

Undergraduate Nursing Students' Experiences on how Learning Style Impact Their Medical-Surgical Nursing Cognitive Performance in North-West Nigeria

Muhammad Ali Garko^{1*}, M. A. Suleiman², Yakubu Lawali³, A. M. Sani⁴

¹Department of Nursing Science, Federal University Dutse, Jigawa, Nigeria.

²Department of Human Kinetics, Ahmadu Bello University Zaria, Kaduna, Nigeria

^{3,4}Department of Nursing Science, Usmanu Dan Fodiyo University Sokoto, Nigeria

*Corresponding Author

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ABSTRACT

Background: Learning style can have an impact on the cognitive performance of students in medical-surgical nursing. The medical-surgical nursing course is an important module in the undergraduate nursing program. It is, therefore, appropriate to investigate students' learning style and their impact on their performance in medical-surgical nursing.

Aim: This study was aimed to explore the Undergraduate Nursing Students' Experiences on How Learning Style impacts their Medical-surgical Nursing Cognitive Performance in North-west Nigeria.

Methodology: A qualitative research design was employed. A total of 13 students were interviewed in the study. A purposive sampling technique was used in the recruitment of the study participants Two (2) instruments were used for data collection. The data was transcribed and analyzed manually. Emerging themes relating to the codes were interpreted and presented thematically.

Results: The result of the study indicated that the students mostly used the VARK learning styles in various combinations. More than 3/5 of the students perceived their cognitive performance in medical-surgical as very good. Three-quarters of the students also perceived a positive impact of learning style on cognitive performance in medical-surgical nursing.

Conclusion: The study concluded that the learning style of undergraduate nursing students is positively related to their cognitive performance in medical-surgical nursing.

Recommendations: An interventional study should be carried out to verify the findings of this study further, more lecturers who specialize in medical-surgical nursing should be provided.

Keywords: Learning style; Cognitive performance; Undergraduate students; Medical-surgical nursing; Experiences; impact.

INTRODUCTION

Theoretical knowledge and clinical skills are of vital importance for undergraduate nursing students. Developing students' knowledge and skills in nursing education has been viewed as a huge task. Lecturers need to be aware of students' learning styles to meet student's individual learning preferences and enhance knowledge and comprehension. (Amanian, Pouyesh, Bashiri, Snelgrove, & Vaismoradi, 2020). Learning styles are the behaviors or actions that students display during the learning interaction and they play a central role in the lives of students.

Medical-surgical nursing courses are important elements in the undergraduate nursing program. They provide foundations for clinical practice. Higher-order and critical thinking skills are required to adequately comprehend the course. Students' learning styles in medical-surgical nursing courses may have a significant impact on the cognitive performance of undergraduate nursing students in medical-surgical nursing. Undergraduate nursing students' performance in medical-surgical nursing is relatively low compared to other courses (Sze, Baaska, & Martin, 2020). Effective styles of learning medical-surgical nursing need to be identified to improve students' performance (Adepeju & Euphemia, 2019).

Andreou, Papastavrou, and Merkouris (2014), defined learning styles as "habitual cognitive and affective behaviours which determine how each person interacts in learning situations or environments". Several studies have been carried out to determine the learning style preferences of undergraduate students.

Several classifications of learning styles exist in the literature. For instance, many Psychologists view learning style from the Physiological angle. For example, visual, auditory, read/write, and kinesthetic while some viewed learning from the Social interaction perspective (cooperative, avoidant, participative, and competitive learning). Some experts also considered Environmental issues in studying learning styles (such as sound, light, temperature, design of the learning environment, and many more).

Undergraduate nursing students are trained in the university to become critical thinkers and problem solvers by developing their cognitive, affective, and psychomotor characteristics during the learning process to ensure the integration of theory and nursing skills (Culha, 2019). Medical–surgical nursing courses should be approached with keen attention to ensure the production of knowledgeable and skilful graduate nurses at the end of the training program. Acquisition of psycho-motor clinical skills has been shown to improve the quality of nursing care provided to patients (Mwale & Kalawa, 2016).

