

**A comparative study of the learning styles among 1<sup>st</sup>, 2<sup>nd</sup> and final year MBBS students****Nagesh Raju G.<sup>1</sup>, Manjunath S. M.<sup>1\*</sup>, Dharmaraj B.<sup>1</sup>, Shrish Patil<sup>2</sup>**

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**ABSTRACT**

**Background:** Learning style is the way students begin to focus, internalize and remember new and difficult information. Identifying the learning styles of medical students will enable the faculty to use appropriate T/L method to increase the grasping ability of their subject/ learning. Purpose of the study was to assess and compare the learning styles of 1<sup>st</sup>, 2<sup>nd</sup> and final MBBS students by using VARK questionnaire.

**Methods:** This was an observational, cross-sectional study based on the questionnaire, conducted by the department of Pharmacology at Basaveshwara Medical College and Hospital, Chitradurga. The VARK learning styles assessment questionnaire was administered to 1st (96 students), 2nd (60 students) and Final year (49 students). The students were categorized as auditory, kinaesthetic, visual learner or read/write depending on the predominant option they chose. Independent sample 't' test was used to compare the mean scores between the two groups using the software SPSS v22.

**Results:** 40% of students had unimodal and 60% had multimodal learning style. Final year MBBS students had higher percentage of multimodal learning style (73%). The most preferred style of learning among all the medical students was kinesthetic (6.6), followed by aural (5.5), visual (4.0) and read/write (3.5). There was significant difference between the learning styles of 1st and Final year MBBS students in Visual (p=0.01) and Read /Write (p= 0.008).

**Conclusions:** Knowing that students have different learning styles and kinesthetic being the most preferred mode of learning will help medical faculty to develop teaching/learning strategies for better outcomes.

**Keywords:** Learning styles, Medical students, VARK**INTRODUCTION**

Teaching is a process of knowledge presentation while learning is many times multifactorial and depends on the mind-set of each individual student. Medical students studying in a medical college come from different socio-economic and cultural backgrounds, having varied prior educational experiences, different levels of competencies, and perhaps even different preferential methods of learning. Medical students have different preferences when it comes to the assimilation and processing of the information.<sup>1</sup>

Each learner processes the information in many different ways. These are referred to as the learning habits. Learning results in gain of knowledge and skills. It has

been observed that different learners have their own particular learning habit. If the method of information delivery to the learner suits their particular learning habit, they learn even better.<sup>2</sup>

Learning style is another term which denotes the way students begin to focus on the process, internalize and remember new and difficult information.<sup>3</sup> Three learning habits have been identified according to the VAK model as visual, auditory and kinesthetic. Another learning habit is added to this, the Read- write habit (VARK model) and this was developed by Fleming and Bonwell.<sup>4</sup>

The VARK is a tool that categorizes learning habit according to Visual, Auditory, Read/write or kinesthetic modes as indicated on a simple preference survey.<sup>5,6</sup>

Fleming's learning habit inventory is the most commonly used model of learning which is also known as VARK questionnaire.<sup>4</sup> The VARK questionnaire is a 13-item, self-reported, multiple-choice questionnaire that can be completed within a time span of 10–15 minutes. The VARK questionnaire was selected for the assessment of learning habits in our study because it is a concise, simple survey Questionnaire, and was pre-validated by the peer group.<sup>7</sup>

Sensory modalities are the learning styles used to process information. A student may have a preference for single modality (unimodal) or be multimodal. Multimodal learners have preferences in more than one mode of learning.<sup>8</sup>

Characterization of learning styles depends on the sensory modality used by the learner to perceive new information. The sensory modality used by the student may be predominantly visual, aural or kinaesthetic or read-write.<sup>3</sup>

Visual learners process information best through agents like graphs, flow charts and pictures. Aural learners process and internalize information by listening to lectures, attending tutorials etc. The Read/write learners are the students who like to take notes verbatim and reread these repeatedly. Finally, the kinesthetic learners like to acquire information through experience and practice. They prefer to learn information that has some connection to the reality.<sup>8</sup>

