EXPLORING LEARNING STYLES PREFERENCES AMONG NURSING STUDENTS: A STUDY AT SHAHIDA ISLAM NURSING COLLEGE LODHRAN, PAKISTAN

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Abstract

Background: *Understanding students' learning styles is crucial for effective nursing education, especially as nursing demands the integration of theoretical knowledge and clinical application. The VAK (Visual, Auditory, Kinesthetic) model remains a widely accepted tool to categorize individual learning preferences and enhance educational outcomes.*

Aim and Objective: *This study aimed to identify and analyze the preferred learning styles among BS Nursing students at Shahida Islam Nursing College, Lodhran, using the VAK model. The objective was to determine how these preferences could guide tailored teaching strategies to improve academic performance and engagement.*

Methodology: *A quantitative, cross-sectional study was conducted from October 2024 to March 2025 using a randomized probability sampling technique. A total of 90 BS Nursing students (both male and female) voluntarily participated. Data were collected through a self-administered VAK-based questionnaire developed by Barsch, using a 5-point Likert scale. Responses were categorized into highly, moderately, and less preferred styles and analyzed using SPSS version 21.0.*

Results: *Among the participants, 65.2% highly preferred visual learning, 58.5% auditory, and 45.3% kinesthetic styles. Visual and auditory modalities were the most dominant. Despite kinesthetic style being least preferred overall, a notable proportion still showed moderate preference, underscoring the value of multimodal teaching strategies. Most participants were aged 20–24 years, with a higher proportion of females (61.1%).*

Conclusion: *Visual and auditory learning styles are predominantly preferred by nursing students, suggesting that teaching strategies should emphasize visual aids and verbal instruction. However, incorporating kinesthetic elements remains essential to address diverse learning needs. Adapting instructional methods to*

students' learning preferences can significantly enhance comprehension, motivation, and academic success in nursing education.

INTRODUCTION

A person's learning style is defined as the intricate combination of their cognitive, emotional, and psychomotor traits that enable them to perceive, understand, and react to learning inputs (Kassutto, 2021). These styles influence how students acquire knowledge and approach new learning experiences. Every learner has a unique method and approach to learning, and understanding these differences is essential in tailoring effective educational strategies (Wong, 2018).

One of the most accessible tools for identifying learning preferences, especially among university students, is the VAK learning model, which stands for visual, auditory, and kinesthetic modalities (Sabiston, 2020). The VAK model categorizes learners into three types: visual learners who benefit from images and diagrams, auditory learners who learn best through listening, and kinesthetic learners who prefer hands-on activities (Barsch, 2022). Developed by Barsch in 1996, the VAK questionnaire remains one of the most widely used instruments for assessing individual learning styles.

Academic success is one of the key indicators used to forecast a learner's future prospects and professional development. An individual's learning style significantly influences their academic performance (Afolabi, 2021). Students differ in various personal attributes such as age, cultural background, intelligence, and psychological traits. These variations naturally affect their learning preferences and outcomes (Mozaffari, 2020).

In nursing education, effective learning is particularly critical due to the complexity and practical nature of the discipline. Nursing students often adopt novel and effective strategies to enhance knowledge acquisition (Mozaffari, 2020). Moreover, their learning is shaped by multiple factors including teaching strategies, curriculum structure, and the learning environment (Shams, 2021).

The interaction between teachers and students plays a vital role in shaping the learning experience. Educators must employ effective teaching resources and create engaging environments rather than relying solely on authoritative instruction (Wong, 2018).

According to (Sabiston, 2020), educators must assess students' learning needs and provide tailored resources to help them succeed academically and personally.

Today's educational paradigm has shifted from a teacher-centered approach to a learner-centered model. This shift requires adopting innovative teaching methods and adapting pedagogy to align with students' unique learning styles, which benefits both learners and instructors (Zhu, 2018). Students who understand their learning preferences can make informed decisions about how to study and apply knowledge in future professional settings.

Despite this, many students focus more on achieving high grades than on actual learning. This grade-centric mindset often overshadows intrinsic motivation. The VAK model encourages learners to reflect on their preferred learning modes, promoting more effective and personalized educational experiences.

