

# Learning preferences among undergraduate medical students

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## Abstract

**Background:** Education in medical field puts a great pressure on young students. An improved understanding of the link between learning performance and approaches to learning can guide to the development of a more adapted approach to delivering coaching to medical students. This study was carried out to assess the learning modalities adopted by the medical students of the third year in Kannur Medical College.

**Objective:** To assess the preferred learning modalities of the medical students of Kannur Medical College.

**Materials and Methods:** It is a cross-sectional study carried out in a medical college of Kannur, Kerala, India. A total of 100 third-year medical undergraduates in a private medical college at Kannur were asked to fill a pretested and prevalidated visual, auditory, read/write, kinaesthetic questionnaire, version 7.3 developed by Neil Fleming. The students were then scored to assess the predominant learning modality used. Data were analyzed using SPSS, version 20. Descriptive statistics and Fisher's test were used to study the variables.

**Result:** Majority of the students were multimodal (69%). Reading/writing was the predominant modality used. There was no significant difference in the learning modalities of male and female students. There was also no difference in academic performance of uni- and multimodal learners.

**Conclusion:** Current teaching styles do not support the student fraternity that is predominantly multimodal. A variety of training programs must be arranged to train teachers to adjust their teaching styles. Multiple methods must be used simultaneously deliver knowledge and information to the students to improve their acceptance.

**Key Words:** Learning preferences, medical students, visual, auditory, read/write kinaesthetic, multimodal, unimodal

## Introduction

Education in medical field puts a great pressure on young students who do not have much awareness about the happenings of a medical course. The medical students will have to put more strain to incorporate more knowledge in lesser time than they are habituated to. The first-year undergraduation is used up trying to arrive to terms with the new subject, a new way of studying the subjects, and so on. In the successive

years of the course, most students would have developed a prototype of learning that they think is most helpful to them. It is vital to learn whether students tend to predominantly favor one modality of learning or a mixture of them to modify a teacher's teaching style to go well with the students.

An improved understanding of the link between learning performance and approaches to learning can guide to the development of a more adapted approach to delivering coaching to medical students.<sup>[1]</sup> The short-form VARK stands for Visual, Aural, Read/write, and Kinaesthetic sensory learning modalities that are used for learning information. Visual (V) preference includes the depiction of information in charts, graphs, flow charts, maps, and other devices that people use to represent what could have been presented in words. It must be more than mere words in boxes that would be useful to those who have a read/write preference. Auditory (A) mode describes a preference for information that is "heard or spoken." Learners who have this as their main preference report that

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they learn best from lectures, group discussion, radio, email, using mobile phones, speaking, and so on. Read/write (R) preference is for information displayed as words. Many teachers and students have a strong liking for this approach. Kinaesthetic (K) modality refers to the “perceptual preference related to the use of experience and practice.” Although such an experience may invoke other modalities, the key is that people who prefer this mode are linked to reality, “either through solid individual experiences, examples, rehearsal or imitation.” People with this as a strong preference learn from the experience of doing something and they value their own background of experiences and less so, the experiences of others. There are seldom instances where one mode is used, or is sufficient; that is why, there is a four-part VARK profile. That is why the VARK questionnaire provides four scores and also why there are mixtures of those four modes. Those who do not have a standout mode with one preference score well above other scores are defined as multimodal.<sup>[2]</sup>

Personal awareness of learning styles and confidence in communicating this are first steps to achieving an optimal learning environment.<sup>[3]</sup> In a study, it was found that the learning preferences (styles and approaches) of the students did not contribute considerably toward their learning outcomes. Tailoring the delivery of teaching and learning instructions matching with the learning preferences (styles and approaches) of the preclinical undergraduate medical students followed by a re-assessment of their performances at summative examinations would be beneficial to genuinely gauge the potential of these teaching–learning strategies.<sup>[4]</sup>

Hence this study was carried out to assess the learning modalities adopted by the medical students of third year in Kannur Medical College.

## Materials and Methods

It was a cross-sectional study conducted in Kannur Medical College, Anjarakandy. Medical students of third year were the study participants. The study was carried out in November 2015. A total of 100 students were included in the study. Students willing to participate in the study and those who were present on the day of data collection were included in the study. The study and its purpose were explained to the students. They were briefed about the meaning of VARK learning modalities to help them identify which modality they thought they used. After obtaining verbal consent from the participants, VARK questionnaire version 7.1, developed by Neil Fleming was administered to all students.<sup>[5]</sup> The questionnaire contained 16 questions with four options to each and a student may mark one or more options for each question. The answers marked by the students were then scored as V, A, R, or K based on the key given in the VARK guide. Based on the instructions given for the VARK inventory, scores were calculated to determine the predominant learning modality used by each individual. Students were classified as unimodal or multimodal learners depending on whether they predominantly used a single learning modality (V, A, R, or K) or

a combination of these (VA, RK, VAR, VARK, etc.). Those who used a combination of two learning modalities (VA, AR, RK, etc.) were classified as bimodal learners. Those using three (VAR, RAK, KVR, etc.) and those using all four (VARK) were classified as trimodal learners and quadrimodal learners, respectively. Data entered in a Microsoft Excel sheet and analyzed using SPSS software, version 20.

