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Research Article

Assessing the Learning Styles of Nursing and Midwifery Students Using Kolb Learning Styles Inventory: A Case at SDA NMTC, Asamang

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Abstract

Background: Understanding students' learning styles is essential for improving teaching strategies and optimizing academic performance, particularly in nursing and midwifery education. Learning styles influence how students acquire, process, and apply knowledge, which is crucial in healthcare education where both theoretical knowledge and practical skills are required. This study assessed the preferred learning styles among nursing and midwifery students at SDA Nursing and Midwifery training college, Asamang and examined whether demographic factors influence these preferences. Methods: A descriptive cross-sectional survey was conducted among nursing and midwifery students. A structured questionnaire was used to collect demographic data and assess learning preferences based on Kolb's Learning Style Model, which classifies learners as Divergers, Convergers, Accommodators, or Assimilators. Data were analyzed using descriptive statistics and chi-square tests to determine associations between demographic characteristics and learning styles. The study employed 160 students using simple random sampling technique. Results: The study found that more than one-third (32.5%) of the respondents were Divergers, indicating a preference for learning through observation, reflection, and brainstorming. Convergers (25.0%) preferred practical application of theories and problem-solving. Assimilators (22.5%) excelled in abstract conceptualization and logical reasoning, while Accommodators (20.0%) favoured hands-on learning and experiential methods. Additionally, the study found no significant association between students' age, level of study, or program (nursing/midwifery) and their learning styles ($p > 0.05$). This suggests that learning preferences are influenced by individual cognitive styles rather than demographic factors. Conclusion: The study highlights the diverse learning styles of nursing and midwifery students, with a significant proportion identified as Divergers and Convergers, indicating a need for both creative and practical learning opportunities. Despite variations in learning preferences, no significant associations were found between demographic characteristics and these styles.

Keywords

Kolb's Learning Style Model, Learning Styles, Midwifery Students, Nursing Education

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1. Introduction

Education has traditionally been viewed as a means of transmitting knowledge, with students perceived as passive recipients of information. However, modern educational approaches emphasize active learning, recognizing that students have diverse ways of acquiring, processing, and applying knowledge [6, 8, 18]. In the field of nursing and midwifery, effective education is critical for preparing competent healthcare professionals who can provide high-quality, patient-centered care. As the healthcare industry continues to evolve, there is an increasing need for instructional strategies that accommodate students' diverse learning styles, ensuring they acquire both theoretical knowledge and practical skills essential for clinical practice.

One of the most well-known frameworks for understanding learning styles is David Kolb's Experiential Learning Theory (ELT), which suggests that individuals have unique preferences for how they engage with and use knowledge [7, 16]. Kolb's Learning Styles Inventory (KLSI) categorizes learners into four types: Accommodators, Assimilators, Convergers, and Divergers. According to Kolb [12], Accommodators learn best through hands-on experiences, role-playing, and fieldwork rather than structured learning. Assimilators prefer structured learning methods such as lectures, readings, and models. Convergers are problem-solvers who excel at applying theoretical concepts in practical situations and prefer hands-on tasks over discussions. Divergers, on the other hand, thrive in brainstorming sessions, group discussions, and creative activities, making them particularly suited for professions that require empathy, interpersonal skills, and the ability to consider multiple perspectives [12].

The concept of learning styles extends beyond Kolb's model, encompassing models such as the Visual, Auditory, Reading/Writing, and Kinesthetic (VARK) learning styles, which further emphasize how students absorb, process, and retain information differently [9, 22]. Understanding these learning styles is crucial in nursing and midwifery education, where theoretical knowledge must be effectively integrated with clinical experience to prepare students for real-world healthcare settings [3, 4]. Research suggests that learning styles significantly influence how students acquire and apply knowledge, which has direct implications for patient safety, clinical decision-making, and the overall quality of healthcare services [5, 24].

Despite the recognized importance of learning styles, there remains a gap in understanding how these preferences influence the academic performance and clinical competency of nursing students. While previous studies have explored learning styles in various educational contexts, limited research has been conducted on the specific learning preferences of nursing and midwifery students in Ghana, particularly at SDA Nursing and Midwifery Training College, Asamang. Furthermore, there is a lack of evidence on whether current teaching strategies align with students' preferred learning styles and how this alignment impacts their academic success, engagement, and professional development. Addressing this research gap is essential for informing curriculum design, improving instructional methodologies, and fostering a more student-centered learning environment that enhances both theoretical comprehension and practical skills.