This study classifies students into kinesthetic, auditory, and visual learners and explores their distinct characteristics. It emphasizes the importance of recognizing that no two individuals learn in exactly the same way. Each learner's style should inform teaching practices to ensure logical, efficient, and meaningful learning experiences (Hammayun, 2022). The use of varied teaching strategies is essential to meet the diverse needs of learners and to achieve educational objectives effectively.

SIGNIFICANCE OF STUDY:

Every person has different learning styles that affect how well they do in school. Recognizing these preferences aids teachers in choosing efficient instructional strategies and resources. Understanding their preferred learning styles—visual, auditory, or kinesthetic—using instruments such as the VAK questionnaire might help BS Nursing students improve their study techniques. In addition to helping students become more self-aware of their learning styles, this research helps teachers modify their lessons to boost student achievement. In the end, identifying and utilizing these preferred learning styles can help researchers and nursing students achieve academic

success.

Literature Review

For the past 50 years, learning style concerns have drawn a lot of attention from academic curricula as well as from administrative and organizational institutions. The study of learning styles and preferences has been the subject of a great deal of research, with hundreds of publications having been published in this area. However, there's always space for development. The following people have worked in this field of study and contributed to the effort to settle this conflict: Reid (1987–1995), Fleming (2001), Dunn & Dunn (1972), and Kolb (1984) (Latuheru, 2021).

In actuality, a learner's learning style affects their academic performance and likelihood of success. Dunn and Griggs (1998) defined learning style as the method, inclination, and conduct that students use when studying. Moreover, thinking that there could be a large or negligible difference in the learning strategy (Afolabi, 2021). Individual learning styles vary from person to person due to a psychologically and intrinsically blended set of characteristics that make some teaching and learning methods effective for certain people but ineffective for others. These teaching strategies seem to have had a significant impact on students' achievement (Khan, 2019).

Learning style is defined as an individual's qualities and preferred techniques of collecting, organizing, and processing knowledge. Individual advantages and preferred means of exploring, accumulating, structuring, and analyzing specific information are also mentioned. As VAK utilizes pattern recognition, it falls under the educational preference category. Closing the knowledge gap between teaching and learning strategies is essential because learning strategies help teachers understand their specific field of interest and subsequently urbanize it. Learners' physiological behaviors and characteristics are often accurate indicators of how they view, interact with, and engage with others as well as how they respond to the learning environment (Sabiston, 2020).

Additionally, curriculum, teachers, and students all influence how good an education is. Priorities include developing curricula, choosing and organizing resources, organizing instruction, and evaluating students. A lot of research has been done in the literature on the ability of educators to set goals, determine the needs of their pupils, and evaluate their work. It is claimed that chosen learning strategies and learning styles have an impact on students' learning. To modify their teaching strategies and provide instruction that will promote students' learning, educators need to be aware of the learning patterns of their students (Edrees, 2021).

According to Dunn (1990), a student's learning style is the way they start to interact with, process, comprehend, and remember complex material. Twenty variables are identified by his theory and categorized into five types of stimuli: psychological, social, emotional, physical, and environmental. Physical stimuli include things like lighting, sound, temperature, and the layout of the classroom. Motivation, accountability, and control are examples of emotional stimuli. Self-learning, working with a partner, structure, conformity, and task persistence are examples of social stimuli. Cognitive styles such as analytical, impulsive, holistic, and reflective are examples of psychological stimuli. Each stimulus has a distinct preference among learners, which affects how they learn (Lui, 2018).

On the other hand, the research on Dunn and Dunn model perception connects the model literature to the broader concept of VAK (T) (visual, auditory, kinesthetic, and tactual). In order to differentiate between practitioners' levels of education, VAK (T) has gained popularity (Khan, 2019).

