Original Research Article

Assessment of learning preferences among medical students

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ABSTRACT

Background: Facilitating learning, or the development of knowledge, skills, attitudes, beliefs, and habits, is what education is all about. The learning style of an individual refers to how they prefer to gather, process, memorize, and recall information. One student may adopt one or many modes of knowledge acquisition. Academics consider learning style as a factor influencing students' learning as a result of personal preferences for physical, social, and environmental components during the learning process.

Methods: The cross-sectional study was conducted from July to September 2022, at Goa Medical College. The student's preferred method of learning was ascertained using the VARK questionnaire which consisted of 16 questions in the VARK questionnaire. Each question offers 4 options, which correlate to the preferences for the 4 sensory modalities. The students were told to select the response that best reflected their preferences.

Results: A total of 867 medical students completed the questionnaire. Among the students 368 (41%) preferred unimodal learning style (either visual, auditory, reading/writing, or kinesthetic), 173 (20%) preferred usage of bimodal learning style, 126 (15.8%) trimodal and 200 (23.2%) quadrimodal learning style.

Conclusions: There is a variety of learning styles present in the classroom, and there are some students who are not addressed by the standard lecture format. Furthermore, this study demonstrated that students prefer multimodal methods. It is the responsibility of the instructor and the student to be aware of student learning style preferences to improve learning. As instructors, we need to assess and understand how to reach all students by understanding how to present information in multiple modes.

Keywords: Learning preferences, Medical education, VARK

INTRODUCTION

Facilitating learning, or the development of knowledge, skills, attitudes, beliefs, and habits, is what education is all about.[1] The learning style of an individual refers to how they prefer to gather, process, memorise, and recall information.[2] Everyone has own unique style of learning. One student may adopt one or many modes of knowledge acquisition.[3] Academics consider learning style as a factor influencing students' learning because of personal preferences for physical, social, and environmental components during the learning process.[4] There are several approaches to evaluate learning styles, but one of the most popular is the visual, aural, read-write, and kinesthetic (VARK) model developed by Neil Fleming.[5]

VARK is an abbreviation for visual, aural, read-write, and kinesthetic. The four sensory learning modalities of visual (V), aural (A), read/write (R), and kinesthetic (K) learners constitute the foundation of this system. Visual (V) learners tend to employ visual aids, see information visually, and think in terms of pictures. Aural (A) learners benefit most from informational listening. Learners who can read and write (R) strongly want to emphasis text-based input and output. Kinesthetic (K) learners gain knowledge by touching, moving, and carrying out

activities. They actively learn through experience. Students' learning preferences might be unimodal or multimodal depending on whether they employ one learning mode or several.

Students would study more effectively if we could help them identify their preferred learning style. Knowing students' preferred methods of learning can also assist educators better understand such methods, as well as help them create instructional strategies that will meet the needs of their students and encourage better teaching. This would eventually lead to improved pedagogic effectiveness and personality devolvement among the dental academicians.

The aim of the study was to determine the learning style preferences of medical students and to identify the relationship between learning style preferences and gender, academic performance. The study's objectives were to examine the preferred learning styles of medical students and the associations between gender, academic achievement, and learning style preferences.

METHODS

The cross-sectional study was conducted from July to September 2022, at the only medical college in the state of Goa which has an intake of 150/180 students per year.

Sample size was calculated using the formula $n = z^2p(1-p)/d^2$ while assuming a prevalence rate of 50%, and z value of 1.96.

Study tool

The English version of VARK questionnaire was used to ascertain the students' preferred method of learning once the informed written consent form was obtained.

A line list of students enrolled was made and the students were segregated according to their semester. Also, their annual result was obtained by calculating the average scores in all the subjects.

The purpose of the study was explained to all the students following which the questionnaire as a google form was circulated through the class representatives. The study included all MBBS students who have given their consent; incomplete forms and students who did not volunteer for the study were excluded. There are 16 questions in the VARK questionnaire. Each question offers 4 options, which correlate to the preferences for the 4 sensory modalities. The students were told to select the response that best reflected their preference. They were free to select more than one response and to omit a question if they believed it did not pertain to them. The distribution of VARK preferences was calculated after scoring and tabulating the completed questionnaires. By adding up all "V" replies (visual), "A" responses (aural),

"R" responses (read/write), and "K" (kinesthetic) responses, preference rankings were determined

Statistical analysis was carried out using IBM SPSS Statistics for Windows (Version 22.0. Armonk, NY: IBM Corp. For categorical variables, Chi-square or T test was the test of significance and a p value ≤0.05 was considered statistically significant.

RESULTS

A total of 867 medical students completed the questionnaire. The demographic data of the responders is as seen in Table 1.

Table 1: Demographic data of responders.

