



EVALUATION OF PREFERRED LEARNING STYLES AND LEARNING STRATEGIES OF MEDICAL STUDENTS

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Abstract

Aim: the purpose of this study was to define and evaluate the preferred Learning Style and preferred learning strategies of medical students

Design: Cross Sectional design, descriptive study and Random sampling method were used

Place and Duration of study: The study was conducted from Feb 2020 to Aug 2020 at the department of psychology and Behavioral Sciences, Quetta Institute of Medical Sciences (QIMS).

Methods: In this study 254 medical students registered, in which 122 males and 132 females. Obtained demographic information with the learning style test (VAK) was administered to assess the preferred learning style of students as visual (V), auditory (A), Kinesthetic (k). All students were also asked to mark the various learning modalities such as lectures, tutorials, demonstration and practical and ranking them from most preferred modality to least preferred modality. Questionnaire was in English and distributed to the large group in two sittings.

Results: Three learning styles or modalities were tested among students: Visual 36%, Auditory 24% and Kinesthetic 40%. The majority of 69% of students preferred learning modality was (multimodal), while 39% was (unimodal), 20% was bimodal, and 41% was (trimodal). The most preferred learning modality was practical 42% and tutorials was least preferred 15%, t-test shows significantly higher number of auditory modalities in female, compared to male, whereas male has significantly higher number in kinaesthetic modality (p value<0.05).

Conclusion: Male students chosen the Kinaesthetic and visual learning style than females, while, female students chosen the auditory and kinaesthetic learning style. Majority students were multimodal (VAK) preference. Awareness about the learning styles of students at educational institutes is appreciated and helps to solve learning problems among students, and become students' better learners and get best results.

Keywords: Learning modalities (Auditory, kinesthetic & Visual) learning strategies, medical students

1. INTRODUCTION

The Learning styles are person's persistent way of collecting, identifying, processing, understanding, forming, analyzing and recalling the unique information. In education it reflects the systematic differences in individual's normal or routine pattern of gaining and generating information in learning situations [1].

Educational studies have indicated an increasing interest in the learning styles and teaching learning strategies. This interest is helping the students to become competent and booming learner. It is extremely endorsed that in education, the teachers should evaluation the learning styles of their students and alter their classroom teaching procedures according to each student's learning style [2]. Adopting learning styles for student, leads to increased performance, increased contention about the course/curriculum. On the contrary if a student's learning style is inappropriate from the teachers' viewpoint, student's show bad grades, cold attitude in class rooms,

poor attendance & dropouts. This also leads to teacher's undue criticism of their students or skeptical their prime of profession. The major effect to society will be trailing possibly brilliant experts [6]. Variation in learning style can be very helpful in taming the grades; teachers should make a strength for a balance of instructional approaches to evade such problems.

In a sensible method, all the students will be trained to some level conferring to their preference; which will improve their enthusiasm to learn. It will also give appreciated response to examine & resolve the student leaning matters which could not be addressed before.[6] Proper expression of learning styles improves understanding and retention by students. It also helps to improve their speaking ability and expression [7].

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Sometimes (VAK) which prolonged upon earlier Neuro-linguistic programming (VAK) models:[8]"Sensory inclinations effect the ways in which students pick up efficiently. Perceptual preferences affect more than 70 percent of school-age youngsters." [9] Educators be alert of those adults have different learning styles and they must adapt information to the describes ways in which they prefer to learn.

Learning styles can have various differences & they modification and develop over time.[10] Indications show that maximum of the prevailing styles uses of the brain during learning. The pivotal parts of the brain accountable for many learning styles have been studied by the researchers using brain imaging tools.[11] This study was emphasis on different learning styles and teaching learning tactics between medical students. Many former studies which have been conducted in Pakistan in the medical arena on the learning styles only, to the best our information; no any studies have correlated the preferred style with teaching learning modalities in medical setting.