Nursing students experience higher levels of stress than students in other health sciences. At a time when more nurses are required than ever, a quarter of all nursing students are still skipping classes or stopping their studies altogether in the UK (The Health Foundation, 2019).

Cognitive performance is concerned with mental skills and the acquisition of knowledge by the students. It is the "thinking" domain that deals with how a student acquires processes and utilizes the knowledge. The cognitive domain is the core of the learning domains because the other two domains (affective and psychomotor) require at least some of the cognitive components (Gowrishankar, Mritha, & Elanchezian, 2014). Cognitive performance is fundamental to affective psychomotor performances.

A study by Jonah & Dakyes (2017) found that the most prevalent learning style among undergraduate Basic Design students of Ahmadu Bello University, Zaria was visual (31.25 %), followed by auditory (27.08 %) then kinesthetic (14. 58 %). In another study by Salihu, *et al.*, (2020), the kinesthetic modality has the highest mean (6.607) and standard deviation (2.265) followed by auditory (5.369/2.436) and then reading/writing (4.984/2.621) and visual (4.345/2.468). Also, another study entitled Learning Approaches as Predictors of Academic Performance of Undergraduate Students in Ahmadu Bello University, Zaria by Ladan, *et al.*, 2014, revealed that the predominant learning approach used by the students is the surface approach (M=14.88, SD=2.64). In addition, a study by Chetty, *et al.*, (2019) revealed that the most preferred learning style by the students is the visual style with 49.80% followed by the Kinaesthetic Style with 15.94% of the respondents then the bimodal dimension Visual and Kinaesthetic (V/K) with 11.95% of the respondents reporting their preference on it. The least preferred learning style dimensions are the trimodal VAK dimension and bimodal Auditory/Kinesthetic (A/K) dimension which had 3.98% and 4.38% preference levels respectively.

The researchers observed that many nurses in the clinical areas expressed dissatisfaction with the performance of the undergraduate nursing students. Many of the nurses lack confidence in undergraduate nursing students. They believe that people who studied nursing at the university are less skilful when compared to those who passed through colleges of nursing. Furthermore, the researchers observed that some of the students were also deficient in cognitive performance. This is because some students find it difficult to think critically and apply their previous knowledge of Basic sciences, Anatomy, physiology, pathology, Biochemistry, etc. to identify, make a clinical decision, and solve a patient's problem. These findings may be related to the students' styles of

learning medical-surgical nursing at the university. This prompted the researchers to review the literature to find the true picture of the situation but only a few documentations were found by the researchers. This prompted the researcher to explore undergraduate nursing students' experiences on the impact of learning style on cognitive performance in medical-surgical nursing in North-west, Nigeria.

Aim of the study

This study aims to explore the experiences of undergraduate nursing students on the impact of learning style on cognitive performance in medical-surgical nursing in North-west, Nigeria.

Objectives of the study

The study intends to achieve the following Objectives:

1. To identify undergraduate nursing students' perception of their learning style of medical-surgical nursing courses in North-west, Nigeria.
2. To determine undergraduate nursing students' perception of their cognitive performance in medical-surgical nursing courses in North-west, Nigeria.
3. To find out undergraduate nursing students' perception on the impact of learning style on cognitive performance in medical surgical nursing in North-west, Nigeria.
4. To identify students' opinions of the strategies for improving undergraduate nursing students' cognitive performance in medical-surgical nursing courses in Northwest, Nigeria.

MATERIALS AND METHODS

A qualitative research design was applied in this study. Key informant interview was conducted with 13 students to obtain data on undergraduate nursing students' experiences on how students' learning styles impact the cognitive performance of undergraduate nursing students in medical-surgical nursing in North-west, Nigeria.

The research setting is the nursing departments of North-west, Nigerian Universities. North West is one of the six geopolitical zones of Nigeria. It consists of 7 states, which include Jigawa, Kaduna, Kano, Katsina, Kebbi, Sokoto, and Zamfara states (Ajala, Adetunji, & Akande, 2015).