Carbo disapproved of Dunn's Model in 1983, saying earlier research had been insufficient. An integral part of the Dunn and Dunn model are preferences related to tasks and activities described in learning by listening, reading-writing, feeling, and practically doing. Several academics dispute Dunn's theory, maintaining that there is no connection between learning styles and modality preferences. For instance, Kampwirth and Bates (1980) asserted that no relationship or interaction between methodology and preference was found in 20 out of 22 experiments. Just two out of fourteen investigations indicated a significant correlation between teaching strategy and modality preference, as proposed by Tarver and Dawson in 1978. It was suggested by Deverensky (1978) in connection to the sensitivity and accuracy of preference evaluation, however he did not address the

topic of whether modality and learning styles are causally related (Kohan, 2021).

Reid's (1987) hypothesis states that learning habits are individual, innate, consistent, and deliberate processes for absorbing, processing, and organizing new information and skills. Reid's study identified six learning strategies that fall under the Conceptual Learning Style choice: auditory learning, which involves listening to lectures and tapes; visual learning, which involves reading and studying diagrams; kinesthetic learning, which involves physical activity and movement; tactile learning, which involves hands-on work and lab experiments; group learning, which involves studying with others or in groups; and individual learning, which involves studying alone (Janakiraman, 2018).

Neil Fleming then put out the VARK model in 2001, which takes into account a person's unique characteristics as well as their methods for gathering, organizing, and understanding information. According to Fleming, because VARK addresses perception types, it falls under the instructional preference category. Read/Write (R), Kinesthetic (K), Aural (A), Visual (V), and Read/Write (R) are the acronyms for this order of operations. Fleming states that maps, charts, graphs, diagrams, photographs, highlighters, and a range of colors are the study tools of choice for visual learners. Aural learners prefer to learn through writing down concepts, clarifying new ideas to others, and discussing issues with peers and teachers. For pupils who are learning to read and write, common learning strategies include essays, textbooks, definitions, readings, and taking notes. Instruments and materialistic items are used by kinesthetic learners as learning tools (Daoruang, 2021).

Nonetheless, Kolb's (2002) methodology is grounded on actual experiences. Sensation, response, thought, and action are only a handful of the human behaviors that contribute to learning. Based on this method, the four main learning skills are abstract thinking, practical experimentation, real-life experiences, and reflection and observation. A person's preferred method of incorporating any one of these four components will determine their preferred learning style. Divergent, convergent, assimilative, and accommodating are the four types of learning styles. Every learning approach has a unique set of drawbacks

and advantages. The perfect student employs a variety of techniques in a variety of situations (Çiloğullari, 2021).

In light of this, Barsch created the multi-model VAK questionnaire and the VAK multi-model learning model in 1996. This is the most widely used questionnaire in the world for determining a learner's preferred learning style (Barsch, 2022). The research divides learners into three groups: kinesthetic, auditory, and visual, based on individual characteristics. It also goes over the traits of each kind of learner and the methods that, given their requirements, are required for effective and profitable learning. The study underscores the fact that no two individuals learn in precisely the same way. Everybody possesses a unique quality that shapes and directs their learning methods, helping them to stand out from the crowd while also indicating the method and strategy that teachers must use to give their students the chance to practice in a logical and productive manner. A combination of skills and techniques must be kept in mind throughout teaching and learning in order to reach the stated goals (Hammayun, 2022).

In-depth research on learning styles has been done in relation to critical analysis dispositions, judgment in empirical studies, and teaching and learning approaches. Apart from concrete experience, which gave the conventional program's nursing students an advantage, nursing students in the advanced and divergent programs are similar in their learning capacities. There was a little but significant correlation between each learning style and certain traits of analytical thinking. Academic success and thinking or learning are significantly correlated. Academic performance is higher for learners who rely on tangible experience, or learning by feelings, according to research conducted on nursing students (Vizeshfar, 2018).

In addition, study and the application of concepts connected to learning styles have led to the classification of learning styles in a variety of ways. Different scales and categories are thus used in different studies to characterize learning styles. Studies have contrasted learning styles, emotional intelligence, intellectual capacity, and academic achievement. Affective and cognitive states, behavioral patterns, personal attributes, and the efficacy of learning choices are the main areas of

similarity among most of these metrics and categories. Because learning styles are important for learning and academic success, the current study aims to assess the effects of education based on students' selected learning styles. Their academic success is influenced by their learning style (Ariani, 2021).