## Results

A total of 100 medical students of third year were assessed and the mean age of the students was  $22.01 \pm 0.9$  years. All of them were residing in the hostel on the campus. Of them, 24 were males and 76 were females.

### Learning Modalities of Medical Students

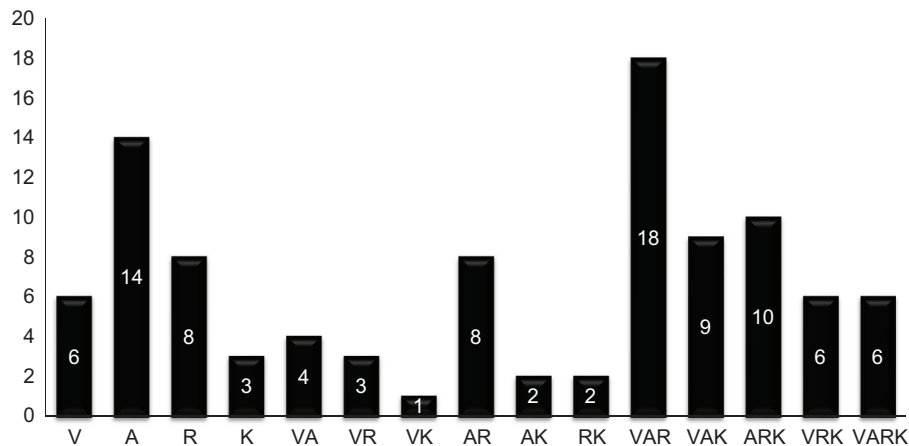
In this study, of the 100 students participated, 31 students were found to be unimodal in their learning style preference ( $n = 31$ , 31%) and 69 were found to be multimodal (69%).

Among the unimodal learners, aural learners form the majority ( $n = 14$ , 45.2%). This was followed by reading/writing ( $n = 8$ , 25.8%), visual ( $n = 6$ , 19.3%), and then kinaesthetic ( $n = 3$ , 9.7%). Among the multimodal learners, the trimodal method of learning was the most predominant style used ( $n = 43$ , 62%). This was followed by bimodal ( $n = 20$ , 29%) and quadrimodal ( $n = 6$ , 9%). Mean score of the academic performance of the students was  $59.4 \pm 5.45\%$  (Figure 1).

There were 4 males and 27 female students using unimodal method and 20 male and 49 female students were using multimodal methods for studying. When the association between gender and mode of learning was seen, it was not statistically significant (Fischer exact test,  $p = 0.127$ ). Association between gender and academic performance was also not statistically significant ( $\chi^2$ -test,  $p = 0.191$ ). In our study, 2 students using unimodal method and 13 students using multimodal methods had got more than 65% in the previous examination. Also, 29 students using unimodal methods and 58 students using multimodal methods had got less than 65% in the previous annual examination. Even though most common preferred mode of learning was multimodal method, but there was no association between the academic performance and preferred mode of learning.

## Discussion

Learning modalities are sensory channels through which individuals give, receive, and store knowledge. Visual, auditory, tactile, kinaesthetic, smell, taste, and so on are the different modes. Our study showed that 69% of our students are multimodal, and this is comparable to the findings of numerous other studies. It was highly similar to a study by Kharb *et al.*<sup>[6]</sup> wherein 61% of the students were multimodal. A study among graduate medical anatomy students showed that 71% were multimodal learners and 29% were unimodal.<sup>[6]</sup>



**Figure 1:** Different preferred modes of learning.

The present study showed that there was no significant difference in academic performance of unimodal and multimodal learners. There was no difference in the modalities adopted by male and female students for learning. In a study by Baykan and Naçar among the first year medical students in Turkey, the learning styles did not differ between male and female students.<sup>[7]</sup> On the other hand, a study among undergraduate physiology students in Michigan found significant differences in the learning style preferences of its male and female students.<sup>[8]</sup> Since there is no significance between academic performance and the mode of learning, there is a scope to perform study on large group of students to understand the association between mode of learning and the academic performance.

Development of student-friendly mode of teaching learning environment is important for making students feel exiled in academics.

## Conclusion

The study shows that most common preferred mode of learning is multimodal method. Unmatched learning methods and teaching-learning styles may negatively affect the learning of the students. Teachers should tailor their teaching styles to suits the needs of the students. An efficient training program should be included in all medical colleges to make sure the learning experience an enjoyable and inspirational one for all medical students. We need to move from classroom teaching and incorporate different patterns of teaching to teach our multimodal learners. There is scope to perform the study on large group of students as the present study was confined to only 100 medical students.

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