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RESEARCH ARTICLE

LEARNING STYLE PREFERENCES AMONG PHYSIOTHERAPY UNDERGRADUATE STUDENTS IN
PUNJABI UNIVERSITY, PATIALA, PUNJAB

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ABSTRACT

Background: Learning style preference explains how learners most efficiently and most effectively perceive process, store, and recall what they are attempting to learn. Understanding learning style preference encourages both students and teachers to continuously update themselves, resulting in greater educational satisfaction.

Objective- The aim of the present study is to find out the frequency of different learning style in students of Bachelor of Physiotherapy in Punjabi university, Patiala.

Methodology: A survey was conducted in department of Physiotherapy, Punjabi University, Patiala, to identify the types of learning styles used by undergraduate students and VARK questionnaire was used for collection of data.

Result: Total 61 subjects (undergraduate students) with mean age of $19.04918 \pm SD 1.17$ were participated in the study. The percentage of visual, auditory, reading and kinesthetic type of learning style among undergraduate students was 19.99, 27.99, 19.19 and 33.36 respectively.

Conclusion: A majority of students in the present study preferred unimodal inputs in their learning process while no statistical differences were found in preferring learning styles by the students. It is concluded that the medical students adopt different types of learning style to improve their academic performance and develop ways to master the lifelong professional skills.

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INTRODUCTION

A learning style or preference is the complex manner in which learners most efficiently and most effectively perceive, process, store, and recall what they are attempting to learn. It is considered a component of the wider concept of personality and intellectual development. One learning style is neither preferable nor inferior to another but is simply different, with different characteristic strengths and weaknesses (Hawk *et al.*, 2007; Felder *et al.*, 2005; Fleming *et al.*, 2006 and James *et al.*, 1995) Evaluating students learning styles provides knowledge about their particular preferences. This awareness can be used to develop, design, format, and deliver educational programs and resources that will motivate and stimulate students' acquisition, integration, and application of information and professional knowledge in an attempt to individualise instruction. "Understanding styles can improve the planning, producing, and implementing of educational experiences, so they are more appropriately compatible with students' desires, in order to enhance their learning, retention and retrieval" (Federico, 2000).

A variety of learning style theories and frameworks have been developed along with accompanying instruments that operationalize their learning style constructs. These models can be grouped into four general categories: personality models, information-processing models, social-interaction models, and instructional preferences models (Claxton *et al.*, 1987; Fleming *et al.*, 1992; MERLOT, 2012). Among the instruments/inventories in the category of instructional preferences is the Visual, Aural, Read-write, and Kinesthetic (VARK) questionnaire developed by New Zealand educator Neil Fleming. VARK is a short, simple questionnaire designed to help students learn more effectively and to help faculty members become more sensitive to the diversity of teaching strategies necessary to reach all students (Hawk *et al.*, 2007; Fleming *et al.*, 1992).

VARK, a guide to learning styles classifies learning preferences based on sensory modalities into four modes such as Visual (V) – seeing graphs, charts, flow diagrams, drawings, diagrams, pictures, colored word accents, demonstrations etc.; Auditory (A) – listening, interacting, discussing, speech; Reading-writing (R) – textual contents, reading books, word lists, writings, handouts; and Kinesthetic (K) – physical touch, manipulating objects or materials.

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Students will have their own individual learning style preferences ranging from single preference (unimodal) to multiple (multimodal) preferences. Although, learners can use all of the four (V, A, R, K) sensory modes of learning, one mode is often dominant and preferred (Muralidhara *et al.*, 2013). Visual learners prefer the use of diagrams, flow charts, hierarchies, models, and arrows that represent printed information. Auditory learners prefer listening and thus explore knowledge through discussions, lectures, and tutorials when acquiring new information. Read/write learners prefer printed words and texts as a means of information intake; they also prefer lists, glossaries, textbooks, lecture notes, or handouts. Finally, kinesthetic learners internalize information best when they are involved physically (e.g., touching and manipulating materials). They prefer simulations of real practices and experiences, field trips, exhibits, samples, photographs, case studies, real-life examples, role playing, and applications to help them understand principles and advanced concepts. According to individual preference to learning style, learners can be classified as unimodal if they show predominantly one learning preference or multimodal if preference is shared between two or more learning styles (Baykan *et al.*, 2007; Dobson *et al.*, 2010).

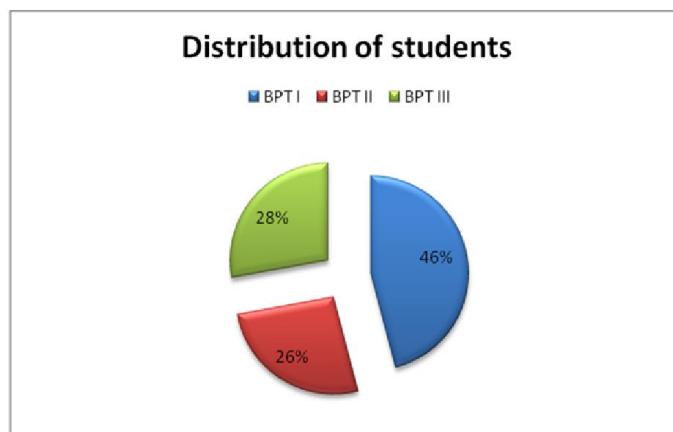
The VARK questionnaire is not intended to box respondents into a mindset that they have been diagnosed or labeled. Rather, it is designed to initiate discussions about, and reflections upon, learning preferences. Ensuing discussions about the questionnaire results may help create a sense of self awareness for the student as to how he or she learns best and the motivation to seek out the best methods to improve learning performance (MERLOT, 2012; Murphy *et al.*, 2004). In the medical and dental literature, learning style preferences have been investigated by many authors using the VARK instrument. However little is known about the learning style preferences used by physiotherapist and these are done in western population. Therefore the aim of the present study is to find out the frequency of different types of learning preference among undergraduate physiotherapy students at Punjabi university, Patiala, using the VARK (Visual, Aural, Read/Write, Kinesthetic) questionnaire.

