



Physiology

ASSESSMENT OF LEARNING STYLES OF UNDERGRADUATE MEDICAL STUDENTS & ITS ASSOCIATION WITH THE PREVIOUS ACHIEVEMENT

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ABSTRACT

Excellence in Medical education is an essential effort than a milestone which has extensive syllabus that has to be learnt in a stipulated time period². Learning style is the adopted sensory modality to analyse and interpret information⁴. This study aimed to assess the different types of learners & its association with previous outcome conducted in Medical education unit in Trichy SRM Medical college Hospital & Research center, Trichy. This study conducted with the undergraduate medical students of both sex from preclinical department (n=100) after obtaining the IEC & consent from the study participants. After collecting the Socio demographic data like Board of syllabus, marks obtained in 12th standard and NEET. Learning style of students were assessed by giving them the instrument - VARK Questionnaire⁷ (version7.1) which consists of 16 questions (The acronym of VARK - visual, Aural, Read/write and Kinesthetic sensory modalities.) and analyzed by Descriptive statistics, Unpaired t test and one way Anova. The predominant learning style was found to be multimodal followed by bimodal. The learning style was compared with the previous achievements and revealed that multimodal learners were found to be the high achievers than the unimodal learners. Assessment of learning style revealed that the high achievers are multimodal learners from CBSE board & we can motivate the students by suitable teaching method for the different types of learners by giving appropriate attention to the slow learners and the outcome can be compared in summative Assessments at the end.

KEYWORDS : Learning style, Medical education VARK questionnaire.**INTRODUCTION**

Medical education is not only factual knowledge about health and disease of the human body but it is the systematized knowledge of health and disease along with social interaction which embraces almost every sphere of human activity. Medical education is therefore so intricate, very vast and comprehensive stated by Fulton (1953)¹. Ahmad CN et.al. (2017) said that excellence in Medical education is an essential effort than a milestone which has extensive syllabus that has to be learnt in a stipulated time period. The educational concepts are understood best by the individual sensory modality and perception.² Medical council of India mandates change in the teaching-learning style from a passive to Active one stated by Marcy V (2001)³. Learning style is the adopted sensory modality to analyze and interpret information. The preferred sensory modality to inculcate knowledge differs from student to student, which is the reason why in each class there is so much diversity among students in gathering information (Slater JA et.al. 2007)⁴. VARK inventory is used to assess all 4 aspects of Visual (v), aural (A), Reading/writing (R), kinesthetic (K) (Vaughn L 2001).⁵ Mesh hypothesis that in an appropriate environment which caters predominant learning style there is significant increase in learning (Pashler H 2008)⁶. Thus If students are able to analyze their preferred mode of learning it will help them to learn better and if the teachers are aware of the predominant mode of learning in a given set of students then they can teach better which will lead to improvement in medical education (Pashler H 2008)⁶.

AIM

This study aimed to assess the different types of learners & its association with previous academic outcome conducted in Medical education unit in Trichy SRM Medical college Hospital & Research center, Trichy

MATERIAL & METHODS

This Cross Sectional Study was conducted in a Tertiary health care teaching Hospital, Trichy SRM Medical College Hospital and Research Centre. By the Medical Education Unit. The study was started after getting Institutional Ethics Committee approval. among 100 1st M.B.B.S students including both girls and boys after getting informed written consent and excluding unwilling students. This study was conducted for a period of 2 months.

DATA COLLECTION TOOL AND PROCEDURE:

VARK is an acronym for Visual, Aural, Read/write and Kinesthetic, which are different ways of learning styles. It is a learning inventory

categorized into the 'instructional preference' modal. The VARK inventory was developed in an effort to improve faculty development and to help students become better learners. Visual (V) learners process information best if they can see it. Graphs, flow charts and pictures are helpful to them. Aural (A) learners like to hear the information and process information best by listening to lectures, attending tutorials and using tape recorders to play back learning sessions. The "R" (read/write) learners like to see the written words. They like to read text and take notes verbatim and reread these over and over again. Finally, kinesthetic (K) learners like to acquire information through experience and practice, and prefer to learn information that has a connection to reality (Fleming ND 1992)⁸.

The Socio demographic details including age, gender, residence, number of siblings, parents occupation, economic status was recorded and other details like board of syllabus the student did schooling under, marks obtained in 12th std and marks scored in NEET exam were recorded. Learning style of students were assessed - by an instrument - VARK Questionnaire (version7.1). Online questionnaire⁷ was used containing 16 questions with 4 answers (can select > 1 responses). The answers of each student were analyzed. Data were entered into Microsoft Excel spread sheet. And Analyzed by SPSS 21 software. Descriptive statistics Unpaired t test and Anova test were used.

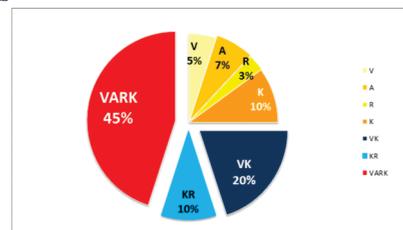
RESULTS

Figure 1: Most Predominant mode and style of learning in 1st M.B.B.S students.

A total of 100 First year M.B.B.S students participated in the study. In our study 25% students were unimodal learners, 30% were bimodal learners and 45% students were multimodal learners. Among the 25% unimodal learners the most preferred style of learning was found to be Kinesthetic 10% followed by Auditory 7%, Visual 5% and Reading

3%. In the 30% Bimodal Learners 30% Visual and Kinesthetic style was more prominent seen in 20% students followed by Visual and Reading 10%. Figure 1.

