ORIGINAL ARTICLE

LEARNING PREFERENCES OF DENTAL STUDENTS AT ISLAMABAD MEDICAL & DENTAL COLLEGE

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ABSTRACT

The purpose of this study was to measure the distribution of learning preferences of 1st and 2nd year dental students at Islamabad Medical & Dental College. Each individual has learning styles in various combinations; as a teacher we need to use all four ourselves recognizing that each student may have a preference of acquiring information and skill in one style over another. As students progress it is important for us to match our teaching methods to their task specific needs. To determine the learning style preferences, the VARK questionnaire was administered. Student questionnaires were scored and tabulated to determine the distribution of VARK preferences. 52% of respondents preferred a single mode of learning, 36% were bimodal, 8% tri modal and 4% were quad modal. Results clearly demonstrate that Dental students' preferred kinesthetic and aural learning at a higher percentage. Dental students may be more skilled at some tasks and less in others; it is important that our teaching / coaching methods are matched to their learning preference and to each task.

Key words: *Learning styles, visual, aural, kinesthetic, read-write, adult learning*

INTRODUCTION

We learn new information according to our specific learning preference. There are many major models that describe learning styles or learning "preferences".[1] Knowledge of learning preferences can help teachers know more about the students they teach and help them to develop effective instructional stragegies.[2] Learning style information can also benefit the students directly as they learn more about themselves and acquire knowledge of general learning theory.[3]

The classroom environment is often not good for dealing with various learning styles. Teachers have not methodically considered students' learning styles, in Pakistan. In a sense, it is natural that Pakistani teachers have not been aware of different learning styles and student diversity. One of the focal points of student not doing too well is the disparity between learning and the delivery of instruction.[4] Medical educationists believe that everyone has a learning style and, if instruction is adapted to accommodate that style, it is anticipated that improved learning will result.[5]

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Among the ever-growing number of tools used to determine learning preferences, one instrument that has been used widely in the health professions is called the VARK instrument,[6] which is an acronym for: visual (V), auditory (A), reading-writing (R), and kinesthetic (K).

METHODOLOGY

To determine the learning style preferences, the VARK questionnaire (www.vark-learn.com/documents/The VARK Questionnaire.pdf) developed by Neil Fleming was administered to 1st & 2nd year dental students enrolled in Islamabad Medical & Dental College. The VARK test was selected due to its ease of use, wide distribution in the field of education, and recent usage in studies of health profession students. It was distributed in the form of hard copies to hundred (100) dental students out of whom 90% students responded and submitted the completed questionnaire, which comprised of sixteen multiple-choice questions with four answer selections corresponding to the four sensory modalities.

Student questionnaires were scored and tabulated to determine the distribution of VARK preferences. Preference rankings were calculated by totaling all "V" responses (visual), all "A" responses (aural), all "R" responses (read/write), and all "K" responses (kinesthetic). Each category was equally weighted, and dominant preference was defined by determining which category received the most responses. Mean scores with standard deviations were calculated for each VARK component. Inter-class means were compared for statistical significance using the Student t-test (SPSS).

RESULTS

A total of 90 students filled out the VARK instrument, giving an overall 90% response rate. It was found that 52% of respondents in this study preferred a single mode of learning (i.e., either V, A, R, or K), out of which kinesthetic and read/write preferences were dominant. The remaining students had multimodal VARK learning preferences. 36% were bimodal, 8% tri modal and 4% were quad modal (Fig. 1 & 2).