The aim of the present study was to evaluate the preferred Learning Style and preferred learning strategies of medical students, which may facilitate them in formulating teaching-learning strategies along with learning style for enhancing their learning experience.

2. METHODOLOGY

The study was carried out on the medical students who were registered at Quetta institute of medical sciences (Qims) Quetta Pakistan. 254 students voluntarily participated in this study (122 males and 132 females). It was performed as a cross sectional study with random sampling method from Feb 2020 to Aug 2020 at the department of Behavioral Sciences and psychology, Quetta Institute of Medical Sciences (QIMS). Two single questionnaires were used to regulate the preferred learning styles and learning teaching methods. 1st to gather personal information applied demographical questionnaire it was consisted on few items: name, age, gender, birth order and to evaluate their preferred teaching learning modalities (lectures, tutorials, practical, self-study). The second questionnaire was used to evaluate the preferred learning style of medical students. It consisted of 20 questions with 3 options and students could choose more than one option if they felt them suitable. The Visual, Auditory and Kinesthetic model was used because (a) it was exposed to self-alteration (b) it is escorted by study plans for each style(c)it could assistance to changing the teaching scheme(d) it is simple and extremely reliable. After taking informed consent from participants, a short demographical Questionnaire with the learning style modality (VAK) was administered to the large group in different sitting. Both questionnaires were in English. Approximately half an hour was spent on this task and assessed the modal scoring by validating scoring instructions that was available on website.

Descriptive statistics was used to analysis the preferred learning style and preferred teaching learning modalities. to compare the VAK scores of male and female students T-test was used. Pearson's correlation co-efficient was used to analysis the correlation between the learning styles and teaching learning modalities.

Ethical statement: After taking approval from ERC of QIMs and explaining the Aim of the study to students, informed written agreement was got and informed that all personal information and responses were kept confidential.

3. RESULTS

Figure 1 shows the total three learning style among students. According to VAK modal the students learning style depends on how they prefer to observe and obtain information. The majority N=104 (40.1%) of respondents were Kinesthetic learner, N=90 (36.3%) was visual learner whereas N= 60(23.6%) were Auditory learner as shown in diagram.

Figure 2 shows that 41% students had trimodal preferred learning style, 39% had bimodal preferred learning style, where as 20% has unimodal preferred learning style.

Figure 3 indicates the learning modalities, the most preferred learning strategies was practical (42%), lectures (34%), self-study (15%) and tutorials (9%) most preferred learning strategy was practical and least preferred strategy was tutorial.

