

GENDER DIFFERENCES IN LEARNING STYLES AMONG THE FIRST YEAR MEDICAL STUDENTSPrabha V¹, Waheeda S²¹Associate Professor, Department of Physiology, Chamaraajanagar Institute of Medical Sciences, Chamaraajanagar, Karnataka, India.²Assistant Professor, Department of Physiology, Vinayaka Mission's Kirupananda Variyar Medical College, Salem, Tamil Nadu, India.

ABSTRACT: In general male and females learn differently. Learning style is the learners' preferred mode of learning in terms of the sensory modality by which they prefer to take in new information. While learning each of us have our own preferences for the way in which we receive the new information. Each learner has distinct and consistent preferred ways of perception, organization and retention. The visual, auditory & kinesthetic (VAK) questionnaire identifies student's preferences for particular modes of information presentation. We administered the VAK questionnaire to our first-year medical students studying at Vinayaka Mission's Kirupananda Variyar medical College, Salem and 153 out of 200 students (76.5%) returned the completed questionnaire. The responses were compiled and assessed for gender difference in learning style preference; (45.1%) of males and (47%) of females preferred a single mode of information presentation. Among the male students, 14.1% of the students preferred Visual (learning from graphs, charts, and flow diagrams), 18% of the students preferred Auditory (learning from speech), 13% of the students preferred Kinesthetic (learning from touch, hearing, smell, taste, and sight). Among the female students 14.2% of the students preferred Visual, 17.8% of the students preferred Auditory, 15% of the students preferred Kinesthetic. Furthermore, 54.9% of male and 53% of female respondents preferred multiple modes [male: two modes (51.6%), three modes (3.3%), and; females: two modes (48.4%), three modes (4.6%)] of presentation. In summary, a majority of male students preferred multimodal instruction, specifically, two modes, whereas a majority of female students preferred two and single-mode instruction. Thus, male and female students have significantly different learning styles. Knowing the students preferred modes can help to avoid mismatches in the styles between instructors and learners. Assist students to build confidence and more effectively manage their own learning.

KEYWORDS: Visual, Auditory, Kinesthetic, Learning styles, Gender differences.

HOW TO CITE THIS ARTICLE: Prabha V, Waheeda S. "Gender Differences in Learning Style among the First Year Medical Students". Journal of Evolution of Medical and Dental Sciences 2015; Vol. 4, Issue 89, November 05; Page: 15459-15462, DOI: 10.14260/jemds/2015/2209.

INTRODUCTION: In general male and females learn differently. Learning is acquisition of information & memory is the retention, storage and retrieval of the information.⁽¹⁾ For memory to be consolidated there has to be repeated learning. While learning each of us have our own preferences for the way in which we receive information. Learning style is the learners' preferred mode of learning in terms of the sensory modality by which they prefer to take in new information. A learning style or preference is the complex manner in which, and conditions under which, learners most efficiently and most effectively perceive, process, store, and recall what they are attempting to learn.⁽²⁾

We need to be aware of learning styles to avoid mismatches in the styles between instructors and learners. When we teach using our own preferred style not all of our students will have the identical style. Inevitably learning will be enhanced in some and diminished for some. Secondly, we need to assist our students to identify their learning styles in order that they to build confidence and more effectively manage their own learning.

Thirdly, their own preferred learning style can influence our approach to planning, implementing and evaluating instruction, it is equally important for us to be conscious of our style.

If we are able to find out the learning styles of the students, accordingly we can deliver our lectures more effectively. In higher education the students represent a broad spectrum in terms of ethnics, culture, background, age, experience, environment states, nation, level of preparedness & knowledge along with different learning styles and skills. This diversity is welcomed & addressed; however, it also presents a challenge to instructors to meet the educational needs of all students. Though the students have different learning styles, it is the responsibility of the instructor to address this diversity to develop & adapt appropriate learning approaches in order to motivate and improve their performance in academics.⁽³⁾

Many learning style tests are available for example, those from Dunn, Kolb, Keefe, Gregorc, Felder, Fleming and Soloman. Fleming⁽⁴⁾ introduced VAK questionnaire to test the learning preferences. Though learners use all of these sensory modes of learning, one mode is often dominant and preferred. For example, visual learners learn through seeing drawings, pictures, and other image-rich teaching tools. Auditory learners learn by listening to lectures, exploring material through discussions, and talking through ideas whereas kinesthetic learners learn through touching and experiences that emphasize doing, physical involvement, and manipulation of objects.

VAK is an acronym that stands for three major sensory modes of learning: visual, aural, and kinesthetic, depending on the neural system with which a learner prefers to receive information.

Financial or Other, Competing Interest: None.

Submission 08-10-2015, Peer Review 09-10-2015,

Acceptance 21-10-2015, Published 05-11-2015.

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DOI: 10.14260/jemds/2015/2209.

Thus VAK is a perceptual, instructional preference model that categorizes learning by sensory preferences. The visual, auditory, kinesthetic (VAK) questionnaire identifies student's preferences for particular modes of information presentation. Hence we were interested in assessing the preferred learning styles of our first-year medical students and to find out any gender difference exists by VAK questionnaire so that we could develop appropriate teaching approaches.