Characteristics	Number of students (%)
Age in years (n=867)	
18-20	181 (21)
>20-25	506 (58)
>25	180 (21)
Gender (n=867)	
Male	330 (38)
Female	537 (62)
Semester (n=867)	
First	181 (21)
Third	147 (17)
Fifth	180 (20)
Seventh	179 (21)
Ninth	180 (21)
Performance in annual exams (n=867)	
50-60%	86 (10)
60-70%	322 (37)
70-80%	331 (38)
>80- 90%	128 (15)
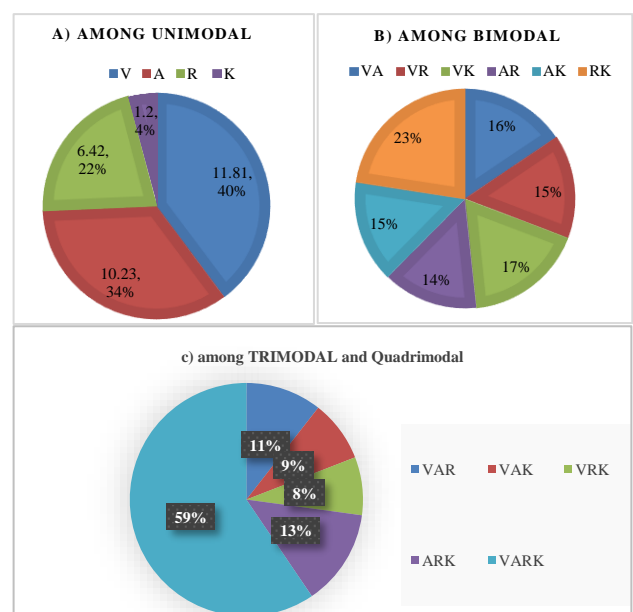
Figure 1: Overall distribution of learning preferences.

Among the 867 students, 368 (41%) preferred unimodal learning style (either visual, auditory, reading/writing, or kinesthetic), 173 (20%) preferred usage of bimodal learning style, 126 (15.8%) trimodal and 200 (23.2%) quadrimodal learning style. The overall distribution of learning preferences is depicted in Figure 1a and b.

Table 2: Sex wise distribution of the responders.

Semester	Male (%)	Female (%)	Total
First	71 (39)	110 (61)	181
Third	53 (36)	94 (64)	147
Fifth	80 (44)	100 (56)	180
Seventh	60 (34)	119 (66)	179
Ninth	66 (37)	114 (63)	180
Total	330 (38)	537 (62)	867

Table 3: Distribution of students as per their preferred learning method.

	Male	Female	Total
Unimodal	180 (54)	188 (37)	368 (41)
Bimodal	70 (21)	103 (19)	173 (20)
Trimodal	37 (12)	89 (15)	126 (15.8)
Quadrimodal	43 (13)	157 (29)	200 (23.2)
Total	330 (100)	537 (100)	867 (100)

The sex wise distribution of the students preferred method of learning is depicted in Table 3. On conducting a multinomial regression there was a statistically significant difference between the learning style preference between the genders with male preferring to use unimodal learning style and females preferring to use trimodal learning style (relative risk =2.47).

Students from preclinical and paraclinical students did not differ statistically significantly in their study methods. Their annual grades didn't reflect in any way to their methods of learning.

DISCUSSION

There are many ways to study, and each one has advantages and disadvantages. Each student has their own individual learning style. Using the right instructional strategy will enhance learning and facilitate comprehension. A teacher must be aware of the most efficient and preferable teaching technique when instructing a class of students. The amount of content in the medical curriculum will make it challenging for both teachers and students; teaching using a variety of methods will be more effective.

In our study, most students (59%) and 41%, respectively, favored multimodal and unimodal methods, like a study done among nursing students by Alkhasawneh and among medical and dentistry students by Fahim et al.[5,6] The most common ways for unimodal styles are verbal and aural,

maybe because students are more accustomed to using these than other types of methods.

Among multimodal techniques, most preferred method is quadrimodal, followed by bimodal and trimodal. With the introduction of online learning in higher education, the importance of multimedia has significantly expanded the rise in online learning may be too responsible for medical students' preference shifting from aural (A) to visual (V) learning. However, further research is needed to determine whether online learning directly affects these students preferred learning styles.

When considering association of genders with learning style preference, there was a significant difference between the styles of both similar to the study by Mozaffari et al and Daoruang et al.[7,8] Male students were more likely to choose unimodal style (K), whereas female students were more likely to choose multimodal learning style.

This study's sample was limited to one institution, and it is cross-sectional in nature. Larger sample size follow-up studies are required to achieve generalizability.

CONCLUSION

With our preliminary data, we conclude that there is a variety of learning styles present in the classroom, and there are some students who are not addressed by the standard lecture format. Furthermore, this study demonstrated that students prefer multimodal methods. It is the responsibility of the instructor and the student to be aware of student learning style preferences to improve learning. As instructors, we need to assess and understand how to reach all students by understanding how to present information in multiple modes. We can help students more effectively both in and out of the classroom, if we are aware of their learning style and can assist them in determining their preferences.

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