

Learning Approaches and Styles among Indian Physiotherapy Undergraduate Students using VARK Questionnaire.

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Abstract

Background:- Learning is characterized as life-induced lasting changes in behavior. Learning is described as "the process by which knowledge is generated through the transformation of experience," according to experiential learning theory. Students' ability to reach the highest level of learning is influenced by a variety of factors, including their aptitude and temperament, the course's curriculum, the teachers' expertise and methods, the assessment process, the availability of learning opportunities, and the educational environment.

Material and Methods: We circulated a validated VARK (visual, auditory, read/write and kinesthetic) questionnaire along with the four keys (each for one question), amongst physiotherapy first year and final year students at Datta Meghe College of Physiotherapy, Wanadongri, Nagpur. Students were asked to select the any one option for all the questions.

Result: Out of total 150 students, 112 students; 62 (20 males, 42 females) 1st year B.P.Th and 50 (18 males and 32 females) final year B.P.Th students willingly participated in the study and they were asked to fill questionnaire. Majority of the student from both the first year and final year batch (55% & 71%) choose multimodal learning style. The most common multimodal learning style among first year batch was auditory and reading while auditory – reading and kinesthetic predominates among final year student.

Conclusion: With the shift of paradigm from traditional classroom to virtual learning the learning style reflects the multimodal rather than the uni-modal learning style.

Keywords: Learning style, Undergraduates, VARK, Physiotherapy, Curriculum evaluation

INTRODUCTION

Since a decade, lots of new theories have been evolved to examine the various process involved in learning. Out of which most learning theories are mainly focused on most useful ways the learning can be delivered. A learning approach is a method of learning that is used to acquire information. The manner in which a student approaches a learning situation is an acquired trait or technique that is influenced by the learning environment or situational demands¹.

Learning is characterized as life-induced lasting changes in behavior. Learning is described as "the process by which knowledge is generated through the transformation of experience," according to experiential learning theory. Every person thinks and learns in their own unique way, with a preference or style for processing specific types of information. A learning approach is the technique used by a learner to interpret, comprehend, process, evaluate, and retrieve information as effectively as possible when pursuing knowledge.^{2,3}

Students' ability to reach the highest level of learning is influenced by a variety of factors, including their aptitude and temperament, the course's curriculum, the teachers' expertise and methods, the assessment process, the availability of learning opportunities, and the educational environment.⁴ Students' learning styles, which are a normal and habitual characteristic, are special. Learning approaches are primarily divided into three categories: deep approach, surface approach, and strategic approach. The deep approach is a systematic and organized learning

method that focuses on comprehending concepts and connecting ideas to improve the learning process.^{2,4}

Since the physiotherapy curriculum requires critical examination of new ideas, connecting new ideas to previously learned concepts and values, and applying this information to solve problems in unfamiliar settings, deep and strategic learning methods are more likely to be used by physiotherapy students. The surface apathetic method, on the other hand, is less favourable because physiotherapy students would have a harder time remembering large quantities of information. Previous research has found a generally positive relationship between the deep learning approach and student learning efficiency, while the opposite is true for the surface apathetic approach.^{2,5}

Undergraduate physiotherapy education seeks to develop ethical and compassionate physiotherapist who have a strong grasp of health sciences, clinical knowledge, problem-solving abilities, and sound judgment. In order to use the above skills in relation to clinical conditions, however, the daily practice of physiotherapy necessitates practitioners having access to a vast volume of factual knowledge.

This factual knowledge bank, which is also built by memorization, has long been considered a prerequisite for learning and practicing many clinical skills in physiotherapy. Until recently, the early years of undergraduate physiotherapy education were dominated by an emphasis on learning factual knowledge.⁶

The VARK learning styles inventory assesses four sensory modalities for learning: visual, aural, read/write, and kinesthetic. Learners may be categorized as uni-modal if they have a strong preference for one learning style, or multimodal if they have a preference for several learning styles. As a result, over time, numerous questionnaires have been established to show students' overall approaches to learning, their impressions of teaching-learning environments, and other relevant aspects of students' attitudes and experiences.⁷

There is very little information available about the learning styles and methods used by undergraduates in Indian physiotherapy colleges. Secondary education in schools is primarily lecture-based, allowing students to learn in auditory and read-write ways.

