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Original article:

Preferences in learning style of under graduatemedical students

Deka RR[1], *Thakuria KD[2], Barua P[3]

[1]Assistant Professor,Dept. of Pathology, Tezpur Medical College , Tezpur, Assam, India

[2]Assistant Professor, Dept of Physiology, Tezpur Medical College, Tezpur, Assam, India

[3] Associate Professor, Dept. of Microbiology, Jorhat Medical College, Jorhat, Assam, India

Corresponding author*

Abstract:

Introduction: Comprehension of how students learn makes a teacher or a facilitator more competent. Medical teachers have to deal with adult learners and knowledge of learning preferences of students helps in complying to the diverse learning needs of the students.

Objective: The aim of this paper is to assess the learning styles of under graduate medical students which might help the facilitators in designing the teaching-learning actions accordingly for effective out-come based learning.

Materials and methods: VARK questionnaireversion 7.0 developed by Fleming was used in this cross-sectional, descriptive studyas material to collect the learning preferences of the under graduate medical students.

Results: Majority of the students preferred all the four sensory modalities (62.4%), followed by unimodal learning style (19.2%).

Conclusion: It became obvious from this study, that majority of undergraduate'smedical students preferred multimodal learning strategies. Hence, designing teaching-learning methods in accordance with students' disposition will help to further interactive outcome-based learning.

Keywords: VARK;adult learning;medical education; learning approaches.

INTRODUCTION

Switching from higher secondary education to professional course is a significant turning point for students in all aspects including learning and acquiring knowledge in a particular field to personality development. The medical teacher has to deal with adult learners, who according to Knowles are autonomous and self-directed, have prior knowledge and experience, goal-oriented, application oriented and easy to manage in an environment of respect. One of the ingredients, according to Sutkin et al 2008, that goes in making a competent medical teacher understands how people learn.[1] Different people have different ways of processing information and understanding that will help a teacher to facilitate the teaching-learning process in an effective way.

Learning style is "the manner in which a learner perceives, interacts with, and responds to the learning environment. Components of learning style are the cognitive, affective and physiological elements, all of which may be strongly influenced by a person's cultural background."[2]

The objective of this study is to assess the learning style of medical students which will help in designing the teaching-learning activities accordingly for effective disbursal and acquisition of knowledge.

MATERIALS AND METHODS

It is an observational cross-sectional, descriptivestudy that was undertaken at Tezpur Medical College, Tezpur, Assam in the year 2016.Human Institutional Ethical Clearance was obtained. The VARK questionnaire[3](with due permission)version 7.0 developed by Fleming was administeredto collect the learning preferences of the MBBS under graduatestudentsfor its ease of use and free online availability.

The questionnaire was distributed to the 1st and 3rd Semester medical students.A total of125 studentsparticipated in this study voluntarily.Prior to the start of the study, thestudents were briefedabout the objective of the study and consent was taken.

Analysis:

The VARK Questionnaire scoring chart was used to find the VARK category each of the answers corresponded to. The learning preferences of the students were found using the VARK spreadsheet. The students were categorized as unimodal when they had only one preference or multimodal for more than one preference into bimodal, trimodal or quadrimodal. Data were analyzed as percentage of students in each category. The number of students with one preferred mode was divided by total number of students responding to determine percentage. SPSS 18 software was used to analyze the collected data.

RESULT

Out of 186 students, 125participated voluntarily in this study, i.e., response rate (RR) is **67.2%**. Distribution of preferred learning modes amongst undergraduate (**UG**) students are shown in **Table 1**.

Table 1 Distribution of preferred learning modes amongst UG students (n=125)

Modes	No. of students (n= 125)	Percentage of students
Unimode	24	19.2%
Bimode	17	13.6%
Trimode	06	4.8%
Quadrimode	78	62.4%

Majority of the students preferred all the four sensory modalities (n=78,62.4%), followed by unimodal learning style (19.2%).

24 participants(19.2%), preferred ‘Unimodal’ learning styleand the various preferred modes of thislearning styles are shown in **Table 2**. Half of the participants preferred kinaesthetic (n=12,50%) followed by auditory (n=9,37.5%).

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Table 2 Preferred mode in unimodal learning style amongst UG MBBS students (n=24):

Modes	No. of students (n=24)	Percentage of students
Visual	01	4.2%
Auditory	09	37.5%
Reading/writing	02	8.3%
Kinaesthetic	12	50%

