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## **ANALYSING LEARNING STYLE PREFERENCES AMONG MEDICAL STUDENTS OF A PRIVATE MEDICAL COLLEGE IN SOUTH INDIA**

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### **ABSTRACT**

To find out preferred learning style of South Indian medical students using VARK questionnaire and to compare learning style preferences of non-clinical and clinical medical students. This descriptive-cross sectional study was conducted in a private medical college of south India. A total of 371 (n=371) students, belonging to different years of M.B.B.S degree were participated in this study. Version 7.8 of the VARK questionnaire form measures four perceptual learning preferences viz. Visual (V), Auditory (A), Reading (R) and Kinaesthetic (K). The VARK questionnaire form (Version 7.3) had 16 questions with four options for each question. Students were distributed the forms and requested to tick the appropriate answer for each question. They were also instructed to choose multiple options if they prefer multimodal learning styles. The VARK questionnaire forms will be collected and will be subjected for statistical analysis. Learning style preferences are expressed as percentages of students in each category. Student 't' test was used to compare learning style preferences among clinical and non-clinical medical students. Statistical analysis was done using SPSS-17(Statistical Package for Social Sciences). The study included 222(59.8%) female medical students and 149 (40.2%) male medical students from all the phases of undergraduate medical course. A total of 349 (94.1%) medical students preferred quadri modal learning method, whereas remaining 22 (5.9%) preferred tri-modal learning method. Among the tri-modal learning modes, 2.9% of students preferred AKV (Auditory, Kinaesthetic, Visual) followed by 2.7 % to AKR (Auditory, Kinaesthetic, Reading) and remaining 0.3% to KVR (Kinaesthetic, Visual, Reading). Most of the students in the present study were multimodal learners. No difference in learning style was found between clinical and non-clinical students. As most of the students have different learning styles, the teachers have to use combination of teaching strategies in medical education.

**Keywords:** Learning styles, Multi-modal learners, Medical Education Damage.

### **INTRODUCTION**

Transition from pre-university education to medical education can be difficult for students because of vast syllabus, limited time period. Students differ in age, sex, culture, learning styles and preferences. Medical

students use different approaches to fulfil their knowledge hunger. Their learning is affected by learning atmosphere and curricular issues as well as by teaching method [1].

Because of these diversities, teachers face problems while teaching [2]. Teachers may stick to one method; which may not be comfortable for students. So, knowledge of the diversity of learning styles of their students could play an important role in selecting teaching styles, which can improve education ultimately [3].

A learning style or preference is the complex

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manner and conditions under which learners most efficiently and effectively understand process, store and recall what they are attempting to learn [4].

There are many learning style inventories like Kolb’s learning style inventory, honey and Mumford’s learning questionnaire; Vermunt’s inventory of learning style, Felder and Soloman’s index of learning style and VARK questionnaire [5,6]. Out of these models, VARK questionnaire is a simple tool to identify the preferred learning styles of learners [7]. VARK stands for visual (V), aural (A), read/write (R) and kinaesthetic (K). Visual are a group of learners who learn best by observation and visual presentation, such as diagrams, pictures, flow charts etc. Aural are a group of learners who learn best through listening and verbal instructions. Reading learners learn by reading textbooks, manuals, prints etc. Kinaesthetic learners learn best by use of experience and practice/demonstrations, videos etc. Learning style preferences may vary with gender and also with different phases of M.B.B.S course. Preferences of preclinical (1<sup>st</sup> M.B.B.S) students might vary from paraclinical (2<sup>nd</sup> M.B.B.S) and clinical students (3<sup>rd</sup> - 4<sup>th</sup> M.B.B.S). Previous studies have shown gender difference in learning style preference among medical students [8-10]. However, there is need for analysing learning style preferences among medical students of different phases of M.B.B.S course.

**OBJECTIVES**

1. To find out preferred learning style of South Indian medical students using VARK questionnaire.
2. To compare learning style preferences of non-clinical and clinical medical students.