The four states that run undergraduate nursing programs are Kebbi; Federal University Birnin Kebbi, Sokoto; Usman Danfodio University Sokoto, Kaduna; Ahmadu Bello University Zaria and Kano; Bayero University Kano.

The target population of this study includes all the undergraduate nursing students in North-west, Nigeria. The researcher continued interviewing the respondents until saturation was reached where 13 undergraduate nursing students key informants were interviewed. The instruments used for data collection include a Self-administered student sociodemographic questionnaire and a Semi-structured student interview guide. The data was collected in phases as described below:

Phase One:

- a. One research assistant was recruited from each of the institutions where the study was carried out and trained on data collection and management for a week.
- b. Informed consent was obtained from the study participants (lecturers and students) before they were enrolled in the study.

Phase Two:

- a. Sociodemographic characteristics questionnaire was administered to the undergraduate nursing students to obtain data on their sociodemographic characteristics.

Phase Five: Key informant interviews (KII) were conducted with the students to obtain data on the experiences

of undergraduate nursing students their learning styles and cognitive performance in medical-surgical nursing in North-west, Nigeria

Phase Six:

The recorded interviews were transcribed verbatim to ensure accuracy and comprehensiveness before data analysis.

Ethical Consideration

Ethical approval was obtained from the Health Research Ethics Committee (HREC) of Bayero University Kano before the commencement of this study (BUK/CHS/HREC/216). Also, institutional approval was obtained from the authorities of Usman Dan Fodio University Sokoto before the commencement of this study. Autonomy was ensured in this study. The researcher fully explained the nature and objectives of the research to the respondents which enabled them to give informed consent. It was also ensured that the respondents participated voluntarily in this study. The respondents were also informed of their rights to withdraw from the study at any time during the study if they so wished. Privacy was also maintained during the administration of the KII to the respondents by administering it at places where the respondents felt free to express their views without any external influence. Confidentiality of the information provided by the respondents was also ensured by keeping the filled consent forms and questionnaires under lock and key where only the researcher and some research assistants had access to them.

Trustworthiness was ensured during the period of data collection by ensuring the credibility, transferability, dependability and confirmability of the collected data.

The data was analyzed manually using a thematic approach. The researchers read through the transcript carefully, highlighted significant statements, and assigned codes to them based on their content. Similar codes were grouped into broader categories. Patterns and relationships between codes were identified. Major themes that capture the grouped categories were identified. The researchers ensured that the themes addressed the research questions and reflected the data accurately. The themes were reviewed further to ensure they were distinct and comprehensive. Similar themes were merged while complex themes were broken down.

RESULTS

The presentations consisted of the analyses of the data collected through semi-structured Key Informant interviews. The presentations are organized in line with the research objectives.

Students' socio-demographic characteristics

A total of 13 students were involved in the study. The minimum age among the students was 20 years and the maximum age was 35 years. Among the students, about 3/5 were females. Of the total number of students involved in the study, less than 1/4 were married. Of the total number of students involved in the study, about 1/2 were in their third year of study (300 level) while 1/2 were in their fourth year (400 level). The mode of entry of about 3/4 of the students was through the UTME. Only about 1/4 of them entered through direct entry.

Learning styles of undergraduate nursing students in the study setting

The opinions of the students from the Key informant interviews showed that the students adopted different learning styles especially auditory, read and write, and visual.