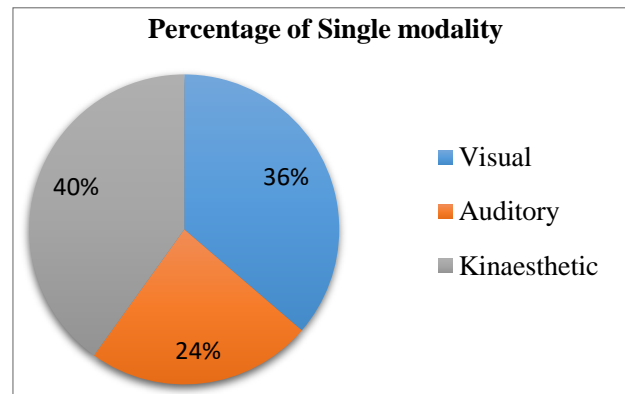


Figure 1 Percentage of Single modality

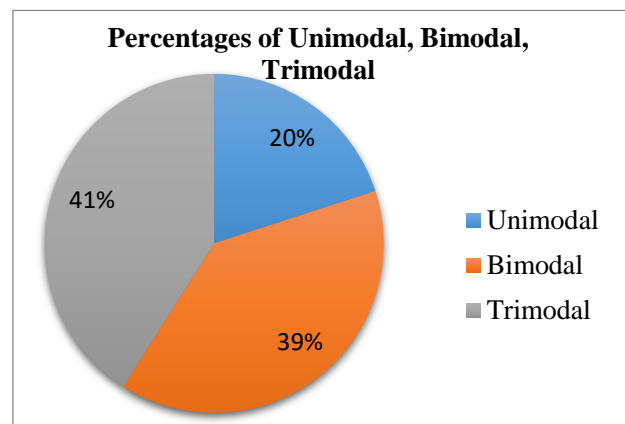


Figure 2 Percentages of Unimodal, Bimodal, Trimodal

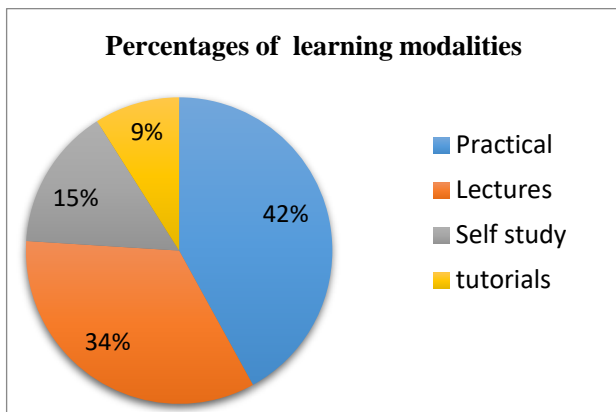


Figure 3 Percentages of learning modalities

This table-1 depicts that the comparison of preferred VAK modalities of respondents. It was indicated that a significantly greater number of female respondents preferred the auditory learning modality as compare to male; where as a significant higher number of male students preferred learning style is kinesthetic modality (p value<0.05).

Table 1 Mean & SD of Male and Female students on Visual, Auditory & kinesthetic

VAK modality	Male/Female	Mean ± SD	p value
Visual	Male	4.73 ± 2.19	0.03*
	Female	5.63 ± 2.23	
Auditory	Male	4.56 ± 1.61	0.13
	Female	5.13 ± 1.41	
Kinesthetic	Male	7.32 ± 2.01	0.002*
	Female	5.78 ± 2.12	

(* p value < 0.05, t-test)

Figure 4 shows the most preferred learning modality of female respondents were lecture (47%) and practical (45%), whereas the male respondents preferred learning modality was practical (41%) and self-study (32%), most preferred learning strategy was practical in both genders.

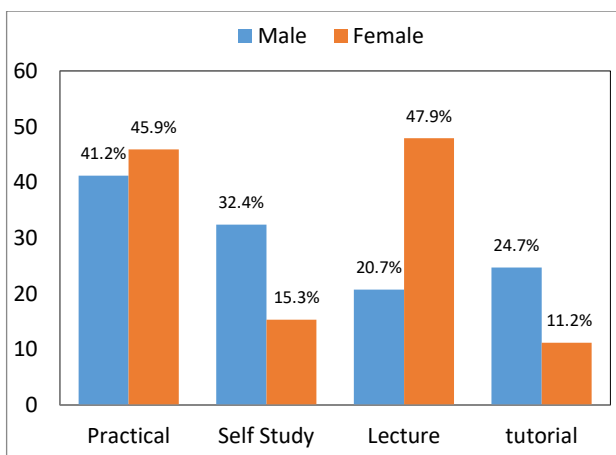


Figure 4 Learning modality

Table 2 Correlation among students' liking for VAK and learning strategies

Preferred mode of teaching- learning method	Practical	Lectures	Tutorials	Self-Study method
Percentage of Student	42	34	9	15
VAK modal	Kinesthetic	Visual	Auditory	
Mean score	15.49	11.69	10.79	6.15

Table 2 depicts the correlation between students' preference for VAK and learning strategies. The most preferred VAK modality was kinesthetic and most preferred learning strategy was practical. A positive correlation (Pearson's correlation coefficient, r= 0.722) was observed between the preferred Visual, Auditory and kinesthetic modalities and learning modalities.

