively or negatively influence the learning such as personal factors causing stress, socio-economic class.[25] Belonging to a third world country, economic factors also negatively influence our learning however this aspect was uncovered in this study.

CONCLUSION

It is evident from the research that learning style preference differs from one student to other. Identifying the effective modes of learning is the first step towards changing the teaching strategy. Training in medicine and dentistry require innovative teaching ideas incorporating all modes for efficient learning of doctors.

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AUTHORSHIP AND CONTRIBUTION DECLARATION

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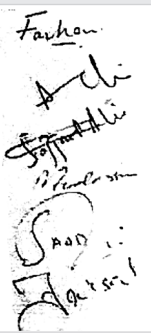
1	Farhan Butt	Conception and design, Statistical expertise.	
2	Asma Naz	Critical revision of the article for important intellectual content.	
3	Sajjad Ali Darvesh	Data collection Critical revision.	
4	Mudassir Hussain	Drafting of the article.	
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