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Assessment of Teaching Method Preferences among Dental and Medical Students

[1]Dr Fasla E K, Post graduate student, Department of Oral Medicine & Radiology, Yenepoya Dental College, Deralakatte, Mangalore Karnataka – 575018

[2]Dr Laxmikanth Chatra, MDS, Head &Senior Professor, Department of Oral Medicine & Radiology, Yenepoya Dental College, Mangalore Karnataka.

[3]Dr Prashanth Shenoy, Professor, Department of Oral Medicine & Radiology, Yenepoya Dental College, Mangalore, Karnataka.

[4]Dr Veena K M, Professor, Department of Oral Medicine & Radiology, Yenepoya Dental College, Mangalore.

[5]Dr Rachna Prabhu, Reader, Department of Oral Medicine & Radiology, Yenepoya Dental College, Mangalore.

Correspondence Author: Dr Laxmikanth Chatra, MDS, Head &Senior Professor, Department of Oral Medicine & Radiology, Yenepoya Dental College, Mangalore Karnataka.

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Abstract

Aim: To assess the teaching method preferences among dental and medical students.

Materials & Methods: An internationally accepted VARK (Visual, Aural, Reading & Writing, kinaesthetic) questionnaire comprising of sixteen, close ended questions was used. The participants were given required time to mark the appropriate answers and data was subject to statistical analysis.

Results: In the present study according to VARK it was found that moststudents preferred a single mode of (uni modal)learning style, about 80% among medical and 83% in dental students. Followed by bi modal learning system, that is 18% in medical and 16 % in dental students and tri modal is found to be the least preferred among medical students about 1% followed by quad modal, 1%among medical and dental students.

Among uni-modal group aural was found to be to be the most preferred one in both medical and dental students ,that is 46 and 40 followed by kinestehtic (18&29),reading and writing (11&9) and visual is the least preferred one ,that is 5% in both dental and medical group. Among bi modal group aural and kinaesthetic opted by 6 students from medical batch and 8 students from dental batch, visual and aural is opted by 6 students from medical and 1 student from dental group, visual and kineshetic is opted by a single student from medical batch, while reading and kinaesthetic is found to be preferred method by 4 student from medical batch. Aural and reading method opted by only one students from dental and medical group. visual and reading method is opted by 6 dental students only.

Among tri modal group visual , reading and kinaesthetic was the method opted by one medical student, while quad modal that is visual, aural, reading and kinaesthetic found be the preferred method by one student from both dental and medical group .

Conclusion: The results of the study concluded that aural mode of teaching was most preferred one followed by kinestheic mode. The visual mode was found to be least preferred among both dental & medical students.

Keywords: Aural, Kinaesthetic, Uni Modal, Bimodal, Trimodal, Quad Modal

Introduction

The purpose of teaching is to encourage students to learn better so as to provide better understanding and knowledge of the subject to the students. As a general concept, individuals differ in their learning style. The concept of individual learning styles became popular in 1970's and since then has greatly influenced the education system.

Learning style refers to individual's way of receiving, perceiving, processing and retaining information for future use.[1] Efficient transfer of information from teacher to the student can be complicated, if there is mismatch between teaching strategy and students' learning styles. There are several methods available to assess learning styles. One of the most frequently used methods is VARK questionnaire developed by Neil Fleming. He described four sensory modalities Visual (V), Aural (A), Reading/writing(R), Kinesthetic (K).[2]

The most common mode for information exchange in our society is speech and this arrives to the learner's ear and is therefore coded as aural (A) by the questionnaire. For students with an aural preference an attachment to the questionnaire provides a set of strategies for 'learning by ear'.

The results for other respondents may reveal a preference for assessing information from printed words. These people are coded read/writers (R) or "R and W" because they use reading and writing as their first preference for taking in information.

The third group are not well served by present day methods of teaching in a university. They are the visuals (V). This does not mean that they are restricted merely to picture information or enhancements using colour and layout. They like information to arrive in the form of graphs, charts, and flow diagrams.