TABLE 1: VARK MEAN SCORES FOR OPTIONS SELECTED BY DENTAL STUDENTS

	Mean	Std. Deviation	Percentages %
Total "V"	3.07	1.907	20
Total "A"	5.38	2.091	34
Total "R"	4.68	2.108	30
Total "K"	5.69	2.608	36

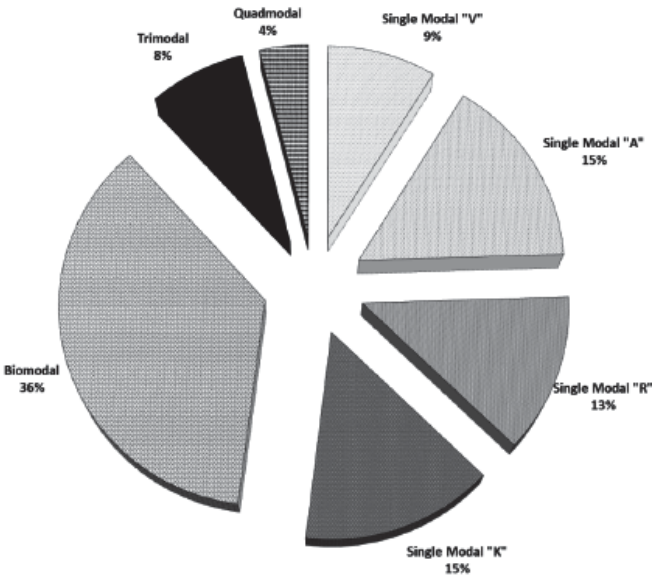

Fig 1: The percentages of students with singular and multimodal learning preferences

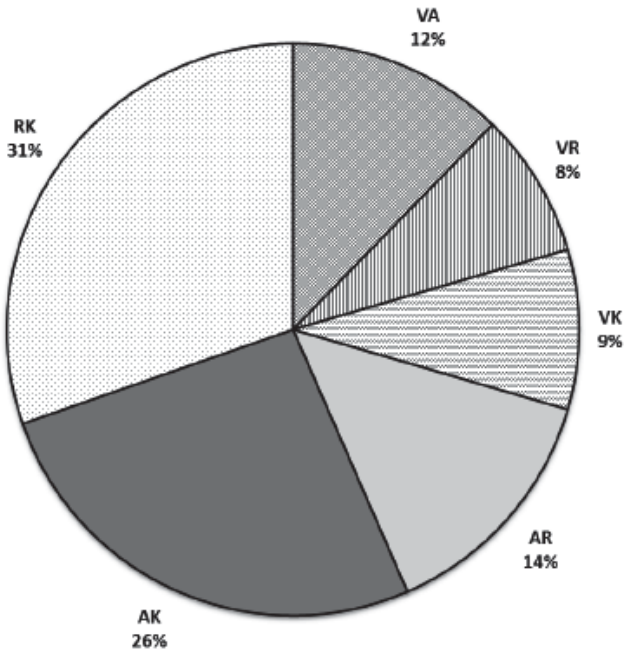

Fig 2: Bimodal Distribution of Learning Preferences

TABLE 2: INTER-CLASS COMPARISONS OF THE PREFERENCE BASED ON STUDENT T-TEST

	Year of the class	n	Mean	Std. Deviation	p Value
Total "V"	1st Year	44	3.14	1.875	.737
	2nd Year	46	3.00	1.955	
Total "A"	1st Year	44	5.11	1.895	.243
	2nd Year	46	5.63	2.254	
Total "R"	1st Year	44	5.30	2.163	.006
	2nd Year	46	4.09	1.895	
Total "K"	1st Year	44	5.91	2.777	.438
	2nd Year	46	5.48	2.447	

In the VARK instrument for each of the sixteen questions, a respondent could select anywhere from zero to four response choices. Conceivably, if the respondent felt all the answers were correct, a total of sixty-four responses could be recorded. The frequency of occurrence was determined for each of the four basic learning preferences (i.e., V, A, R, and K) for the entire group of students. The results showed that all four learning preferences were well represented among the students. VARK mean scores for options selected by dental students showed that kinesthetic and aural preferences ranked highest (5.69 and 5.38 mean scores per respondent respectively), followed by read/write (4.68) and visual (3.07) preferences (Table 1).