Table 1: Mode of Learning and Socio Demographic Details:

Sl No	Variables	N	Mode of Learning %			p value
			UNI	BI	MULTI	
1	Age	17 years	29	27	22	.634
		18 years	48	31	16	
		19 years	23	22	17	
2	Gender	Male	32	40	19	.311
		Female	68	20	18	
3	State	Tamil Nadu	89	28	20	.342
		Kerala	8	12	-	
		Andhra Pradesh	3	100	-	
4	Socio demographic details	Upper	1	100	-	.499
		Upper middle	35	31	20	
		Middle	58	24	15	
		Lower middle	0	50	17	
		Lower	6	-	-	
5	Parental Occupation	Profession	41	29	22	.578
		Doctor, Teacher Engineer			49	
		Clerk, Service, Business	56	26	16	
		Agriculture	3	33	-	
		Labour	-	-	-	
6	Having Siblings	Yes	83	19	20	.0004*
		No	16	75	1	
7	Place	Rural		32	7	.219
		Urban		25	26	

There is no significant association between modality of learning and the factors like age, gender state Sociodemographic status parents occupation & place of residence except Presence of siblings students with siblings were more of multimodal learners than those without siblings.

There is a significant association between the modality of learning and previous achievement in 12th standard & NEET exams(p=0.005 ,p=0.003) revealing that the high achievers in both the exams are multimodal learners.(71% & 87%) . When the mode of learning was compared based on Syllabus, the student who studied under CBSE board had the highest number of multimodal learners 70% followed by state board 51% and ICSE board 50% with a significant difference p=0.0002 among the three groups. Table 2.

Table 2: Mode of learning based on previous achievement and syllabus:

Sl No	Variables	N	Mode of Learning (%)			p value
			Total 100	Uni	Bi	
1	Marks obtained in NEET	High Achievers	44	16	7	.0003*
		Low Achievers	56	90	-	
2	Marks Obtained in 12th Std	High Achievers	60	17	12	.0005*
		Low Achievers	40	54	19	
3	Syllabus	State board	25	29	20	.0002*
		CBSE	60	14	16	
		ICSE	15	50	-	

DISCUSSION

Out of 100 First year M.B.B.S students who participated in the study 25% students were unimodal learners, 30% were bimodal learners and 45% students were multimodal learners. Multimodal Learning is the most preferred mode of learning. Which is in accordance to The present study done by Breckler et.al.(2009)⁹ and Kharb et.al.(2013)¹⁰ Among the 25% unimodal learners the most preferred style of learning was found to be Kinesthetic 10% followed by Auditory 7%, Visual 5% and Reading 3%. This is in accordance to the study by Breckler et.al (2009)⁹ stating that kinesthetic style was most preferred mode of

learning, but contradictory to the study by Hadi Peyman et.al (2014).¹¹ most preferred style was aural/read and write. In the 30% Bimodal Learners 20% were preferring Visual and Kinesthetic style followed by Visual and Reading 10%.

There is no significant association between age, gender, sociodemographic status, parental occupation, place of residence with modality of learning. Contradictory to the previous report by Breckler et.al.(2009)⁹ who found that females were multimodal learners when compared to males.

The present study revealed that students with siblings were more of multimodal learners. There is a significant association between high achievers in 12th exam and multimodal learning. Also significant association was found between high achievers in NEET exam and multimodal learning. Which shows that there is a strong association between mode of learning and the academic outcome. Similar to the previous report by Newble et.al.(1985)¹² but contradictory to the study by Alkhasawneh et.al. (2013)¹³ Meta-analysis study by Khanal et.al.(2014)¹⁴ revealed that in first year MBBS students Lecture was the only method of teaching which was accompanied by power point in most of the institutions. Our study results state that most of the students preferred multimodal learning and kinesthetic style. The Meta-analysis by Khanal et.al (2014)¹⁴ states that medical curriculum should include more of practical classes and dissection sessions. Students are benefited if the teaching strategies can be revised and include teaching sessions having activities like Text, Video, Audio, Images, Interactive elements to cater more effectively to the learning style of students. Based on Syllabus the student studied under in school, CBSE board had the highest number of multimodal learners 70% followed by state board 51% and ICSE board 50% with a significant difference among the three groups. Meta-analysis by Khanal et.al (2014)¹⁴ also states that in schools mostly Lecture is the method of teaching because of its relative ease to pass on the information, long history of lecturing and perhaps due to the teachers own preference of learning. But if at the premedical level, schools have more of practical sessions then students may develop a preference for multimodal learning. In the 1 year of MBBS rather than traditional Lecture sessions if Active learning strategies are adopted where there is exposure to hands on clinical experience it will contribute in a big way to medical curriculum and will have a positive effect on Medical Education. A study by Breckler et.al (2009) stated that by VARK analysis students become more aware of their preferred learning style which helps in better performance in examinations⁹. VARK analysis can motivate teachers to reach more students by helping them in formulating suitable teaching strategies was revealed by a study by Lujan et.al(2006).¹⁵ VARK studies can be used as a reference for comparing the outcome of results regarding learning as well as teaching in medical curriculum.

CONCLUSION

Different types of learning styles can be revealed among undergraduate students through VARK analysis, which may be useful to improve their learning by using appropriate modality as there is an association between the learning style and the previous achievements of Undergraduate MBBS Students.

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