MATERIALS & METHODS: Two hundred first year medical students studying at Vinayaka Mission's Kirupananda Variyar Medical College, Salem, were included for the study. Informed consent was taken from the participants. The study was approved by Institutional Ethical Committee. Learning styles of the students were determined by Fleming's VAK questionnaire. The following are internet links to the VAK homepage Free VAK multiple-choice questionnaire test (PDF) Free VAK multiple-choice questionnaire test (MSWord doc file).

Questionnaire consisted of 30 questions with A for auditory, B for kinesthetic and C for visual as options. We administered the questionnaire as a hard copy & also as power point presentation; however, the VAK questionnaire is freeware that can be completed online. The VAK questionnaire was administered individually during endocrine component of medical physiology class to the students. The students were allowed to choose best mode they prefer. The students were then categorized as visual, auditory or kinesthetic learner depending on the predominant option they choose. If they preferred a single sensory modality then they were considered as unimodal, two preferences as bimodal and three as trimodal learners. The preferred modes of male and female students were tabulated.

Analysis: The number of students who preferred each mode of learning was divided by the total number of responses to determine the percentage of students in each category.

RESULTS: We administered the VAK questionnaire to our first-year medical students studying at Vinayaka Mission's Kirupananda Variyar medical College, Salem and 153 out of 200 students (76.5%) returned the completed questionnaire. Figure 1 shows the percentage of preferred mode of learning in male and female students. Male students preferred (45.1%) single mode, (51.6%) two modes, and (3.3) three modes of information presentation. In comparison, female students preferred (47%) single mode, (48.4%) two modes, and (4.6%) three modes of information presentation.

Figure 2 shows the percentage of single mode preference in male and female students. Among the male students, the percentage of single mode of learning style preferred was (14.1%) visual, (18%) auditory & (13%) kinesthetic. Among the female students who preferred single mode of learning, (14.2%) preferred visual, (17.8%) auditory & (15%) kinesthetic.

Figure 3 shows the percentage of two modes of preference in male and female students. Among the male students who preferred two modes of information presentation, (21%) students preferred visual and auditory, (18%) students preferred auditory and kinesthetic, and (12.6%) students preferred visual and kinesthetic.

Among the female students who preferred two modes of information presentation, (20.2%) students preferred visual and auditory, (15%) students preferred auditory and kinesthetic, and (13.2%) students preferred visual and kinesthetic. No significant gender differences were found for unimodal and multimodal preferences between males and females ($p < 0.05$).

DISCUSSION: Learning and memory are the two sides of a coin, without learning memory cannot be consolidated. Each learner has distinct and consistent preferred ways of perception, organization and retention. Most of the students not doing well in school fall behind in higher education. As this continues to happen, students begin to lose their confidence and resent school because of repeated failure.⁽⁵⁾ Learning problems frequently are not related to the difficulty of the subject matter but rather to the type and level of cognitive process required to learn the material.⁽⁶⁾ Keefe stated learning style as "the composite of cognitive, affective and physiological domains which are influenced by environmental factors that serve as the most powerful leverage, available to educators to analyze, motivate, and assist students.

It is the foundation of a truly modern approach to education.⁽⁷⁾ Carbo and Hodges explain that "Students who understand and then are provided opportunities to make use of their learning styles tend to feel valued, respected, and empowered".⁽⁸⁾ Hein and Bundy similarly stated, "Acknowledgement of students' individual learning styles can play a critical role in the learning process."⁽⁹⁾ Furthermore, the use of formal learning style assessments can provide useful information that benefits the student as well as the instructor".

Teachers and students feel most comfortable when they are working within the parameters of their own dominant learning styles. Hunt states that more they attempt to stretch their styles into other cognitive delineations, the greater the amount of discomfort they will feel which has both intrapersonal and interpersonal effects. Teachers must therefore strike a shifting balance between their own and their students' individual cognitive comfort zones, so as to nurture supportive learning environments based on intrapersonal self-discovery and experimentation, and interpersonal trust and communication.⁽¹⁰⁾ Students who understand their learning styles and who exercise active control over their cognitive skills do better in school.

They are better adjusted, have more positive attitudes toward learning and achieve at higher levels than their less skillful peers.⁽⁸⁾ In our study, we administered the VAK questionnaire to our first-year medical students to determine their preferred modes of information presentation. No significant gender differences were found for unimodal and multimodal preferences between males and females. Shah et al & Slater et al also found similar observation in their study.^(11,12)

The questionnaire can motivate teachers to move from their preferred mode(s) to using others. In so doing, they can reach more students because of the better match between teacher and learner styles.⁽¹³⁻¹⁹⁾ When the students are exposed to a teaching style that matches their learning style, students score higher marks on tests than those not taught in their learning style; and it is advantageous to teach and test students in their preferred modalities.⁽²⁰⁾

CONCLUSION:

1. Knowing the students preferred modes can help to avoid mismatches in the styles between instructors and learners, which ultimately prevents professorial frustration and a loss to society of many potentially excellent doctors.
2. When the students are exposed to a teaching style that matches their learning style, students do well in their academics than those not taught in their learning style.
3. We can assist students to build confidence and more effectively manage their own learning.
4. Motivate teachers to move from their preferred mode(s) to using others.

