VOL. 3, NO. 2 DECEMBER, 2023
ISSN 2756-4444
E-ISSN 2756-4452

EFFECTS OF MODIFIED LECTURE AND CASE-BASED TEACHING METHODS ON COGNITIVE ACHIEVEMENT OF STUDENT NURSES IN NURSING SCHOOLS IN NORTHWEST STATE IN NIGERIA: A COMPARATIVE INTERVENTIONAL STUDY

BY

[1]Felicia Philip, [2]Emmanuel Ejembi Anyebe, [3]Babayo Mohammed Tukur, [4]Gomma M. Hayyat & [5]Zubairu, S. A.

[1]Department of Nursing Sciences, Faculty of Allied Health, Ahmadu Bello University, Zaria, Nigeria
[2]Department of Nursing Sciences, College of Health Sciences, University of Ilorin, Ilorin, Nigeria
[3]Department of Nursing Sciences, College of Health Sciences, University of Maiduguri, Nigeria
[4]Department of Curriculum Development, Faculty of Education, Ahmadu Bello University, Zaria, Nigeria
Email: anyebe.ee@unilorin.edu.ng

Abstract

Teaching is constantly being modernized to suit the ever changing needs of diverse learning experiences of students. Continuous evaluation of teaching methods is therefore a routine. The study assessed the effects of modified lecture and case-based teaching (CBT) methods on student nurses' cognitive achievement in Nursing Schools. Adopting a quasi-experimental two-group research design, a combination of stratified and simple probability sampling techniques was used to select two schools. Students were assigned to control and experimental groups. A set of multiple-choice, fill-in-the-blank spaces, short-answer test items was used to measure the cognitive performance of the 102 respondents, before and after lecture and case-based teachings on "postpartum haemorrhage" in Maternal and Child Health Nursing course. The data collected at both phases were analyzed descriptively and inferentially using Statistical Package for the Social Sciences (SPSS) 23.0. Results revealed that in the two schools, students were predominantly females (89.2%). The scholastic achievement showed that mean score for lecture method in posttest compared to pretest was good > 50%. In lecture, there was also an improved performance in the post-test with 56.7% scoring > 50. For CBT, 80.0% of the students in School I had poor score (< 49%) in the pre-test while only 33.3% improved post-test. In comparison, the mean score of students for lecture was higher than that of case based teaching. This indicates that the post test scores for each of the teaching methods increased; although scores for the lecture method improved more significantly than that of the CBT. It is concluded that mean scores for modified lecture method for both experimental and control groups were higher than those of case based teaching groups in both schools, indicating that cognitive achievement in lecture was higher. The post test scores for lecture improved more significantly, indicating that effect of lecture on cognitive achievement of student nurses was better. No statistically significant differences were however found between them. It was therefore recommended that student nurses should be exposed to case based teaching in the nursing curriculum as it appears a less used approach, accounting for its less improved scores post-test.

Keywords: Case-based Teaching, Cognitive Achievement, Modified Lecture Method, Nursing Education, Nursing Students, Teaching Methods

Introducton

The contemporary health care system requires nurses to to advance their knowledge, clinical competency, and autonomy in teaching/learning (Shohani, *et al.,* 2023) and clinical judgment (Bano, *et al.*, 2015), especially as more sophisticated technologies and society's orientation to health and self-care are witnessed in the educational needs of nurses. This development is good both for the nursing profession and the consumers of nursing services as better educational preparation begates better performance (Agbedia, 2012). To justify the enormous activities on classroom and clinical education in nursing), nurse educators need to have clear, and realistic expectations of the desired outcome of both classroom and clinical learning process using contemporary approaches (Hafeez, 2021; Kantar & Sailian, 2018). The effectiveness of classroom and clinical teaching is often judged by the standardized outcomes it produces. This is made easier if nurse educators follow student centered teaching strategies, with all the teaching needs available. Bano, *et al.,* (2015) discussed numerous teaching strategies that suit the pedagogical learning, although not all can be

VOL. 3, NO. 2 DECEMBER, 2023
ISSN 2756-4444
E-ISSN 2756-4452

properly applied by nurse tutors in both classroom and clinical area to yield the desired outcome. Teaching is considered as 'ever evolving' processes especially in medical school. Consequently, this teaching needs to be modernized continuously to sooth the ever changing needs of a diverse society (Simmons&Wilkinson, 2018). Of the many teaching methods available (lecture, demonstration, simulation, problem based, role play, and project study, case based and brainstorming among others) the traditional (lecture) method is the most commonly adopted (Abu-Hasheesh, *et al*., 2017).