To bridge this gap, this study aims to assess the learning styles of nursing and midwifery students at SDA Nursing and Midwifery Training College, Asamang. By identifying the dominant learning styles within this student population, the study will provide valuable insights for educators, enabling them to adopt more effective, evidence-based teaching strategies that enhance student learning outcomes and ultimately contribute to the production of well-rounded, competent healthcare professionals.

2. Materials and Methods

2.1. Study Settings

The study was conducted at SDA Nursing and Midwifery Training College (NMTC), Asamang, a health training institution in the Sekyere South district of Ashanti region, Ghana. The college trains nursing and midwifery students to provide quality healthcare services. It has lecture halls, skills laboratory, a library and a computer laboratory. The institution has a structured academic environment with students at different levels of study, making it suitable for assessing diverse learning styles. Currently, it's a single sex (female) school.

2.2. Study Design

The type of design for the study was a descriptive cross-sectional survey. The study adopted a quantitative research design because numbers were generated from the responses and analysed with appropriate statistics to determine the learning style of the students [14]. A stratified random sampling technique was employed to ensure fair representation across different academic levels (second-year and third-year students). The proportional allocation method was used to determine the number of students selected from each level. After stratification, simple random sampling was applied to select participants from each level, ensuring that every student had an equal chance of being included.

2.3. Sample size determination

Kish (1965) approach, according to Puopiel (2014), was used to determine the sample size [13].

$$n = N/ [1 + N (\alpha)^2]$$

N= 274, [α] is 5% (i.e., α = 0.05) and a 95% confidence

interval, this gave a sample size of 160

2.3.1. Inclusion Criteria

1) Nursing and Midwifery students currently enrolled at SDA NMTC, Asamang.
2) Students who have completed at least one semester of study.
3) Those willing to provide informed consent.

2.3.2. Exclusion Criteria

1) Students who are on academic leave or have deferred their studies.
2) Those who refused to provide consent.

2.4. Procedure for Data Collection

Ethical approval was obtained from the Ghana Adventist Health Services. Written informed consent was obtained before participation. The Kolb Learning Style Inventory (LSI) questionnaire was used to assess students' learning preferences.

2.5. Data Processing and Analysis

Data entry was performed using SPSS software version 26.0, where the data was cleaned and analyzed. Descriptive statistics were used to summarize the variables, with results presented in the form of frequencies and percentages. Additionally, chi-square tests were conducted to examine relationships between variables.

3. Results

3.1. Demographics Characteristics of the Study Respondents

A total of 160 sampled subjects with age ranged from 18-25 years. Majority of the respondents (n= 95, 59.4%) were within the age of 18-21 years. The data indicates a well-balanced sample in terms of educational level (Level 200 & 300) and program of study (Nursing & Midwifery) with (n=80, 50.0%) respondents from each variable. All the respondents were females.

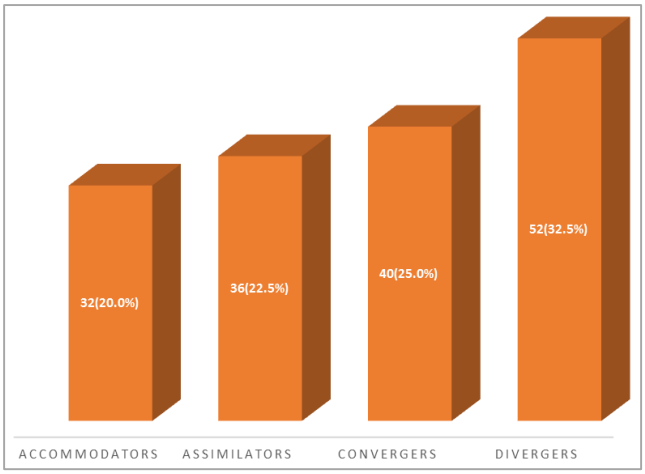
Table 1. *Demographics characteristics of the study respondents.*

Variable	Response	Frequency (n)	Percentage (%)
Age	18-21	95	59.4
	22-25	65	40.6
Level	200	80	50.0
	300	80	50.0
Programme	Nursing	80	50.0
	Midwifery	80	50.0