The University for higher education in physiotherapy offers an integrated modular curriculum with a strong focus on problem-based learning. The programme incorporates a variety of learning approaches, and tests provide a significant component of continuous evaluation. A criterion-referenced qualifying test serves as the final assessment.⁴

We predicted that first-year and final-year students would have major variations in learning styles and methods, with first-year students favouring auditory and read/write learning styles and strategic learning, whereas final-year students would be required to turn to multimodal learning styles with a greater focus on deep learning.

The aim of this analysis was to see if there were any variations in learning style between first and final year students. These variations in learning styles and methods may be used to adapt these curricula to promote diverse learning styles and deep learning rather than strategic and shallow learning.

MATERIAL AND METHODS:-

The learning styles and attitudes to learning of first-year and final-year undergraduate students in an Indian physiotherapy college were examined in this review. The research was completed in the year 2020.

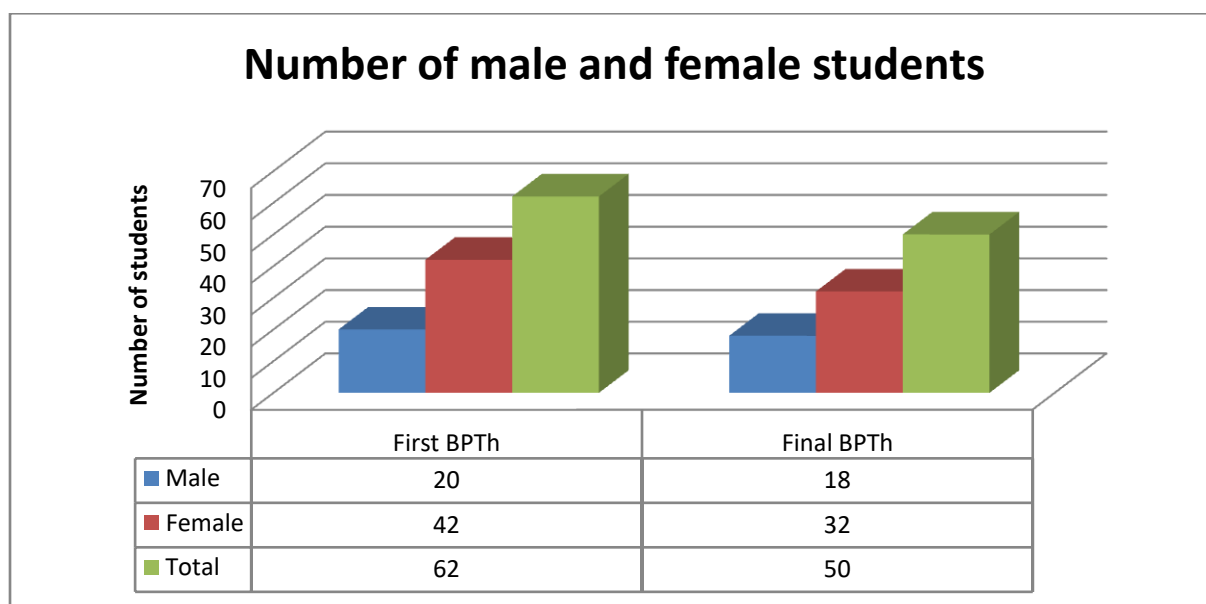
Validated VARK questionnaire was used as study instruments. The questionnaires were distributed during lectures and practical sessions to the undergraduate students in their first and final years. Students from the first and final years' attendance registers were selected as alternates, and consenting students were invited to participate in the study. To prevent repetition, participants were asked to confirm that they had not completed the questionnaire at a previous session. Participants were updated on the study's goals in all cases, and the confidentiality of responses was maintained by retaining responder anonymity.

The questionnaire was self-administered and was in English. The developers created protocols that were used to rate each answer. We measured subscale scores according to protocol in the VARK questionnaire, then assessed preferred learning method and uni-modality or multimodality based on subscale scores.