**METHODOLOGY**

This descriptive-cross sectional study was conducted in a private medical college of south India. Study was started after getting the approval from Institutional Ethical Committee (IEC) and informed consent from the participants. A total of 300 (n=300) students, belonging to first, second, third and fourth year M.B.B.S were requested to participate in this study. Students were explained about

different learning styles and the purpose of the present study. The VARK questionnaire forms originally developed by Fleming were distributed to the students [11]. Version 7.8 of the VARK questionnaire form measures four perceptual learning preferences viz. Visual (V), Auditory (A), Reading (R) and Kinaesthetic (K). The VARK questionnaire form (Version 7.3) had 16 questions with four options for each question. Students were requested to tick the appropriate answer for each question. They were also instructed to choose multiple options if they prefer multimodal learning styles. The VARK questionnaire forms will be collected and will be subjected for statistical analysis.

**STATISTICAL ANALYSIS**

Learning style preferences/VARK mode distributions are expressed as percentages of students in each category. Student ‘t’ test was used to compare learning style preferences among clinical and non-clinical medical students. Statistical analysis was done using SPSS-17(Statistical Package for Social Sciences).

**RESULTS**

A total of 371 medical students out of 400, voluntarily participated in this study. The study included 222(59.8%) female medical students and 149 (40.2%) male medical students from all the phases of undergraduate medical course. Table 1 shows the year wise distribution of study participants. In our study all the undergraduate medical students preferred multi modal learning styles. 341(94.1%) medical students preferred quadric modal learning method, whereas remaining 22 (5.9%) preferred tri-modal learning method. Among the tri-modal learning modes, 2.9% of students preferred AKV (Auditory, Kinaesthetic, Visual) followed by 2.7 % to AKR (Auditory, Kinaesthetic, Reading) and remaining 0.3% to KVR (Kinaesthetic, Visual, Reading) learning modes (Table 2 and Figure 1) There is no statistical difference among non-clinical and clinical medical students with regard to the learning style preferences (Table 3).

**Table 1. Year wise distribution of undergraduate medical students**

		Sex		Total	
		Female	Male		
Y E A R	I	Count	82	51	133
		Percentage	61.7%	38.3%	100.0%
	II	Count	43	37	80
		Percentage	53.8%	46.3%	100.0%
	III	Count	54	34	88
		Percentage	61.4%	38.6%	100.0%
	IV	Count	43	27	70
		Percentage	61.4%	38.6%	100.0%
Total		Count	222	149	371
		Percentage	59.8%	40.2%	100.0%