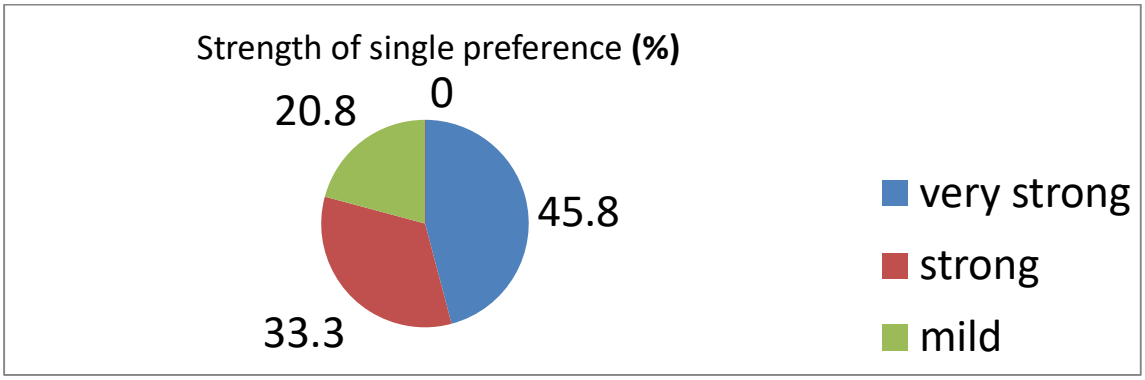

Figure 1 Showing the strength of preference in unimodal learners

45.8 % of unimodal learners have very strong association with their respective learning preferences while 33.3% and 20.8% have strong and mild associations with their preferred learning style respectively.

Among the participants, 17(13.6%) preferred'Bimodal Learning Style'. The various preferences under these learning styles are shown in **Table 3**.

Table 3 Preferred mode in bimodal learning style (n=17)

Modes	No. Of students(n=17)	Percentage of students
AK	10	58.8%
VK	02	11.8%
RK	03	17.6%
AV	01	5.9%
AR	01	5.9%
VR	-	-

(AK- auditory &kinaesthetic, VK-visual &kinaesthetic, RK-reading/writing &kinaesthetic, AV-auditory &kinaesthetic, AR-auditory &kinaesthetic ,VR-visual &kinaesthetic)

6of the participants(4.8%)preferred trimodal learning strategy. The various preferencesare shown in **Table 4**.

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Table 4 Preferred mode in trimodal learning style (n=6)

Modes	No. of students(n=6)	% of students
AVR	-	-
VRK	1	16.7%
ARK	3	50%
AVK	2	33.3%

(AVR-auditory,visual,reading/writing,VRK-visual,reading/writing,kinaesthetic,ARK-auditory,reading/writing,AVK- auditory,visual,reading/writing)

Gender wise distribution of different preferred learning modes are shown in Table 5. Majority of male and female students show multimodal preferences. However, a larger proportion of females have quadrimodal learning preferences compared to males while a larger percentage of boys are unimodal compared to girls.

Table 5 Gender wise distributions of learning modes

Modes	Male (n=52)		Female(n=73)	
	No.	%	No.	%
Unimode	15	28.8	09	12.3
Bimode	07	13.5	10	13.7
Trimode	04	7.7	02	2.7
Quadrimode	26	50	52	71.3

DISCUSSION

This study was undertaken to understand the different learning styles adopted by the medical students for acquisition of knowledge, as this will help in adopting affective teaching-learning methods. The VARK model uses the visual, auditory, reading/writing and kinesthetic modalities to understand the learning styles. Information about learning styles can help faculty become more sensitive to the differences students bring to the classroom.[2]The teacher or the facilitator can modify his or her techniques to align with the learning styles for affective disbursal of knowledge. On the other hand, when a student knows his or her learning style, he /she can develop the appropriate learning strategy.

The participants of our study preferred (80.8%) multimodal learning styles, in combination of 2, 3 or all 4 learning modalities. This implies that learners adjust to various ways information is delivered or they are flexible to choose the most suitable learning style which would help to ingrain the study materials into their long-term memory. Rathnakar P Urval et al[6], in their study on undergraduate medical students alsofound 68.7% to be multimodal, 36.6% of whom preferred all the four modalitiessimilar to our study.PrithiskumarIJ[5] in their study on 1st year undergraduate medical students alsofound 86.8% of students to be multimodal in their learning style with bimodal being the commonest learning strategy.

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Similarly various other studies[8-14] have found that students adopt multiple learning styles although few other studies[16,17]have also found majority of their participants following single learning style.

Majority (50%) of the unimodal learners preferred kinesthetic way of learning in our study. Khanal L et al[7]in a systemic review of 20 full text articles from most parts of the world found that in unimodal learners, kinesthetic way is the most preferred. Other studies[5,9,12] have also reflected similar findings. It is also seen in this study that, of the learners who preferred bimodal or trimodal learning, kinesthetic mode is usually combined with the other learning strategies. Since kinesthetic style is an important component in most of the students' way of acquisition of knowledge, the authors feel that teaching-learning activities giving special attention to this modality should be encouraged.

It is seen in our study that majority of male and female participants adopted multiple styles of learning. PrithiskumarIJ et al[5] in their study also found both male and female participants preferring multimodal learning strategies with no significant difference between the sexes. Slater et al [10] found similar results with similar percentage of students preferring multimodal as well as unimodal learning styles. However, in our study,a higher percentage of female participants were multimodal compared to males and a higher percentage of male participants were unimodal learners compared to females.

The study had some limitations in that it was conducted in a single medical college, so that sample population was limited. Also once the learning styles have been found, it remains to be seen how the students responded after being aware of their learning styles.

CONCLUSION

Using the VARK questionnaire, we attempted to understand the learning preferences of students. Majority of our students were multimodal in their learning approaches while a significant number were also unimodal. This study haswillhelped us to reflect on the alignment of the learning strategies with our instructional methods.

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