Sometimes they will draw maps of their learning sequences or create patterns of information. They are sensitive to different or changing spatial arrangements and can work easily with symbols.

The last group in the four part typology is the group who like to experience their learning by using all their senses, including touch, hearing, smell, taste and sight. This group is regularly described in the literature as kinesthetics (K). They want concrete, multi-sensory experiences in their learning.

Choice of learning methods for proper understanding of medical and dental subjects among medical and dental students is equally important as it is for other fields of educational system. With regard to the depth and nature of learning in terms of both theoretical and clinical skills, choosing the right mode of learning style for these students is extremely important for proper understanding of these important subjects. With regard to this need, a questionnaire based study was conducted on the dental and medical students to arrive at a conclusion about the best and most effective method of learning among these students. Teachers can use these methods to facilitate learning.[3]

Materials and Methods

A questionnaire based, cross sectional type of study was conducted in department of Oral Medicine & Radiology, Yenepoya Dental college, Yenepoya University Mangalore, Karnataka state India. The study was aimed to assess the teaching method preferences among dental and medical studentsof the same institution.An internationally accepted questionnaire comprising of 16 close ended questions which are indirectly related to the teaching method preferences, was implemented. Dental and medical under-graduate students from Yenepoya medical

and dental collegesof Yenepoya University were included in the study while as other students who were pursuing any course other than dental and medical courses from same University and post graduation students in medical and dental branches were excluded from current study. On the basis of convenience sampling method, a minimum sample size of 200 was found to be statistically significant using G* software. After taking informed consent from the participants, the questionnaire was distributed among medical and dental students and they were given required time to mark the appropriate answers. All the students marked all the questions and returned the questionnaire form. After collection,the data was entered in Excel sheets and was subject to statistical analysis.

Categorical data was expressed interms of counts and percentages. Independent t test was used to compare mean score between medical and dental students. The data was analyzed using SPSS Software version 22.

Questionnaire [4]

1. You are helping someone who wants to go to your airport, town centre or railway station.You would:

a. go with her.

b. tell her the directions.

c. write down the directions.

d. draw, or give her a map.

2. You are not sure whether a word should be spelled `dependent' or `dependant'. You would:

a. see the words in your mind and choose by the way they look.

b. think about how each word sounds and choose one.

c. find it in a dictionary.

d. write both words on paper and choose one.

3. You are planning a holiday for a group. You want some feedback from them about the plan. You would:

a. describe some of the highlights.

b. use a map or website to show them the places.

c. give them a copy of the printed itinerary.

d. phone, text or email them.

4. You are going to cook something as a special treat for your family. You would:

a. cook something you know without the need for instructions.

b. ask friends for suggestions.

c. look through the cookbook for ideas from the pictures.

d. use a cookbook where you know there is a good recipe.

5. A group of tourists want to learn about the parks or wildlife reserves in your area. You would:

a. talk about, or arrange a talk for them about parks or wildlife reserves.

b. show them internet pictures, photographs or picture books.

c. take them to a park or wildlife reserve and walk with them.

d. give them a book or pamphlets about the parks or wildlife reserves.

6. You are about to purchase a digital camera or mobile phone. Other than price, what would most influence your decision?

a. Trying or testing it.

b. Reading the details about its features.

c. It is a modern design and looks good.

d. The salesperson telling me about its features.

7. Remember a time when you learned how to do something new. Try to avoid choosing a physical skill, eg. riding a bike. You learned best by:

a. watching a demonstration.

b. listening to somebody explaining it and asking questions.

c. diagrams and charts - visual clues.

d. written instructions – e.g. a manual or textbook.

8. You have a problem with your knee. You would prefer that the doctor:

a. gave you a web address or something to read about it.

b. used a plastic model of a knee to show what was wrong.

c. described what was wrong.

d. showed you a diagram of what was wrong.