**Table 2. Learning style preferences of undergraduate medical students**

Modes	Frequency	Percentage
AKR	10	2.7
AKV	11	2.9
KVR	01	0.3
VARK	349	94.1

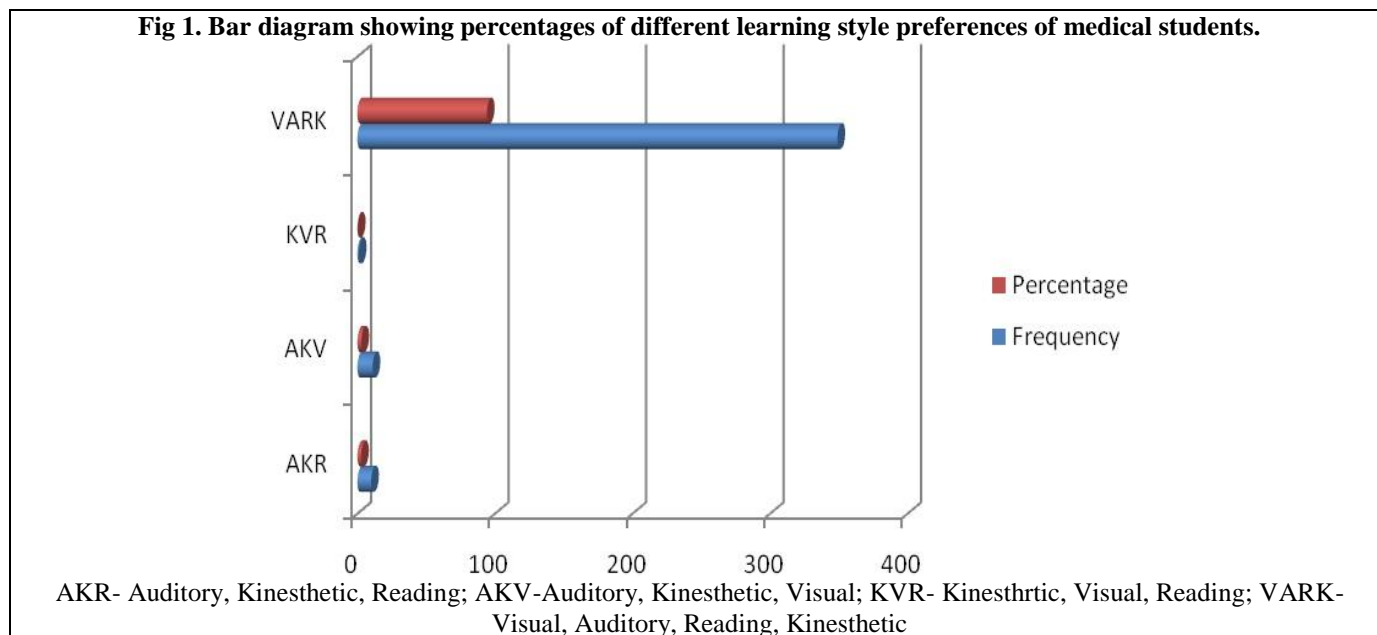
AKR- Auditory, Kinesthetic, Reading; AKV-Auditory,Kinesthetic, Visual; KVR- Kinesthrtic, Visual, Reading; VARK- Visual, Auditory, Reading, Kinesthetic.

**Table 3. Comparison of learning style preferences among non-clinical and clinical medical students.**

Year	Quadrimodal	Trimodal	Total	P value
I & II	204	9	213	0.107*
III & IV	145	13	158	

\*NS- Not significant

**Fig 1. Bar diagram showing percentages of different learning style preferences of medical students.**



**DISCUSSION**

Learning style refers to the preferential way in which the student absorbs, processes, comprehends and retains information for long time. Each Student prefers different learning styles. Many have mix of learning styles. Individual learning styles depend on cognitive, environmental and emotional factors, as well as one’s prior experience. It is important for educators to understand the differences in their students’ learning styles, so that they can implement best practice strategies into their daily activities, curriculum and assessments.

In most of the medical colleges, lecture classes are taught using PowerPoint presentation or over head projectors and to some extent using black board. Demonstrations and bed side clinics are mainly done for clinical subjects. Using multiple learning styles for learning is a relatively new approach. In our study 94.1% medical students preferred quadrimodal learning style. This finding is similar to the previous studies conducted [12, 13]. The

remaining 5.9 % of medical students preferred tri-modal learning style preference. Unlike the previous studies conducted by Baykan and Kharb that showed kinaesthetic was most preferred uni-modal learning style among medical students, in our study no one preferred uni-modal approach [14, 15]. In this study we also able to compare learning style preferences among clinical and non-clinical medical students. Surprisingly, there was no statistical difference among clinical and non-clinical students learning style preferences. The major limitation of our study was we did not consider influence of academic performance of medical students on their learning style preferences.

**CONCLUSION**

Most of the students in our study were multimodal learners. No difference in learning style was found between clinical and non-clinical students. As most of the students have different learning styles, the teacher should use combination of teaching strategies in medical education.

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## CONFLICT OF INTEREST

No interest.

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