4. DISCUSSION

Learning preferences helps to make learning easier and enjoyable and attain academic success. In this study, we administered the VAK questionnaire to all the years of medical students to find out their preferred learning style. The majority of respondents (69%) had multimodal (VAK) preferred learning style, which indicated that they had interest in multiple modals to get the information. The result of prior studies showed the same outcome. Students learn effectively with the blending of multimode as well as it also increases the learning strategies.

In unimodal (whether it is visual, auditory and kinesthetic) learning styles, we establish the utmost preferred modality was kinesthetic (40%), monitored by visual modality (36%) and auditory modality (23%). There are two types of learning. Active learning and passive learning, the active learning methods persuade the critical thinking (assessment, evaluation, investigation, interpretation and explanation of information) as well as develop cognitive ability (problem solving, logical thinking and decision-making skills). Participation, hand on approach and practical strategies is an active learning and a submissive learning method like lectures generally accommodate to the auditory learning. In present study, the percentage of the auditory learner was much less as associated to kinaesthetic learning style and visual learning style. Our finding was same to the study of Baykan and Nacar [12] on first year of medical students from turkey, most preferred learning style was kinaesthetic mode.

This study found significant relationship between learning preference and gender, [13] found that males and females preferred different styles in Saudi Arabia. In the study by Sarabi-Asiabar tended that male have the kinesthetic style and females tended to learn using the auditory style. There is no solitary finest learning method that can work for every student, no matter how much that style is good. Many studies have indicated that learning methods such as PBL, CBL are special and old-style methods i.e lectures [17]

The data of this study showed that practical was the most preferred learning strategy in both respondents. The information can be related with the conclusion that the utmost preferred learning style was kinaesthetic. The kinaesthetic learners choose the hand on approach to practical session. They learn through experiencing/doing things. Best for kinesthetic learner: short definitions, fill-ins, multiple choices. Worst for kinesthetic learner: long tests and essay

- Taking lab classes& performing practical
- Role playing
- Interaction and active participation
- Hand on training
- Taking field trips, visiting museums
- Physical Activities

- Manipulate and touch material
- Studying with others
- Use muscle memories
- Walk as practice
- Using memory games
- Using flash cards to memorize

It was observed that the second most preferred learning strategy was visual (slides, presentation) and third was auditory (lectures). This indicated that preference of the learning strategies was affected to some degree by learning styles. Matchless learning style and teaching learning approaches may badly affect the learning of the students [18] and therefore, modified learning methods to the students preferred learning style is advocate [19].

It must be Providing training, supervision and chances to the medical instructors to build up a perceptive and understanding of the students preferred learning style can be the result in immense understanding, comprehension, reflection and consideration of the exclusive learning needs of students. Associating the students preferred learning style and instructional condition can contribution the instructors in using appropriate teaching-learning methods and these interventions can enhance the intellectual and learning capacity.

Limitation

One of the limitations of this study was it pretty small sample size and taken from only one institution so these finding cannot generalize to all the medical students of Pakistan. second, other learning style inventory, VARK (visual, auditory, read & write and kinaesthetic) can also use to assess the fourth modality as well.

In future, more studies require to be conducted, (a) to find out the relationship between performance and learning style (b) Learning style changes the performance from pre clinic phase and post clinic phase (c) changes in teaching learning strategies can enhance intellectual and cognitive ability and performance. (d) Find out the relationship between personality, satisfaction and learning style.

5. CONCLUSION

The awareness regarding learning styles has inference for the medical instructors and students, the students recognize their learning inclination, which can help them in using the appropriate learning schemes and in result they are more self-directive, maintain interest, better way to perceive, process and retain new information and utilize their true prospective. The instructors become conscious of the students preferred learning style and they can integrate teaching learning strategies which are customized to encounter the students preferred learning styles. This would not only generate a resourceful learning situation, but it would also offer a safe and known environment for study and inspire the students to achieve the successful academic career.

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