Field source, 2024

3.2. Presentation of Findings

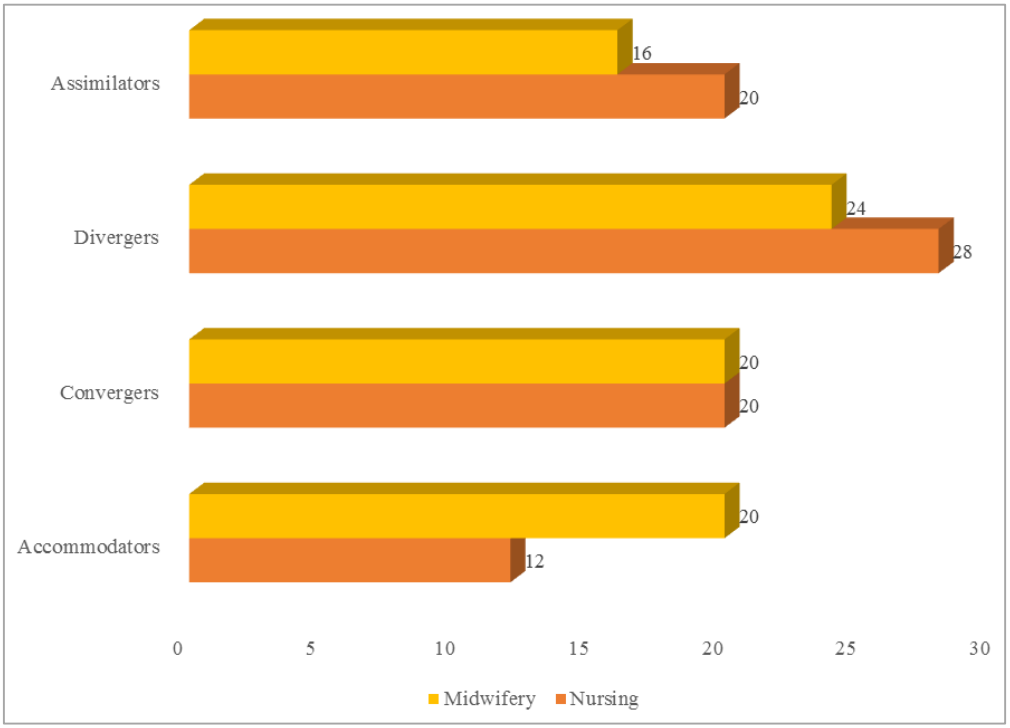
The results shows that majority (n= 52, 32.5%) of the respondents were Divergers. These students excel at viewing situations from multiple perspectives and tend to be imaginative and good at brainstorming. Also, 40 students (25.0%) were classified as Convergers. They prefer practical application of ideas and theories, often excelling in problem-solving and decision-making. Moreover, 36 students (22.5%) were Assimilators. Assimilators prefer abstract concepts and are more interested in ideas and logical reasoning rather than practical applications. Lastly, 32 students (20.0%) fall under Accommodators. Accommodators tend to learn best through hands-on experience and rely heavily on intuition rather than logic.



Source: Field data, 2024

Figure 1. *A bar graph showing the preferred learning styles of the students in terms of Divergers, Convergers, Accommodators and Assimilators.*

The study found that, the Divergers category consist of 24 Midwifery students and 28 Nursing students. The Convergers category consist of 20 Midwifery students and 20 Nursing students respectively. 16 Midwifery students and 20 Nursing students identify as Assimilators. 12 Nursing students and 20 Midwifery students are categorized as Accommodators.



Source: Field data, 2024

Figure 2. *A bar graph showing the number of the preferred learning styles of the nursing and midwifery students.*

The current study found no association between the demographic characteristics and the learning style of students.

Table 2. *Association between demographic characteristics and the learning style of students.*

Variable	Learning Style				Chi-square (x^2)
	Divergers	Convergers	Accommodators	Assimilators	
Age					
18-21	38(40.0%)	29(30.5%)	19(20.0%)	9(9.5%)	1.042
22-25	14(21.5%)	11(16.9%)	13(20.0%)	27(41.6%)	
Level					
200	30(37.5%)	23(28.75%)	14(17.5%)	13(16.25%)	5.170
300	22(27.5%)	17(21.25%)	18(22.5%)	23(28.75%)	
Programme					
Nursing	28(35.0%)	20(25.0%)	12(15.0%)	20(25.0%)	2.345
Midwifery	24(30.0%)	20(25.0%)	20(25.0%)	16(20.0%)	