MATERIALS AND METHODS

This was a descriptive study and a sample of 61(58 females + 2 males) students from students of Bachelor of Physiotherapy from Punjabi University, Patiala was selected. The subjects from other departments or universities were excluded from the study. A VARK questionnaire was used for collection of data by distributing. The questionnaire was distributed to the students before filling it, the researcher explains the questionnaire to the students. The collected data was analyzed by using MS-Excel 2007 and Data are reported as percentage of students in each category of learning style preference. The number of students who preferred each mode of learning was divided by the total number of respondents to determine the percentage. In addition to VARK inventory, a screening form was also filled by the students, to get additional information about their demographic details, family background and their learning experience in physiotherapy program.

RESULTS

In the present study, the mean age of the students was 19.04918 ± 1.17 with aged ranged from 17 to 23 years. The Graph 1 shows the distribution of students in the different years of their BPT program. The frequency of the subjects in the BPT I, BPT II and BPT III were 46%, 26% and 28% respectively.



Graph 1. Distribution of Students in Different years of BPT program

Table 1 shows the comparison of different type of leaning styles among BPT I, BPT II and BPT III years students. Percentage of different Type of learning style among BPT I Students was found to be 18.125, 29.16, 18.75 and 33.39 for visual, auditory, reading and kinaesthetic learning style respectively. The percentage of different Type of learning style among BPT II Students was found to be 18.66, 28.69, 18.84, and 33.7 for visual, auditory, reading and kinaesthetic learning style respectively. However, the percentage of different Type of learning style among BPT III Students was found to be 22.03, 25.7, 20.05 and 32.2 for visual, auditory, reading and kinaesthetic learning style respectively.

Table 1. Comparison of different type of leaning styles among BPT I, BPT II and BPT III years students

	Visual	Auditory	Reading	Kinaesthetic
BPT I	18.125 %	29.16%	18.75%	33.39%
BPT II	18.66 %	28.69%	18.84%	33.7%
BPT III	22.03%	25.7%	20.05%	32.2%

Table 2 shows the overall distribution of students with VARK learning style preferences among the students of Bachelor of Physiotherapy of Punjabi University, Patiala. The percentage of Visual, Auditory, Reading and Kinesthetic learners were found to be 19.99, 27.99, 19.19 and 33.36 respectively.

Table 2. Overall Distribution of Students with VARK Learning Style

Learning style	Percentage (%)
Visual	19.99
Auditory	27.99
Reading	19.19
Kinesthetic	33.36

DISCUSSION

Learning style as defined by Keefe is the 'composite of characteristic cognitive, affective and physiological characters that serve as relatively stable indicators of how a learner perceives, interacts with and responds to the learning environment' (Keefe *et al.*, 1987). The field of learning styles is complex, with over 70 different models which are based on a number of assumptions (such as learning styles are fixed, flexibly stable, contextually determined, or even nonexistent) and focus on different aspects of the learner (cognitive personality style, information processing style, or instructional preferences) (Coffield *et al.*, 2004). However, it is important to recognize two factors that influence learning; stimuli (environmental, emotional, sociological, physical and psychological) and preference for learning/ processing new information (Dunn *et al.*, 1993). Disparity between learning and delivery of instruction may lead to frustration in students. This can be reduced by knowing the students learning style preferences which can be employed to teach them. When information is presented using students preferred learning style, not only teachers are better able to connect with students but students also achieve higher scores (McManus *et al.*, 2006; Miller *et al.*, 1998). In our study most of the students preferred a unimodal learning style. But in contrast to it in other studies, assessment of learning styles preferences among first-year medical students showed that only 36.1% of the students preferred a single mode of information. In our study all the three batches of physiotherapy students showed unimodal learning preferences, amongst this kinesthetic type was preferred. First year undergraduate physiotherapy students preferred kinesthetic(33.39%) followed by auditory(29.16%), reading(18.75%) and visual(18.125%) type of learning style. second year undergraduate physiotherapy students preferred kinesthetic(33.7%) followed by auditory(28.69%), reading(18.84%) and visual (18.66%) type of learning style. Third year undergraduate students preferred kinesthetic (32.2%) followed by auditory (25.7%), visual (22.03%) and reading (20.05%) type of learning style. The result of the present investigation has encouraged us to look into learning style preferences of undergraduate physiotherapy students in the Punjabi university. This is in consideration of the growing body of evidence showing that learning style preferences may change over time and with different levels of education. The limitation of the present study was small sample size and students of BPT 4th year were not included in the study. Further follow up study can be conducted to assess the changes in learning style preferences over time and comparison can be done with academic performance, self esteem etc.

Conclusion

A majority of students in this study preferred unimodal inputs in their learning process. Our study did not reveal any statistical differences in preferred learning styles. It is believed that storing of knowledge up to 40% is achieved by visual sensory mode. However, our students in the present study lack that component of learning style. When students exhibit significantly different learning styles, the instructor need to address this fact and develop appropriate learning approaches as it can enrich the learning experience. But, it should be noted with caution that while sensory preferences are useful as a

launching point for inquiry, they should not be used as the only source of information for creating learning improvement. However medical students adopt different types of learning style to improve their academic performance and develop ways to master the lifelong professional skills.

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