In the words of one of the students: *"I usually apply reading. I read and I try to jot. When a teacher is teaching in the class I listen attentively and try to ask questions when I don't understand what is going on I try as much as possible for him to make it clear to me in situations where I feel I don't understand and then I will prefer him to give examples in instances which will make me to understand what he has taught better. Then I will be able to read again and understand better."* **BUKS 1**

The reason he gave for adopting this learning style was: *“Because I feel more comfortable with those styles and I will be able to.... I understand more with those styles.”*

Another student has this to say: *“I will just listen attentively and jot some important basic things and later when he finishes the lecture I will go and research on that specific outline I jotted.”* **BUKS 2**

His reason for adopting that learning style was: *“Because it is simpler to me that I will never forget what I learned”*

Also, another student said: *“Listening, I listen to what the lecturer is saying, I hardly jot, read the lecture notes, find books to read, and sometimes for me to understand I use videos.”* **UDUSS 3**

He gave his reason for applying this style: *“Because that’s how I understand what is being taught. If I want to understand very well that is how I learn.”*

Cognitive performance of undergraduate nursing students in medical-surgical nursing

Among the student Key informants, only a few opinions vary but the majority of the students opined that their cognitive performance in medical-surgical nursing was generally very good.

One of the student key informants has this opinion; *“I will say it is very good.”* **BUKS 1**

His reason for grading the cognitive performance as very good was: *“Because in all exams when results are being passed you just see very few among of students are having re-sit on that medical-surgical nursing. So I won’t say excellent because we do not have 100% pass but the majority pass the course.”*

Another student said; *“Sir I will grade it as very good.”* **UDUSS 1**

His reason was; *“Because like we in our School before you come to clinical, you have to do preclinical, where they expose you to theory and practical of the different sessions that they take you through like physiology and anatomy, so is only when you understand the physiological and anatomical aspect that you will pass to come clinical, so is only when you understand that you pass, based on me, yes more than 60 and above pass, more than 3/4 pass medical Surgical Nursing to my experience.”*

According to another student key informant; *“So far the performance is very good, sir.”* **UDUSS 4**

His reason was; *“Because most of the students when you check the performance in terms of examination you will see that they perform well, at least B or C, you hardly see somebody fail in medical-surgical nursing. I think the method of teaching by the lecturers may be the cause.”*

How students’ learning styles impact cognitive performance of undergraduate nursing students in medical-surgical nursing

The student Key informants unanimously opined that learning style has a positive impact on the students’ cognitive performance in medical-surgical nursing.

In the words of one of the student's Key informants; *“There is a positive impact.”* **BUKS 1**

The reason he gave for this opinion was: *“Because if the learning style doesn’t have a positive impact on the performance, I don’t think the performance is going to be good if the learning style is not in correlation with the performance then definitely the learning style have some lapses, that the performance could not be able to correlate with the performance”.*

Also, another student opined that; *“It has a positive impact”* **BUKS 3**

The reason given was; *“Because if your learning style helps you to understand that particular theoretical aspect when it comes to writing it down... because when we were in the lower level we just cram and write but if you understand it by doing all those things like looking at videos pictures you can actually write something down from your own understanding, so it helps with the theoretical aspect.*

Another student said; *“The impact is positive.”* **UDUSS 2**

His reason was; *“Because I think the learning style used, in learning things about medical-surgical nursing will seriously affect the performance because medical-surgical nursing is not something that you just learn like that. You need to get the main concept and the different approach determine your understanding because med surge is very vast.”*

Strategies for improving cognitive performance of undergraduate nursing students in medical-surgical Nursing in North-west, Nigeria

The study revealed that the students gave valuable recommendations on the strategies for improving the cognitive performance of undergraduate nursing students in medical-surgical Nursing in North-west, Nigeria that touched very important areas.

One of the students said; *“Students should always be informed that in case of any Lecturer who comes to their class if the learning process he is doing is not appropriate to them should kindly quickly inform the lecturer too, maybe, change to another if there are many ones. To the lecturers, whenever the lecturers go to the class the lecturers should ask the students which method is appropriate for them for easier study to choose by themselves,”*

BUKS 2

Another student said; *“I will say we should have more time to understand both for the teaching and the understanding like, if it is possible I think our semester should be even increased, and then the time that we pour into the theoretical aspect that is the class learning we should also pour the same time into practicing those things we did in medical-surgical nursing. Actually seeing them live and then doing it so that we will not be in a particular level and we will be telling ourselves I don’t think we are supposed to be in this level.”* **BUKS 3:**

Also one of the student key informants opined; *“As students, we will appreciate more if there are students-lecturers relationships, maybe the teachers are giving a favourable atmosphere for students to open up and say their problems and their view about their teaching styles.”*

“As a nursing student, I will recommend more exposure to clinical areas, especially with regards to medical surgical nursing because is something which has to do with psychomotor skills theories and so on.”