Having said that, the present study discovered that students give preference to experiential learning, perception, and evidence over the predetermined activities, suggesting that they processed and evaluated information based on firsthand observation. Sensing students enjoy a practical approach, direct implementation, and studying through the five senses. Provide pupils with step-by-step instructions to aid in their learning. According to (Wong, 2018), learners who choose sensing-based learning systems have a higher chance of success.

In light of this, identifying learning requirements is a component of development programs that target learning gaps, support efficient services, and result in positive outcomes. Because development resources are scarce, it may have to compete with other objectives for funding, time, and effort (Mangold, 2018).

Additionally, individual learning preferences affect social environments, judgment, challenge, and other broader aspects of life adaption in addition to student education. Therefore, because the VAK Learning Styles framework is easy to use and allows students to self-administer the questionnaire at no cost, we decided to use it for this study. Additionally, the characteristics related to learning styles are quantified and documented objectively for analysis. Furthermore, the most popular and utilized learning technique is VAK.

Methodology

In 2024, quantitative cross-sectional research was carried out on nursing bachelor's degree candidates at Shahida Islam Nursing College in Lodhran, in Pakistan's Punjab province. The questionnaire, which took 8–10 minutes to complete and asked questions about preferred learning styles, was scored on an ordinal scale. Each participant's scores, ranging from 1 to 5, were then divided into three categories: highly, moderately, and less preferred. For data analysis, the researchers employed SPSS version 21.0. Students pursuing bachelor's degrees in nursing were the study's target group, and Shahida Islam Nursing College served as the study's location. The researcher used a straightforward, probability-randomized selection technique to choose a sample size of 90 pupils. Both male and female Shahida Islam Nursing College BS Nursing students participated. All consenting volunteers who signed the permission form were part of this research. The study eliminated those individuals who declined to participate, held a diploma, were post-registered nurses, or did not express any desire to provide their personal information.

Data for this study was gathered using a self-administered questionnaire that was taken from Barsch. A 5-Likert scale served as the basis for the survey questionnaire. Written informed consent was given to each participant (attached). Every piece of data and information collected was kept confidential. Participants in the research maintained their anonymity. The subjects were told that the study approach has no risks or disadvantages. Participants were informed that they might leave the study at any time while it was being conducted. This study was not associated with any recognized risks. In this study, participation was completely voluntary. At any time, participants can choose not to participate or to revoke their consent to do so. In no way were the volunteers kept in the dark about the study. The duration of this study was around six months, from October 1st, 2024 to March 1st, 2024. Harvard Style was used for the bibliography

Results

Demographics:

**Table 4.1: Demographic data of BS Nursing students of Shahida Islam Nursing College.**

1	Gender	Male	Female
		39% (35)	61% (55)

| 2	Age	15-19 Years	20-24 Years	25-29 Years	Above 30
		7 (7.8%)	78 (86.7%)	5 (5.6%)	
3	BSN	1ˢᵗ Year	2ⁿᵈ Year	3ʳᵈ Year	4ᵗʰ Year
		23 (25.6%)	17 (18.9%)	22 (24.4%)	28 (31.1%)

The samples of 90 students included 35 (38.9%) males and 55 (61.1%) females. There were 7 (7.8%) students in age group of 15-19 years, 78 (86.7%) in 20-24 years and 5 (5.6%) students of age group of 25-29 years. There were 28 (31.1%) students from BSN 4ᵗʰ year, 22 (24.4%) from 3ʳᵈ year, 17 (18.9%) from 2ⁿᵈ year and 23 (25.6%) students from BSN 1ˢᵗ year. (Table 4.1).