Field source, 2024

4. Discussion

The study findings show a diverse range of learning styles among nursing and midwifery students, with the majority of participants classified as Divergers. Divergers, as defined by Kolb's learning theory, excel at viewing situations from multiple perspectives and are highly imaginative, which may be advantageous in professions like nursing and midwifery that

require empathy, communication, and the ability to consider diverse patient needs [12]. A possible explanation could imply that, given the dominance of Divergers, educators should incorporate more reflective practices, case studies, and discussions that allow students to consider multiple perspectives and apply empathy [23]. This preference for Diverger learning styles aligns with prior research suggesting that health science students often favor interpersonal and reflective learning styles due to the nature of their work, which emphasizes understanding patient perspectives and providing compassionate care. For instance, a study by McCarthy et al. [16], supports the notion that nursing students often prefer learning styles that involve interaction and reflection, as these skills are essential for patient-centered care. In addition, Almarwani et al. [2] found that health sciences students, including nursing and midwifery, tend to prefer learning styles like Diverging and Converging. According to Madu et al. [15] studies in Southeast Nigeria among undergraduate nursing students revealed that 29.0% were Diverger, 27.4%; Assimilator, 25.8%; Converger, and 17.7% Accommodator. A study by Aina-popoola and Hendricks [1] also found that among first-year undergraduate nursing and midwifery students, divergers are the most desired learning style, followed by assimilators, accommodators, and convergers. Again, a descriptive cross-sectional study conducted to explore the dominant learning style of undergraduate nursing students in South India revealed that majority (50.3%) of the undergraduate nursing students investigated were of diverging learning style which shows that majority prefer to learn by feeling, watching and reflection [17].

Contrary to the finding, [10] found that, the most preferred learning style for the nursing students was turned out to be Accommodator (35%). Again, in a study, [19], found that majority of the students were Convergers and Assimilators in which they reflect the need for problem-solving and analytical thinking in healthcare environments.

The current study found no association between the demographic characteristics and the learning style of students. The study finding agrees with several other studies. For instance, [11] found no significant difference regarding the pattern of learning styles among Generic and Post RN BSN students (p=0.201). Also, Sam [20] revealed that, there was no association between the Learning styles of undergraduate nursing students and their demographic variables. Furthermore, Nair et al. [17] concluded that, no significant association was identified between the selected demographic characteristics of undergraduate nursing students and their learning style.

On the contrary, a study in Nigeria [15] found that, there was a statistically significant correlation between identified learning styles and mode of admission (P = 0.020) as well as the year of study and learning styles (P =.000). Also, Sarabi-Asiabar [21] has reported a significant relationship between gender and single modal learning styles (P = 0.009) and between status and learning styles (P = 0.04). The study highlights the significance of understanding the diverse learning styles among nursing and midwifery students, particularly the predominance of Divergers. Given that Divergers excel in viewing situations from multiple perspectives and emphasizing empathy and reflection, educators should integrate teaching strategies that align with these strengths, such as reflective practices, case studies, and interactive discussions. This approach could enhance students' ability to provide compassionate, patient-centered care, a fundamental aspect of nursing and midwifery.

5. Limitation of the Study

The limitation of the study was that it focused on a single cohort of nursing and midwifery students.

6. Conclusion

The study highlights the diverse learning styles of nursing and midwifery students, with a significant proportion identified as Divergers and Convergers, indicating a need for both creative and practical learning opportunities. Despite variations in learning preferences, no significant associations were found between demographic characteristics and these styles, suggesting that educational strategies should be universally adaptable. Ultimately, implementing differentiated instructional approaches can enhance the learning experience and better prepare students for their future roles in healthcare.

7. Recommendations

1) Health Training Institutions should adopt a variety of teaching strategies to accommodate different learning styles.
2) The MOH/NM&C/GTEC should encourage flexible curricula that integrate both traditional and innovative teaching methods. It should promote the use of technology-enhanced learning such as interactive platforms and e-learning tools to address the diverse learning styles of students.
3) Healthcare institutions providing clinical placements for nursing and midwifery students should be equipped to support diverse learning styles during practical training.

Recommendation for Further Studies

Further research is recommended to explore the impact of adaptive teaching methods on student learning outcomes.

Abbreviations

BSN	Bachelor of Science, Nursing
ELT	Experiential Learning Theory
GTEC	Ghana Tertiary Education Commission

HTI	Health Training Institution
KLSI	Kolb's Learning Styles Inventory
MOH	Ministry of Health
N&MC	Nursing and Midwifery Council
NMTC	Nursing and Midwifery Training College
RN	Registered Nurse
SDA	Seventh-Day Adventist
VARK	Visual, Auditory, Reading/Writing Kinesthetic

Author Contributions

Richard Mensah: Data curation, Formal Analysis, Methodology, Writing – original draft

Yvonne Agyeman-Duah: Conceptualization, Resources, Supervision, Writing – review & editing

Vivian Darkoah Domfeh: Writing – review & editing

Richard Nketia: Formal Analysis, Writing – review & editing

Conflicts of Interest

The authors declare no conflicts of interest.

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