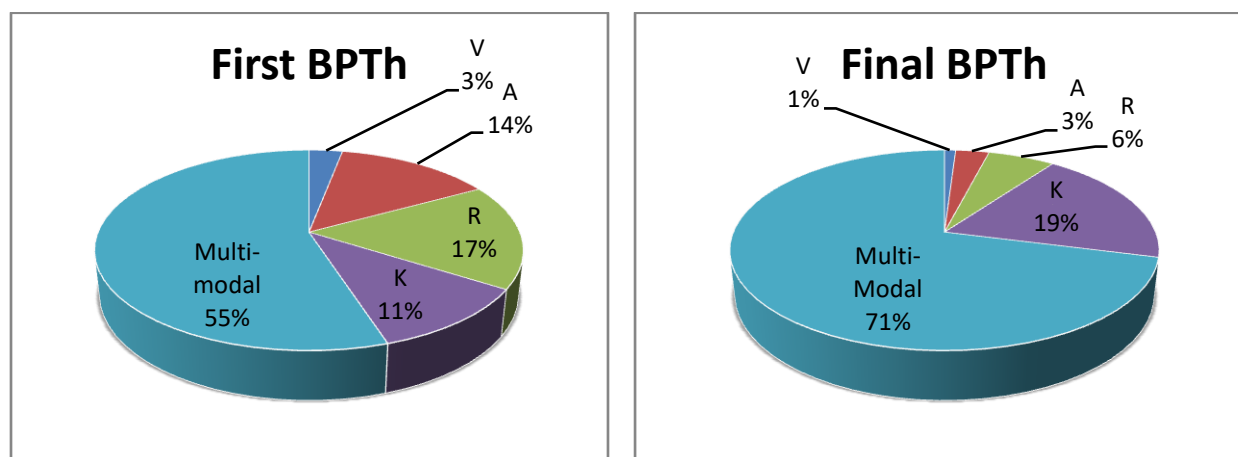
RESULTS:-

Out of total 150 students, 112 students; 62 (20 males, 42 females) 1st year B.P.Th and 50 (18 males and 32 females) final year B.P.Th students willingly participated in the study.

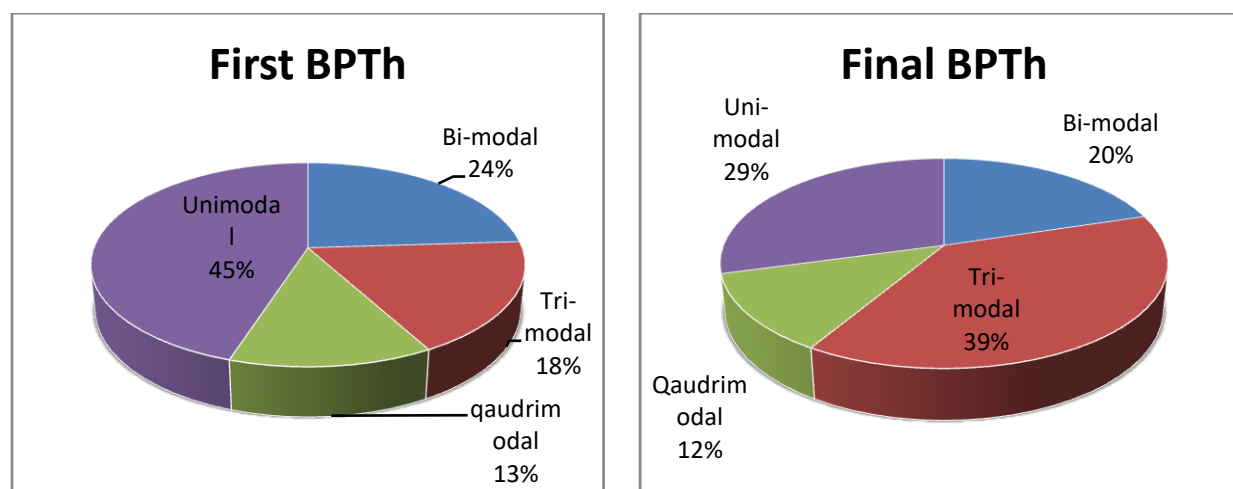
Graph I:- Shows the number of students in BPTH First year and BPTH Final year and number of males and females in the study.