Graph 4.1: Preference for learning style:
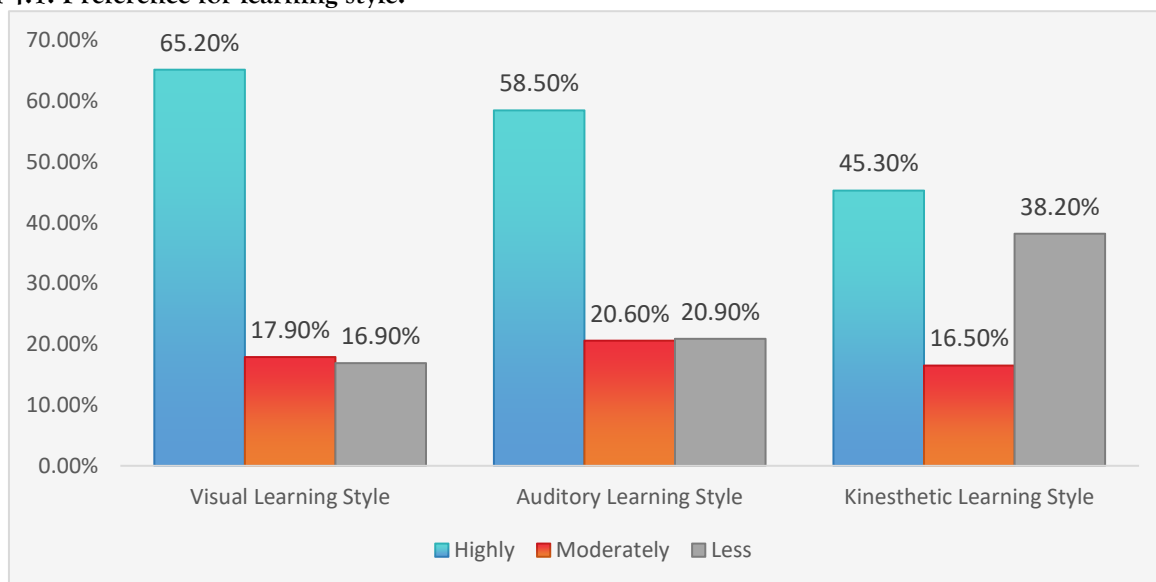
In our study the visual learning style (VLS) was highly preferred by 65.2% students, followed by moderately preferred by 17.9% and less preferred by 16.9% students. Auditory learning style (ALS) was highly preferred by 58.5% students, followed by moderately preferred by 20.6% and less preferred by 20.9% students.Kinestheticlearning style (KLS) was highly preferred by 45.3% students, followed moderately preferred by 16.5% and less preferred by 38.2% students.

Graph 4.2: Comparison ofpreference for learning style:

Preferred Learning Styles
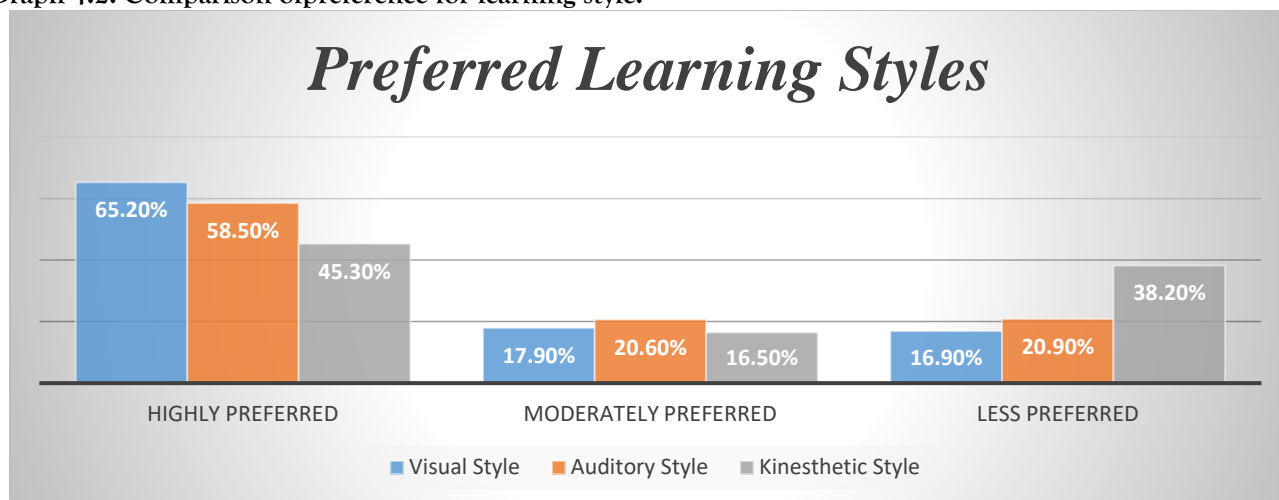
The vast majority of nursing students strongly choose VLS (65.2%) and ALS (58.5%), indicating that the most successful teaching strategies are those that use visual aids and auditory input. Although VLS and ALS are the most popular, a significant percentage of students have a moderate preference for all three types (VLS 17.9%, ALS 20.6%, and KLS 16.5%), underscoring the need of using a combination of methods. Since KLS is the least popular style, teachers may need to include Kinesthetic activities more creatively. In addition to include practical demonstrations and hands-on experiences, nursing education should make use of visual and auditory modes. For kids who are less oriented toward hands-on learning, Kinesthetic exercises combined with compelling visual or auditory explanations might help close the gap.