9. You want to learn a new program, skill or game on a computer. You would:

a. read the written instructions that came with the program.

b. talk with people who know about the program.

c. use the controls or keyboard.

d. follow the diagrams in the book that came with it.

10. I like websites that have:

a. things I can click on, shift or try.

b. interesting design and visual features.

c. interesting written descriptions, lists and explanations.

d. audio channels where I can hear music, radio programs or interviews.

11. Other than price, what would most influence your decision to buy a new non-fiction book?

a. The way it looks is appealing.

b. Quickly reading parts of it.

c. A friend talks about it and recommends it.

d. It has real-life stories, experiences and examples.

12. You are using a book, CD or website to learn how to take photos with your new digital camera. You would like to have:

a. a chance to ask questions and talk about the camera and its features.

b. clear written instructions with lists and bullet points about what to do.

c. diagrams showing the camera and what each part does.

d. many examples of good and poor photos and how to improve them.

13. Do you prefer a teacher or a presenter who uses:

a. demonstrations, models or practical sessions.

b. question and answer, talk, group discussion, or guest speakers.

c. handouts, books, or readings. d. diagrams, charts or graphs.

14. You have finished a competition or test and would like some feedback. You would like to have feedback:

a. using examples from what you have done.

b. using a written description of your results.

c. from somebody who talks it through with you.

d. using graphs showing what you had achieved.

15. You are going to choose food at a restaurant or cafe. You would:

a. choose something that you have had there before.

b. listen to the waiter or ask friends to recommend choices.

c. choose from the descriptions in the menu.

d. look at what others are eating or look at pictures of each dish.

16. You have to make an important speech at a conference or special occasion. You would:

a. make diagrams or get graphs to help explain things.

b. write a few key words and practice saying your speech over and over.

c. write out your speech and learn from reading it over several times.

d. gather many examples and stories to make the talk real and practical.

Results & Observations

Comparison of V, A, R& K between dental and medical students:

Table no.1: Group Statistics

	G	N	Mean	Std. Deviation	Mean Difference	p-value
V	Dental	100	2.70	1.617	.360	.120
	Medical	100	2.34	1.641		
A	Dental	100	5.41	1.753	-.110	.682
	Medical	100	5.52	2.032		
R	Dental	100	3.55	1.610	-.340	.137
	Medical	100	3.89	1.607		
K	Dental	100	4.59	2.045	.200	.442
	Medical	100	4.39	1.595		

Here, mean score given by dental and medical students are compared in V,A,R and K.

We observed that there is no significant difference between dental and medical students with p>0.05.