Graph II:- Shows the percentage of First and Final year BPTH students having preference for single or multiple modes of learning style.



Graph III: Percentages of students having uni-modal/multi-modal preference of learning style.



On assessing each student preferred learning style, it was found that 55% students of first BPTH and 71% students of final BPTH had preference for multiple modes of learning style (multimodal) and 45% & 29% students preferred single modes of learning style (uni-modal) in first and final BPTH respectively. Majority of the students from both the years prefer multimodal learning style. The most common multimodal learning style among first year batch was auditory and reading while auditory – reading and kinesthetic predominates among final year student.

Students who selected uni-modal (either visual, auditory, reading/writing, or kinesthetic) preference, maximum number of students preferred kinesthetic mode followed by read/write and aural mode.

Among the students who preferred multi-modal style, tri-modal style was preferred followed by bimodal and quadri-modal style.

DISCUSSION:-

The current study analyzed the learning styles of first-year and final-year physiotherapy students using the VARK questionnaire.

It was observed that 55% students of first BPTH and 71% students of final BPTH had preference for multiple modes of learning style (multimodal) and 45% & 29% students preferred single modes of learning style (uni-modal) in first and final BPTH respectively. Majority of the students from both the years prefer multimodal learning style. The most common multimodal learning style among first year batch was auditory and reading while auditory – reading and

kinesthetic predominates among final year student. Students who selected uni-modal (either visual, auditory, reading/writing, or kinesthetic) preference, maximum number of students preferred kinesthetic mode followed by read/write and aural mode. Among the students who preferred multi-modal style, tri-modal style was preferred followed by bimodal and quadri-modal style.

Learning is the process of gaining knowledge through active interaction, participation, and cooperation between learners and educators. The learning style adopted by the student is influenced by the subject to be learned, meaning, teaching methods, the essence of the educational setting, and assessment strategies. These considerations vary between first-year students who are studying basic preclinical subjects such as Anatomy, Physiology, Biochemistry, Exercise therapy, and Electrotherapy, and final-year students who are studying clinical physiotherapy subjects such as physiotherapy in musculoskeletal condition, physiotherapy in cardio vascular and respiratory sciences, physiotherapy in neurosciences and physiotherapy in community health.^{4,7,8.}

In India, first and final year physiotherapy students are taught using a variety of teaching methods, including aural lectures with or without the use of overhead projectors/power point presentations to describe flow charts, images, and other visual diagrams.

The preclinical curriculum focuses on gaining a foundational understanding of medical sciences, which entails a great deal of details. In our setup, didactic-based classroom lectures, problem-based learning, and written reports are used as teaching methods during the preclinical process. This could encourage more passive learning while still encouraging strategic and surface learning.^{6,10}

A global trend in physiotherapy education is a paradigm change away from conventional teaching methods and toward deeper and integrated problem-based learning. Furthermore, internal inspiration for the physiotherapy career may be one of the explanations for the students in our study's multi-modal learning style.

This study determined preferred modes of learning style by physiotherapy undergraduate students, based on the hypothesis that everyone has a particular learning style and that if teaching is tailored to match that style, learning would improve. Knowing their preferred style of learning will assist our teaching faculty in recognizing our students' varied needs, the need for customized teaching methods, and overcoming the tendency to teach everyone in the same way. Multiple learning techniques have the benefit of being able to learn more easily and at a deeper level, resulting in better recall at a later time. Using a variety of learning methods will also help you develop your attention span. Understanding different learning types can only help you research more efficiently.^{5,11}

Since a large percentage of students in this study preferred the kinesthetic mode in a uni-modal learning style. When it comes to learning, these students tend to use all of their senses, including touch, hearing, smell, taste, and sight. They tend to learn by presentations, simulations, animations, case studies, practice, and applications. They tend to benefit from doing things rather than from someone else's experience, and they value their own history of experiences over someone else's. As a result, it is suggested that these students be taught more by simulations, presentations, animations, case studies, and hands-on methods.^{3,12}