Discussion

The learning style is a generally stable personal attribute that develops over a long period of time and is influenced by a variety of variables, including demographic qualities, internal personality traits, and external teaching situations. As the influencing factors alter constantly, the learning style can also be altered. Every student mixes several learning strategies in a way that suits him/her best and that he/she develops through time. When learning or carrying out other duties, a person is more likely to rely on any one of these categories.

There was deviation in results were found by (Hammayun, 2022) where the study was conducted on 113 BS Nursing students of Lahore School of Nursing at the University of Lahore were visual learning style (VLS) was highly preferred by 40 (35.40%), moderately preferred by 67 (59.30%) students, followed by and less preferred by six (5.30%) students. Comparable results are reported by (Khan, 2019) from Rawalpindi, Pakistan from a sample of 1200 BA/BSc and BS students from 12 public sector colleges of Punjab province in 2019 using Barsch Learning Preferences Inventory (BLPI). Here maximum students 52.9% preferred visual learning style. Similar results are reported in 2016 by Ibrahim & Hussein on 210 undergraduate students from two Nursing Colleges from Mosul and Kirkuk, Iraq. They used VAK learning style questionnaire. Here visual learning style was preferred by 40%. (Wong, 2018) measured learning styles of 17 undergraduate students by the Index of Learning Styles (ILS) in Hong Kong, China, revealing the most preferred learning style as visual learning (82.4%). Whereas, in our study 65.2% of students in our survey said they liked the visual learning style (VLS), followed by 17.9% who said they enjoyed it considerably and 16.9% who said they preferred it less. Numerous factors influence nursing students' choices for visual learning. Because certain students naturally think in terms of pictures and spatial relationships, cognitive processing style is important. For these kids, diagrams, charts, and color-coded notes are more effective learning tools. Educational background also plays a role since students who have previously been exposed to visual-heavy teaching approaches (such anatomy atlases or video presentations) are more likely to retain the material. Visual learning is further supported by the

growing use of digital resources in nursing education, including as info graphics, virtual simulations, and 3D anatomical models. Furthermore, well-organized textbooks with graphics, well-designed lecture slides, and well-lit classrooms all improve the comprehension of visual learners. However, there are drawbacks when classes just use spoken teaching, which makes it difficult for visual learners to understand difficult ideas without sufficient visual aids.

According to (Hammayun, 2022)auditory learning style (ALS) was highly preferred by 23 (20.35%), followed by moderately preferred by 88 (77.88%) students and less preferred by two (1.77%) students. In (Khan, 2019) study, 17.6% students preferred auditory learning. (Zhu, 2018) reported in China, used version 7.0 of VARK questionnaire developed by Fleming. The auditory learning style was least popular style in bachelor students as 18.20%. Diverging results were seen by the pupils, 58.5% favored the auditory learning style (ALS), 20.6% favored it somewhat, and 20.9% favored it less. There are a number of reasons why auditory learners prefer verbal presentations of information. Lectures, podcasts, and group discussions are frequently more successful ways for students who have good language abilities or who were raised in academic settings that value discussion to learn new material. Teaching strategies are important; teachers that prioritize oral explanations, narrative, or mnemonic techniques aid auditory learners in remembering the information. This approach is further supported by social learning settings like study groups and oral case presentations. However, environments where written or visual materials predominate—such as textbooks that require a lot of reading or quiet study sessions—may be difficult for auditory learners. Clear, well-structured verbal instruction is crucial for their success because background noise and classroom acoustics might further impair their capacity to concentrate.