Graph no.1

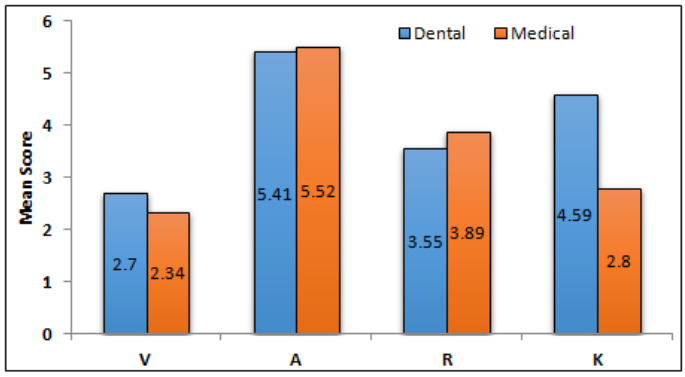


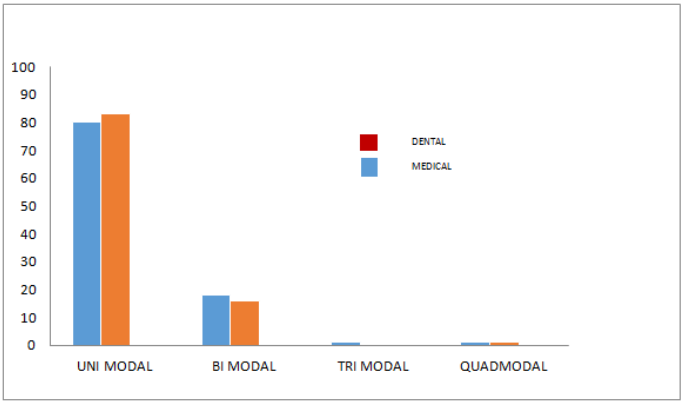
Table no.2

	Medical(n=80)	Dental(n=83)		Medical(n=18)	Dental(n=16)		Medical(n=1)	Dental(n=0)		Medical (n=1)	Dental (n=1)
V	5(6.25%)	5(6.02%)	AK	6(33.33%)	8(50%)	VRK	1	-	VARK	1	1
A	46(57.5%)	40(48.19%)	VA	6(33.33%)	1(6.25%)						
R	11(13.75%)	9(10.84%)	VK	1(5.56%)	-						
K	18(22.5%)	29(34.94)	RK	4(22.22%)	-						
			AR	1(5.56%)	1(6.25%)						
			VR	0	6(37.5%)						

Table no.3

	Medical	Dental
V	5	5
A	46	40
R	11	9
K	18	29
AK	6	8
VA	6	1
VK	1	-
RK	4	-
AR	1	1
VR	0	6
VRK	1	-
VARK	1	1

Graph no.2



Comparison of the mean VARK scores between medicaland dental students showed that ,there were no significant differences between dental and medical students with p>0.05.(table no.1)

Among medical students A- aural method was found to be the most preferred one with a mean of 5.52 followed by K- kinaesthetic with a mean of 4.39,R/W –reading or writing with a mean of 3.89 and V- visual method is the least preferred method with a mean of 2.34.

Among dental students, A- auditory was the most preferred method with a mean of 5.41 ,followed by K- kinaesthetic with a mean of 4.59 and 3.55 for R/W- reading or writing.

V-visual was the least preferred method with a mean of 2.70(table. no 1and graph no.1)

In the present study according to VARK it was found that moststudents preferred a single mode of (uni modal)learning style, about 80% among medical and 83% in dental students. Followed by bi modal learning system, that is 18% in medical and 16 % in dental students and tri

modal is found to be the least preferred among medical students about 1% followed by quad modal1%among medical and dental students. (table 2 and graph2)

Among uni modal group aural found to be to be the most preferred one in both medical and dental ,(46 and 40%) followed by kinestehtic (18&29%),reading and writing (11&9%) and visual is the least preferred one ,that is 5% in both dental and medical groups. Among bi modal group aural and kinaesthetic opted by 6 students from medical batch and 8 students from dental batch, visual and aural is opted by 6 students from medical and 1 student from dental group, visual and kineshetic is opted by a single student from medical batch, while reading and kinaesthetic is found to be preferred method by 4 students from medical batch. Aural and reading method opted by only one students from dental and medical groups. Visual and reading method was opted by 6 dental students only.

Among tri modal group visual , reading and kinaesthetic were the methods opted by one medical student, while as quad modal that is visual, aural, reading and kinaesthetic found be the preferred method by one student from both dental and medical groups.(table.2) .

Discussion

VARK is an internationally acknowledged questionnaire and is widely used by researchers to analyze learning style preferences of the study participants. It has become crucial for both the dental and medical education system to recognize that students could have varying preference for learning styles. Analyzing the learning style preferences of students will in turn help the system to consider selection of different learning modalities and preferences to encompass the diverse needs of students. It will also help them to reflect on the effectivenessof current instruction modes employed by them. The questionnaire can also aid the students in understanding their own learning preferences, which may be contrary to their perception. This would help them to actively engage in a learning environment that they would have otherwise perceived to be unsuitable.

According to the VARK model analysis, a student's preference of learning style is completely dependent on how one chooses to perceive received information. The preference may vary from a single mode (unimodal) to two modes (bimodal), three modes (trimodal) or all four modes (quadrimodal) of the options provided. It is also seen that students learn effectively when all the methods are blended together (visual, aural, read-write & kinaesthetic sensory modalities).