In the present day scenario, majority of the medical students have preference for several learning habits, and yet medical faculties teach predominantly in a single mode i.e. the lecture. Listening to lectures is basically a passive learning method that encourages mere memorization and note-taking as the means of assimilating knowledge.<sup>9</sup> Keefe observed that better understanding of the learning habits by the faculty can reduce the students' frustration and help in better understanding of the subject.<sup>10</sup>

Students learning styles may not correlate with the teaching methods, causing poor performance in the examination. Identifying the learning styles of MBBS students will enable the faculty to use appropriate T/L methods to increase their grasping ability of the subject/learning. In view of this, the current study was undertaken to assess and compare the learning styles of 1<sup>st</sup>, 2<sup>nd</sup> and Final MBBS students by using VARK questionnaire.

## METHODS

This was an observational, cross-sectional study based on the questionnaire, conducted by the department of Pharmacology at Basaveshwara Medical College and Hospital, Chitradurga. The study was done after obtaining the permission from the institutional ethics

committee. Written informed consent was taken from all the participants who were willing to volunteer for the study.

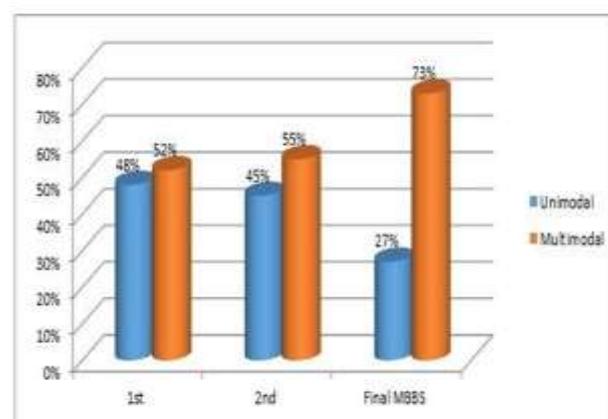
A total of 205 medical students participated in the study. The VARK learning styles assessment questionnaire was administered to 1<sup>st</sup> (96 students), 2<sup>nd</sup> (60 students) and Final year (49 students). Students were given a time of 15 minutes to fill the questionnaire.

The students were categorized as auditory, kinaesthetic, visual learner or read/write depending on the predominant option they chose. If they opted a single sensory preference they were considered as unimodal as and more than two as multimodal.

Their learning styles were analysed by using frequency and proportions. Independent sample 't' test was used to compare the mean scores between the two groups using the software SPSS v22. A 'p' value of <0.05 was considered as statistically significant.

## RESULTS

Among medical students, 40% had unimodal and 60% had multimodal learning style. Of all the participants, Final year MBBS students had a higher preference to multimodal learning style (73%) (Figure 1).