Results are reported by (Hussein Ibrahim, 2015) on 210 undergraduate students from two Nursing Colleges from Iraq. They used VAK learning style questionnaire. Here kinesthetic learning style was preferred by 30.5% students. (Daoruang, 2021) revealed that the most preferred learning style was kinesthetic learning in 47 undergraduates in second semester. The study concluded that teaching/learning methods do not have equal achievement for the different groups of learning styles. (Khan, 2019) reported that it was the least preferred learning style which occupied only 8.5% students. Kinestheticlearning style (KLS) was moderately preferred by 71 (62.84%) students, followed equally by highly preferred by 21 (18.58%) and less preferred by 21 (18.58%) students in Lahore by (Hammayun, 2022). In contrast with our study 45.3% of students said they liked the Kinesthetic learning style (KLS), followed by 16.5% who said they enjoyed it considerably and 38.2% who said they preferred it less. A variety of factors impact the preference of kinesthetic learners, who rely on practical experiences to grasp nursing principles. Pupils with a practical background—such as previous medical experience or vocational education—tend to prefer tactile learning. For these learners, clinical rotations, simulation labs, and skills workshops are essential because they learn best via hands-on activities like administering IVs, treating wounds, or practicing CPR. Their involvement is increased by teaching strategies that use interactive mannequins, role-playing, or real-time patient contacts. However, curriculum that emphasize lectures and provide little opportunity for movement and tactile involvement may present difficulties for kinesthetic learners. Furthermore, if they are made to listen passively instead than actively, stress and cognitive overload may impair their ability to learn. The requirements of Kinesthetic learners are typically better served by nursing programs that strike a balance between theoretical training and real-world application.

According to this study, nursing students' learning styles are influenced by more general elements in addition to personal preferences. Cultural background matters. While some educational systems promote hands-on apprenticeships (which help Kinesthetic learners), others place more emphasis on rote memorization (which favors auditory learners). Personality qualities can play a role; introverts may prefer visual or autonomous hands-on approaches, whereas extroverted pupils may prefer discussion-based learning. Learning preferences are also influenced by technology availability and program design. While programs with interactive conversations serve auditory learners, those that use multimedia resources (such as movies and virtual reality simulations) appeal to visual and kinesthetic learners.

Understanding these elements enables teachers to develop inclusive, multi-modal teaching methods that cater to the many requirements of nursing students, hence enhancing clinical competency and information retention.

Conclusion

In our study, visual learning style was highly preferred by maximum students, then auditory learning style and kinestheticlearning style was least preferred. The value of visual aids in medical education is demonstrated by nursing students' high preference for visual learning over aural and kinesthetic learning techniques. According to this trend, infographics, films, and diagrams greatly improve understanding and memory of difficult nursing ideas. While tactile and auditory approaches are still useful for some students and abilities, teachers should emphasize visual aids while keeping a balanced approach to meet the demands of a wide range of learners. Optimizing learning outcomes and better preparing students for clinical practice can be achieved by modifying instructional tactics to conform to this visual dominance.

Limitations:

1. **Limited scope** - Study conducted at only one nursing college
2. **Small sample size** - May affect generalizability of results
3. **Context-specific findings** - Results may not apply to other institutions/settings
4. **Statistical limitations** - While findings were statistically significant, they may not represent true validity

Recommendations:

1. **Expand research scope** - Replicate study at multiple nursing colleges
2. **Increase sample size** - For better generalizability
3. **Mixed-methods approach** - Combine quantitative with qualitative methods
4. **Enhance validity** - Through methodological improvements

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