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5. Teaching style that is both effective for students and comfortable for the professor will evolve naturally and relatively painless, with a potentially dramatic effect on the quality of learning.

ACKNOWLEDGEMENTS: Authors thank Mr. Ravi Kumar, Assistant Professor of Community Medicine, SRMC, for analysis of the data. We sincerely thank I & II M.B.B.S Students of Vinayaka Mission's Kirupananda Variyar Medical College & Hospitals for the participation.

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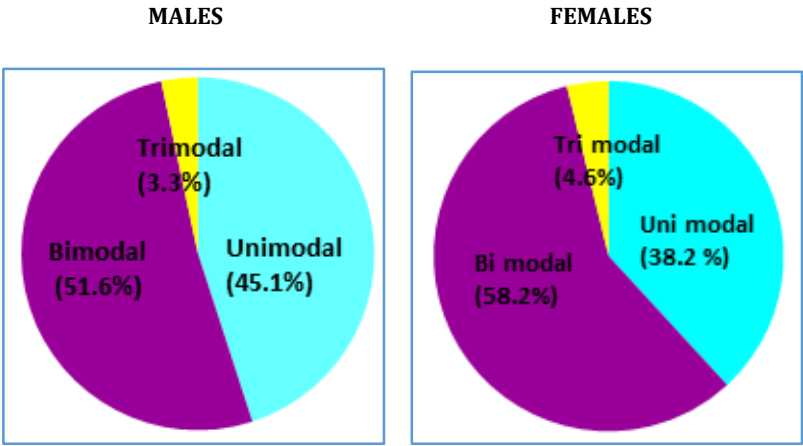


Fig. 1: Shows Percentages of students who preferred single mode of information

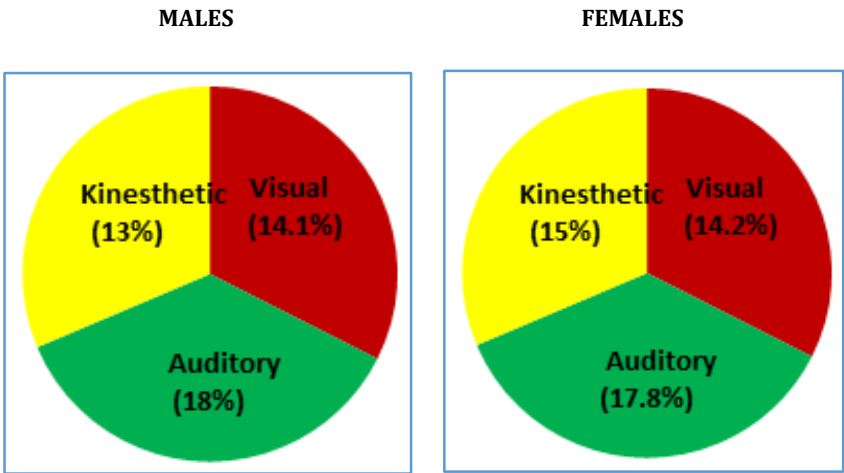


Fig. 2: Shows Percentages of students who preferred single mode of information

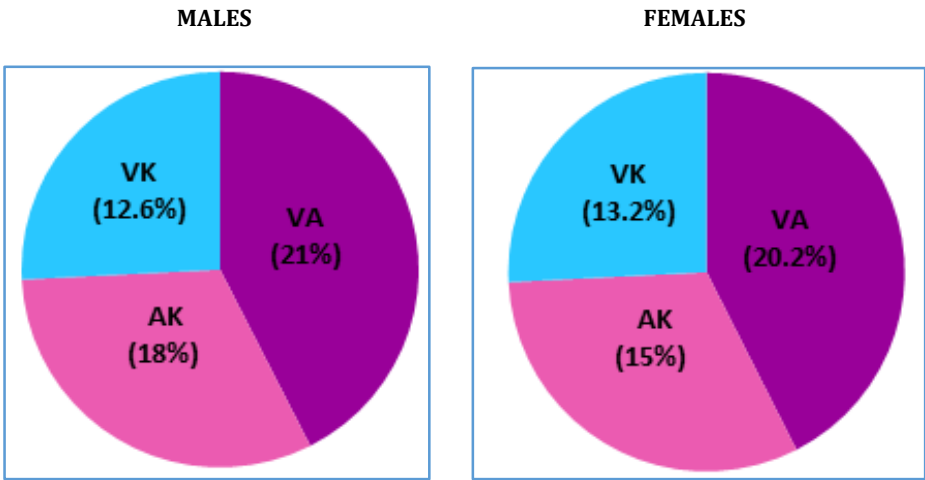


Fig. 3: Shows Percentages of students who preferred two modes of information