In the teaching–learning process, all learning styles cannot always be accommodated. However, raising awareness of the issue will aid in the improvement of various educational methods. Physiotherapy education necessitates the development of a broad range of information and skills, which can be attained through a variety of learning methods, depending on whether the learner prefers a preferred or non-preferred learning style. Increasing non-preferred learning styles allows people to be more open to different types of learning and from different sources.^{5,13,14}

The study's limitation is that these findings are an indicator of students' learning habits at a single institution. A clearer indication of the preference profile of a group of students from a diverse area may be included in the study, but should not be over-interpreted.

Conclusion: With the shift of paradigm from traditional classroom to virtual learning the learning style reflects the multimodal rather than the uni-modal learning style. Both physiotherapy learners have specific learning styles of active participation, underpinned with practical examples of theoretical concepts.

References:-

1. Shah D, Lochan Yadav R, Sharma D, Kumar Yadav P, Islam N, Khatri Sapkota N et al. Learning approach among health sciences students in a medical college in Nepal: a cross-sectional study. *Advances in Medical Education and Practice*. 2016;;137.
2. Chonkar S, Ha T, Chu S, Ng A, Lim M, Ee T et al. The predominant learning approaches of medical students. *BMC Medical Education*. 2018;18(1).
3. Raj S, Kanagasabapathy s. Relationship between gender and learning style preferences- a study among undergraduate medical students in south india. *Journal of Evolution of Medical and Dental Sciences*. 2019;8(19):1550-1554.
4. Srikantaiah S, Rajadhyaksha S. A study of physiotherapy students' perception of reflection in learning. *Journal of Research in Medical Education & Ethics*. 2020;10(2):81.
5. Schmutz A, Meyer I, Archer E. Supervision interactions and student learning: how supervision can influence learning. *Physiotherapy Theory and Practice*. 2019;37(2):315-322.
6. Balasooriya C, Hughes C, Toohey S. Impact of a new integrated medicine program on students' approaches to learning. *Higher Education Research & Development*. 2009;28(3):289-302.
7. Rani N A. Learning Style Preferences of Undergraduate Medical Students: A VARK Profile. *Scholars International Journal of Biochemistry*. 2019;02(10):259-261.
8. Breckler J, Joun D, Ngo H. Learning styles of physiology students interested in the health professions. *Advances in Physiology Education*. 2009;33(1):30-36.
9. Stander J, Grimmer K, Brink Y. Learning styles of physiotherapists: a systematic scoping review. *BMC Medical Education*. 2019;19(1).
10. Goyal C, Naqvi WM, Sahu A. An atypical case of febrile infection-related epilepsy syndrome following acute encephalitis: Impact of physiotherapy in regaining locomotor abilities in a patient with neuroregression. *Pan Afr Med J* 2020;36:1-6.

11. Jawade S. Post-operative physiotherapy rehabilitation in rare combined full thickness tear of supraspinatus and subscapularis tendon managed by arthroscopy with mini open Supraspinatus tendon repair: A Case report. *Eur J Mol Clin Med* 2020;7(2):1212-1219.
12. Lalwani L, Kazi A, Quazi N, Quazi Z, Gaidhane A, Taksande A, et al. Study protocol for a randomised controlled trial comparing the effect of lung recruitment manoeuvres as an adjunct to conventional chest physiotherapy in postoperative paediatric congenital heart disease patients on mechanical ventilation. *Eur J Mol Clin Med* 2020;7(2):2588-2597.
13. Risaldar P, Raut A, Bawiskar D, Naqvi WM. Impact of physiotherapy rehabilitation program on postoperative acl tear patient on prognosis leading to maintain consistency in sport. *Int J Res Pharm Sci* 2020;11(3):4821-4825.
14. Samiksha S, Sukhna Kaur K, Umanjali D, Prerna V. A. To Compare the Effects of Maitland Mobilization with Conventional Physiotherapy in Adhesive Capsulitis. *Int J Cur Res Rev. Modern Therapeutics Applications*, July, 2020, 99-102