“Lecturers too should focus more on student Cantered approach while teaching med-surg nursing, because by so doing the students will appreciate the course more and develop more interest in the course than the lecturer doing all the talks when he or she comes to the class”.

“For the University there is need for more staff who specialized in MedSurg Nursing, who have med surge as a primary area of specialization by so doing the students will appreciate the course more” **BUKS 6**

Also, another student said; *“I think generally, if all the lecturers can adopt the interactive class method, and show kind of pictures and videos related to the disease condition, it's going to help the students. Students should do more research after the class, and read more, and is better if you read ahead and read wide. Schools should provide adequate facilities that enhance the learning system”.* **UDUSS 4**

DISCUSSION

The main aim of this study was to explore undergraduate nursing students’ experiences on how learning style impacts their medical-surgical nursing cognitive performance in North-west Nigeria. This study utilized a qualitative research approach by using key informant interviews. This study explored the reasons for the adoption

of the learning style by students, the possible reasons for students' cognitive performance, and strategies to improve students' cognitive performance in medical-surgical nursing.

Socio-demographic characteristics of undergraduate nursing students

The result of the study indicated that the age of the students was between 20 years and 35 years. Among the students, about 3/5 were females. Of the total number of students involved in the study, less than 1/4 were married. Also, about half of the students were in their third year of study (300 level) while the other half were in their fourth year (400 level). The mode of entry of about three-quarters of the students was through the UTME. Only about one-quarter of the students entered through direct entry. The student's age and level of study indicate their ripeness to be able to provide reliable information on their learning style and its impact on their cognitive performance in medical-surgical nursing.

Learning styles of Undergraduate nursing students in the study area

The result of the study revealed that among the four learning styles (Visual, Auditory, Read and write, and Kinaesthetic), most of the students used a combination of two (bi-modal) learning styles. Other students used a combination of three (multi-modal) learning styles. The finding agreed with a previous study by Cetin and Suat (2018) who found that students mostly used VARK (Visual, Aural, Read-write, Kinesthetic) with Kinesthetic as the leading learning style. In addition, the finding also corroborates with the findings of a study by Chetty, *et al.*, (2019) which revealed that the most preferred learning style by the students is the visual style with 49.80% followed by the Kinaesthetic Style with 15.94% of the respondents then the bimodal dimension Visual and Kinaesthetic (V/K) with 11.95% of the respondents reporting their preference on it. The least preferred learning style dimensions are the trimodal VAK dimension and bimodal Auditory/Kinesthetic (A/K) dimension which had 3.98% and 4.38% preference levels respectively. This finding also supports a study on learning style preferences of medical students in Kano, Northwestern, Nigeria by Salihu, *et al.*, (2020), which found that kinesthetic modality has the highest mean (6.607) and standard deviation (2.265) followed by auditory (5.369/2.436) and then reading/writing (4.984/2.621) and visual (4.345/2.468) modalities. The finding of this study that undergraduate nursing students used all four learning styles either singly or in combination may be related to their maturity (age and level of study) and could also influence their cognitive performance in medical-surgical nursing courses. In the current study, the respondents added by giving reasons behind their adoption of their preferred learning styles. Most of the students claim that they comprehend medical-surgical nursing better when they use their preferred learning styles. For example, one of the students said "*If I want to understand very well, that's how I learn.*"

Cognitive performance of Undergraduate nursing students in medical-surgical nursing

The result of this study found that more than 3/5 of the students rated their cognitive performance as very good. From the observation here, the students could be said to have a very good cognitive performance in medical-surgical nursing courses in North-west, Nigeria. The finding of this study that undergraduate nursing students used all four learning styles either singly or in combination may be related to their maturity (age and level of study) and could also serve as an explanation for their cognitive performance in medical-surgical nursing courses.