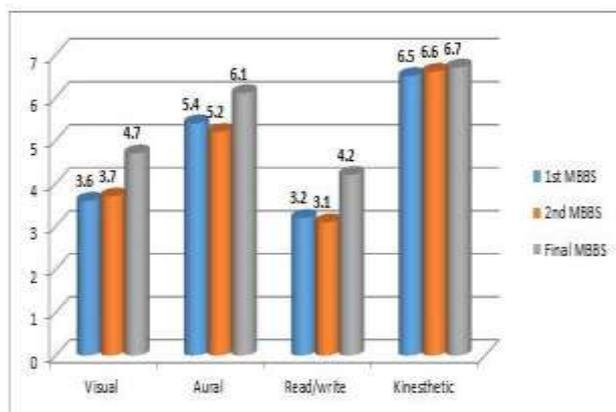


**Figure 1: Unimodal vs. multimodal learning styles of MBBS students.**

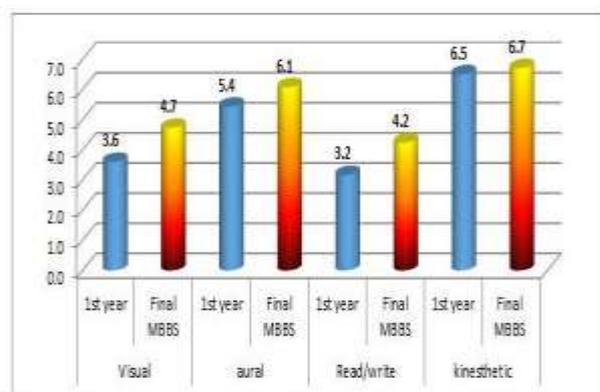
The most preferred style of learning among all the medical students was Kinesthetic (6.6), followed by Aural (5.5), Visual (4.0) and Read/Write (3.5) (Figure 2).

There was no significant difference between the learning preference of 2<sup>nd</sup> year MBBS students with both 1<sup>st</sup> and Final year statistically ( $p > 0.05$ )

On the contrary, there was significant difference between the learning styles of 1<sup>st</sup> and Final year MBBS students in Visual ( $p = 0.01$ ) and Read /Write ( $p = 0.008$ ) (Figure 3).



**Figure 2: Learning styles of MBBS students (mean scores).**



**Figure 3: Comparison of learning styles between 1st and final year MBBS students (mean scores).**

## DISCUSSION

Getting to know the learning styles of medical students helps the faculty in identifying and solving the learning problems and also helps reduce the frustration levels of students.

The need of the hour is the transition from the passive traditional didactic lectures to problem-based learning and to achieve this, the faculty needs to apply multiple teaching methods which suit the different learning preferences for a better outcome.

Active learning strategies promote thinking and improve problem solving as well as decision-making abilities. Students learn in different ways using variety of methods to convert the information into long term memories. There is no single best method to teach, but teachers need to adapt their teaching styles to suit the learning habits of each distinctive pupil.<sup>11,12</sup>

When instruction match student's learning style preferences, students achieve higher scores than when mismatched.<sup>13</sup>

In a study done by Navin R et al, 55% of the medical students preferred using a single sensory modality while learning i.e., they had unimodal learning preferences, while the rest 45% preferred using two or more sensory modalities i.e., they were multimodal.<sup>14</sup> In contrast our study revealed 60% had multimodal and the other 40% had unimodal learning style preference. The reason for majority of the Final MBBS students preferring multimodal learning style might be due to their exposure to various learning methods like problem solving, interaction and examination of patients.

No significant gender difference was observed in selecting unimodal or multimodal learning style in our study. This is consistent with study done by Zeynep et al.<sup>15</sup> Both the sex preferred multimodal learning style.

In a study, among 1<sup>st</sup> year MBBS students, the highest preference was given to Aural followed by Kinesthetic, Read/Write and Visual.<sup>16</sup> In contrast our study revealed Kinesthetic was the most preferred learning style followed by Aural, Visual and Read/Write.

In a study done by Usha GS et al, among Final MBBS students the most preferred mode was visual, but in our study kinesthetic was the preferred learning style.<sup>3</sup> The probable reason for students preferring the kinesthetic style of learning in this study could be due to increasing use of practical and clinical oriented discussions in our setup.

Final MBBS students showed more preference in visual and read/write style as compared to 1<sup>st</sup> year students. The reason could be due to increased interaction of final MBBS students with the patients and clinical examination.

Many of the studies have shown that the teaching methods that caters to multiple modalities of learning styles, enhances performance by the students. Some of the strategies that can be included for the benefit of students in academics are Objective Structured Clinical/Practical Examination (OSCE/OSPE), integrated teaching, e-learning, early clinical exposure to patients in OPDs and wards, increasing use of models, lending the hand-outs of power point presentations, audio recording of lectures, and computer assisted learning.

## CONCLUSION

It may be difficult to tailor course work to the individual learning style of each student. Knowing that students have different learning styles and kinesthetic being the most preferred mode of learning will help medical faculty to develop teaching/learning strategies for better outcomes. This will make the educational experience more fruitful and productive.

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