The present study was carried out among 200 study participants, comprising of 100 medical & 100 dental students. VARK, an internationally accepted questionnaire was administered to the participants. The study revealed that most of the medical and dental students preferred aural mode of teaching followed by kinaesthetic mode in the single mode learning category. The results of the study is in agreement with previousstudies carried out by Rathnakar P Urval et al[5],Nasser alqahtani et al[6], James et a[7], Abdallah et al[8],Slater et al[9]and Murphy et al[10], who also noted that the most frequently chosen methods were aural followed by kinesthetic. However, the results of this study seems to contradict with the study conducted by Murthy et al[11]as well as the findings ofNkemcho Ojeh et al[12]who concluded that the dominant preference of single learning style was the read-write model. This difference may be attributed to the differences in the teaching methodologies which are used at the premedical level. It was noted in the study conducted by Murthy et al. that most of the examinations given were focused on written tests, thus explaining the strong read-write preference, while in the former studies mentioned above, a variation of teaching methods was utilized which were not necessarily focused on the utilization of one method only.

The least preferred one in both categories of students was visual mode, and the difference between both categories were statistically insignificant. This was found to be in agreement with findings of Randa FathiAbidia et al[13], Rathnakar P. Urval et al[5],and Runki Saran et al[14] . Nonetheless, this finding was in disagreement with Murphy et al.[11] whose study revealed dominance of read/write and visual preferencesamong population of US dental students. Literature review reveals unimodal preference for visual learning to be higher in most of othercultural groups except in India and Saudi cohorts.

Students can use a variety of modes for learning; however, one mode can be dominant and preferred or there can be equal preference for one or more modes. With regards to modes of learning methods, As depicted by results of our study it was found that most of the students preferred unimodal mode of teaching andonly a minimal percentage of students showed preference towards bimodal, trimodal or quadmodal methods. This observation was in agreement with Randa Fathi Abidia et al[13]who also noted a similar finding of uni modal being the most preferredone among first and third year students while others opted multi mode of learning.The study by Nasser alqahtani et al[6] also found uni model to be the most preferred one. However, he also found an influence of gender,where boys opted single mode of learning more frequently while girls opted for multi mode of learning. This is in turn found to be disagreementswith the findings of a study conducted by Wehrwein et al[15] in 2007 on undergraduates of physiology,where they it was revealed that most male students selected the multimodal mode as their learningstyle preference (VARK) while female students preferred the single mode of learning. In contrast, other researchers found no differences in modes of learning styles between genders in dental, midwifery or medical students. Our study included both male and female students, and depicted that the selection of modality depends on various factors like age, culture, gender and academic level of the students who participated in the research.

However, our study is disagreement with Kharb et al[16](2013) whose study using VARK questionnaire indicated a 61%preference for multimodality and 39% being unimodal learners among the first year medical students in India. Baykan and Nacar [17](2007) reported 63.9% multimodality and 36.1% unimodality preference among medical students in Turkey using a Turkish version of the VARK questionnaire. Ramirez et al[18]. (2011) also reported a predominance of 68.9% multimodal learners out of 312 undergraduate students . A study by Breckler and co-workers[19] (2009) demonstrated a multimodal style preference of 60% among undergraduate and postgraduate students.

Difference in the prevalence of learning preferences between these studies may be explained by the difference in characteristics such as age, gender, culture and academic level of the students that participated in these studies.

Conclusion

This study carried out on students of amedical & a dental institutions, was aimed to know the preferred methods of teachings among students. The results of the study concluded that aural mode of teaching was most preferred one followed by kinestheic mode. The visual mode was found to be least preferred among both dental & medical students. The choice of preferred methods can be attributed to the familiarity of the students to most commonly used methods in pre-university teaching curriculum. Moreover the results of the study can be used to modify the current mode of teaching protocols by these colleges for better understanding among students.