The result of this study supports a study by Wong *et al.* (2020), which found that the use of concept mapping significantly enhances the cognitive performance of student nurses in medical-surgical nursing. Improvements in cognitive performance found in both studies could be linked to the structured and visual representation of knowledge used by the students, facilitating better understanding and retention of complex information.

The finding of this study contradicted the report of a previous study by Sze, Baaska, and Martin (2020), who found that undergraduate nursing students' performance in medical-surgical nursing is relatively low compared to other courses. This could be a result of differences in curriculum design, teaching methods, or student support services between the two regions studied. Additionally, the contradiction might stem from varying access levels to resources and technological tools that support multimodal learning, which were more readily available to students in North-west Nigeria.

How students' learning styles impact cognitive performance of undergraduate nursing students in medical-surgical nursing

The finding of this study revealed that over three-quarters of the undergraduate nursing students opined that there is a positive impact of learning style on cognitive performance. This implies that an improvement in the learning style will lead to an improvement in the cognitive performance of undergraduate nursing students and vice versa. The finding of this study supports the findings of (Garko et al, 2023) which found a significant relationship between learning style and cognitive performance of students in medical-surgical nursing. This could be due to the adaptability and engagement facilitated by diverse learning methods, enhancing understanding and retention. Not only cognitive performance, in support of the current finding, the learning style was also established to be linked to the clinical competency of nursing students (Mousavi, Javadzadeh, Hasankhani, & Parizad, 2024). This could be a result of the comprehensive and practical nature of certain learning styles that enhance both theoretical knowledge and practical skills.

Strategies for improving undergraduate nursing students' cognitive performance in medical-surgical nursing course

The current study found several recommendations aimed at improving cognitive performance in medical-surgical nursing education, which contrast and agree with the findings from Gregersen et al. (2021) in different ways.

Students in the current study recommend increasing the semester duration and time allocated to the practical aspect of medical-surgical nursing. This suggests that the current time frame is perceived as insufficient for mastering practical skills and integrating theoretical knowledge. This aligns with Gregersen et al. (2021), who emphasized the need to review and adjust the approach to teaching practical skills to better prepare students for clinical practice. Both studies support the idea that extended exposure and practice are crucial for competency development.

Improving the student-lecturer relationship and creating a favourable atmosphere for open communication are also recommended, alongside adopting interactive teaching styles. While Gregersen et al. (2021) did not explicitly mention student-lecturer relationships, they highlighted the importance of effective supervision and support. The current findings extend this by emphasizing the role of teaching styles and interpersonal dynamics, which could impact students' ability to express difficulties and engage with the material.

The current study found more exposure to clinical areas as a factor, suggesting that current placements might be insufficient or not aligned with the skills needed in practice. This supports Gregersen et al. (2021), who noted that some skills learned in university were perceived as less relevant in clinical settings. Both studies underline the need for increased clinical exposure to bridge the gap between theoretical knowledge and practical application.

Finally, the current study suggests that students should engage in self-directed learning beyond the classroom. Although Gregersen et al. (2021) did not specifically focus on this aspect, their findings underscored the importance of practical skills and their application. The current study highlights that students recognize the need for additional self-directed learning to enhance their readiness for clinical practice.

CONCLUSION

Based on the findings of this study, it can be concluded that Auditory, Visual, and Read and write learning styles were the most commonly used learning styles among undergraduate nursing students in North-west, Nigeria. The cognitive performance of the students was generally very good. The students opined that their learning styles have a positive impact on their medical-surgical nursing cognitive performance.

This study is limited to the perceptions of undergraduate nursing students on the impact of learning style on their medical-surgical nursing cognitive performance and does not establish cause and effect. An intervention study is required to further confirm the findings of this study.

Conflict of interest

There is no conflict of interest in this study.

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