Learning preferences for 1st year and 2nd year BDS classes were also compared. Using a cutoff p-value = 0.05, based on the Student t-test, inter-class comparisons of the preference mean scores showed no statistically significant differences (Table 2).

DISCUSSION

The VARK instrument has limitations in its scope, validity, and reliability.[7] VARK is not a complete learning style inventory but rather provides basic sensory learning preferences. In addition, VARK does not take into consideration other learning criteria, such as engagement, motivation, and enthusiasm. Despite the limitations of VARK, there are new and exciting data that suggest that specific VARK learning profiles might be associated with those students pursuing careers in the health professions. The VARK learning philosophy at least offers and encourages teachers to acknowledge learning differences and to make efforts to address some of these differences by attempting a wide range of teaching approaches.[8]

Many educators agree that learning style or preference models make intuitive sense. Visual learners prefer the use of diagrams, pictures and symbolic devices (e.g. graphs, flow charts etc.). Visual learning is broken into a second category called Read/Write. Read/Write learners prefer printed words and text as a means of information intake (e.g. lists, glossaries, textbooks, lecture notes, or handouts). Aural learners concentrate on what lecturers say. They would prefer to listen rather than take notes and discuss to understand. To aid their studying, aural learners may talk out their answers or listen to taped discussions about exam topics. Kinesthetic learning is a multimodal measurement employing a combination of sensory functions. Kinesthetic preference refers to learning achieved through the use of experience and practice. In other words, the kinesthetic learner has to feel or live the experience in order to learn it.

Knowledge of dental student learning styles can be used in instructional strategy, particularly if students are not being taught in a manner consistent with their current preferences. For instance, the vast majority of dental students in the present study preferred the "K" learning style. This suggests that teaching approaches that incorporate the "K" learning style might be very useful and improve learning and engagement among many students. For those students with a strong unimodal "K" learning preference, learning difficult subject matter could be especially challenging and render some students at learning disadvantage in traditional didactic lectures. To provide "K" learning style opportunities, the instructor might include active learning strategies[9] or engage students in tactile demonstrations or in directly manipulating objects.[10] In dental school, kinesthetic learning may be achieved

through preclinical laboratory simulation or clinical instruction.

In this study 49% had multiple learning preferences with the VARK instrument. This data is roughly within the range of values reported for users of the VARK website,[11] of whom 58% have multimodal learning preferences. Based on these findings, dental students appear to have a stronger kinesthetic learning preference at this Institute. This preference, coupled with strong read/write preference scores, will suggest that the lecture presentation highlighted with pictures, diagrams, PowerPoint presentations, handouts, or guided notes would satisfy the needs of most dental students.

Learning preferences may change with time and surrounding. Meta analysis of learning style applications in higher education, however, indicates that preferences rather remain similar for a group of undergraduate students as also indicated in our study. However these preferences may shift if a student wants to master the learning objectives (e.g. post-graduation).[12]

Having discussed all this it comes to mind that, what exactly does it (learning style) mean to Instructors/teachers? Should teachers waste time or energy trying to determine the composition of learning styles their student's possess? So many learning style studies show positive effects (that students do better when teachers are trained in learning style theory). One possibility of this positive effect could be that the mere act of learning about learning styles prompts teachers to pay more attention to the kinds of instruction they are delivering. Teachers tend to offer a broader mixture of lectures, discussions, and laboratory work and this variety of instruction might turn out to be better for all students, irrespective of any matching. Teachers should worry about matching their instruction to the content they are teaching.[13] Results shown by the present study supports the suggestion that trainees should be given an active rather than a passive role in their learning.[14,15]

CONCLUSION

Knowledge of learning preferences can provide useful information to instructors. A wide variety of teaching methods can help reach the diversity of learners. The main usefulness of learning style information may be primarily to the students themselves. This study has helped provide self knowledge and to explore opportunities for making the dental educational experience both more productive and enjoyable for students and faculty members.

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