Kinesthetic mode should be blended with aural for better results.

Recommendations

Authors of this study would like to recommend:

1. Workshops & hands-on courses should be included in curriculum to take advantage of the students' preferred modes. Hands-on courses make use of kinaesthetic senses. So they should be preceded by aural (interactive listening & speaking).
2. Aural followed by kinaesthetic modes will also improve students' confidence levels which is very important requirement for dealing with different clinical scenarios.

Limitations of The Study

Sample size was small.

Participants for comparison were selected from only two institutions.

References

1. Singh R, Gupta N and Sing G.Learning style and teaching method preferences of dental students.J Anat Society of India. (2016);65(2): 152–155.
2. Asiry M, Learning styles of dental students. The saudi j dent research. 2017; (1):13-17.
3. Fleming, N.D. I'm different; not dumb.Modes of presentation (VARK) in the tertiary classroom.in Zelmer,A., (ed.) Research and Development in Higher Education, Proceedings of the 1995 Annual Conference of the Higher Education and Research Development Society of Australasia (HERDSA);18:308 – 313.
4. Vark-learn.com.
5. Uruval R, Kamath A ,Ullal S, Shenoy A and Uduppa L. Assessment of learning styles of of undergraduate medical students using the VARK questionnaire and the influence of sex and academic performance. Adv Physiol Educ . 2014; 38(3):216-220.
6. AlQahtani N, AlMoammar K, Taher S, AlBarakati S, AlKofide E. Learning preferences among dental students using the VARK questionnaire: A comparison between different academic levels and gender.JPMA.2018;59:68.
7. James S, D'Amore A, Thomas T. Learning preferences of first year nursing and midwifery students: utilising VARK. Nurse Educ Today. 2011; 31: 417-23.
8. Abdallah A, Al-Zalabani A, AlqabshawiR.Preferred learning styles among prospective research methodology course students at Taibah University, Saudi Arabia. J Egypt Public Health Assoc. 2013; 88:3-7.
9. Slater JA, Lujan HL, DiCarlo SE. Does gender influence learning style preferences of first-year medical students? Adv Physiol Educ. 2007; 31: 336-42.
10. Murphy RJ, Gray SA, Straja SR, BogertMC.Student learning preferences and teaching implications. J Dent Educ. 2004; 68: 859-66.
11. Murthy N, Ramesh VL, Gowramma R. A study on VARK learning styles of SJM Dental college and hospital students Chitradurga. J Educ Res & Med Teach. 2014; 2: 33-6.
12. Ebiere Dorgu T .Different teaching methods: A panacea for effective curriculum implementation in the class room.inter j sec edu. 2015; 3(6):77.
13. Abidia RF, Stirling B, Azam A, et al. A Preference for Hands-on Learning: A Cross Sectional Study Assessing Dental Students' Preferred Style for Receiving Curricula. J Healthc Commun. 2016; 2:1.
14. Saran R, Kumar S, Pentapati KC. Assessment of learning preferences among dental students using Visual, Aural, Read- Write, Kinesthetic questionnaire:

An institutional experience. J Dent Res & Rev. 2015; 2: 10-12.

15. Wehrwein EA, Lujan HL, DiCarlo SE. Gender differences in learning style preferences among undergraduate physiology students. Adv Physiol Educ. 2007; 31: 153-7.
16. Kharb P, Samanta PP, Jindal M, Singh V. The learning styles and the preferred teaching-learning strategies of first year medical students. Journal of clinical and diagnostic research : JCDR. 2013;7(6):1089-92.
17. Baykan Z, Nacar M. Learning styles of first-year medical students attending Erciyes University in Kayseri, Turkey. Advances in physiology education. 2007;31(2):158-60.
18. Ramirez BU. The sensory modality used for learning affects grades. Advances in physiology education. 2011;35(3):270-4.
19. Breckler J, Joun D, Ngo H. Learning styles of physiology students interested in the health professions. Advances in physiology education. 2009;33(1):30-6.