However, methods that are student-centred are preferred. Ogkouzi & Saemian (2012) had posited that learners should be in-charge of their own learning while the teacher acts as a facilitator during teaching-learning process. This implies that teaching and pleasant learning of basic concepts and processes can only be accompanied within the instructional framework with the combination of teaching strategies and approaches (Adesanya & Adesina, 2014). These strategies constitute the varying methods of teaching that help teachers deliver the prescribed skill through cognitive, affective and psychomotor domain and achieve desired outcome (Ibtihal, 2017). Lecture, as one of the oldest methods,is specially placed in the training programs, concerned with the teacher being the controller of the learning environment. It is one of the oldest and by far the most widely used methods of teaching. There are different types of lecture method and this includes the modified method where other forms or additions are made to the conventional pure reading of a text to the hearing of a group of students. For example using chalk and board, pictures, panels and posters to explain a text and making additional emphasis by writing on board and use of illustrations. The lecture method has advantages of exposing new material to a large class, it has teacher control advantages, enables teaching to engage large communication n, it also permits the dissemination of unpublished or not readily available material.

On the other hand, Case-based Teaching (CBT) is a long established pedagogical method, which is defined in a number of ways depending on the discipline and type of 'case' employed. It incorporates many principles of adult learning e.g. active involvement of learners, social interaction, tutor and peer input, communication, modelling professional thinking and action, providing direction and feedback, and creating a collaborative learning environment leading to active construction of knowledge (Bano, *et al.*, 2015). Case based Teaching (CBT) is student-centered and facilitates students' learning and teaches them to decide about their perspective field, by the use of case studies (Kaddoura, 2011). Case Based Teaching is structured so that trainees explore clinically relevant topics using open ended questions with defined goals. This type of learning has been shown to enhance clinical skills, improve team work, improve patient outcome. This study focuses on the cognitive achievement in lecture and case based teaching methods. Cognitive achievement in this study is the total score obtained by each respondent in the control group being taught with lecture or the experimental group taught with case based method. The total score is 100% and measured using test items with different sections. In the field of nursing, only few scientific research comparing Case Based and lecture in teaching core subjects have been attempted. Some factors that may have influenced the outcome of this study relate to the type of students in the study and the subject matter in the professional field.

Literature Review

The fruitfulness of any academic achievement is measured when the education of students is involved. In the Nursing school, several factors come into play when discussing academics and this includes students' interest, level of entry, parental support, adequate learning facilities and teaching methods etc. Since teaching methods impact student learning significantly, it follows that the method in which knowledge is taught must undergo series of study to determine their conformity with current trends best practices (Hafeez, 2021). Students learn differently through different distinct ways. There is need to use approaches that holistically deal with the uniqueness of students through domains of learning. Developing and delivering lessons by teachers are important in the teaching process. The Nursing schools are faced with the challenge to train students who are able to think critically and be effective in evidence based practice through different teaching strategies (Shohani, et al., 2023). The traditional lecture method now modified in different forms is one of the prominent teaching methods utilized in medical schools and other institutions of higher learning (Logan, at al., 2022). Lecture may be sufficient in promoting cognitive learning at the levels of remembering and understanding but may not be effective in promoting cognitive learning at the higher levels of application, analysis, synthesis, and evaluation. On the other hand, the case based method is a student centered approach that results in deeper level of learning and helps in the application of theoretical knowledge into clinical practice as opined by Idika,

VOL. 3, NO. 2 DECEMBER, 2023
ISSN 2756-4444
E-ISSN 2756-4452

(2021). Case based teaching (CBT) is valued in the sciences especially medicine and nursing. This is because it fosters critical thinking exposing students to real-world scenarios. According to a review, CBT is a form of teaching and learning that creates a connection between theory and clinical practice.

Determining the level of learners' satisfaction is an important criterion for measuring the efficiency of educational systems. In a study by Tsekhmister (2023), it was found that Case Based Teaching when compared to other techniques can increase medical and pharmacy undergraduate students 'academic performance as well as their capacity to analyze cases. The result of a quasi experimental study conducted by Mostafa, *et al.*, (2019) indicated that case based teaching is a more effective method for educating nursing students about cardiac dysrhythmias and enhancing their diagnostic skill. This exposed only some of the students to the methods and could vary with other methods. Allowing students express their opinion on the preferred method of teaching will help in outcome of teaching and ensure better participation. In 2021, Ozcan studied factors affecting students' academic achievement according to the teachers opinion. The goal is to help student process information more deeply, which allows them to relate new information to existing ideas or experiences. This current study hopes to compare case based teaching and modified lecture method among nursing students in Kaduna State, Nigeria to add to the existing knowledge on contemporary teaching methods in the Nigerian setting.

Objectives of the Study

The main objective of the study was to compare effect of case based teaching and lecture method on cognitive achievement of student nurses. The specific research objectives were to;

1. identify the effect of case based teaching method on cognitive achievement of students nurses;
2. identify the effect of lecture method on achievement of students nurses;
3. compare effect of case based teaching and modified lecture method on cognitive achievement students' nurses.

Research Hypotheses

Three hypotheses were developed, which guided this study:

H_o1: Students in study group who are exposed to case based teaching method will achieve higher scholastic achievement in posttest than in pretest.

H_o2: Students in study group who are exposed to lecture method will report higher scholastic achievement in the post test than in pre test.

H_o3: Effect of scholastic achievement is higher in Case based teaching compared to effect in lecture based teaching.

Methodology

Research Design

A quasi-experimental (a two-group pretest/post test research design) was adopted to compare effect of Case-based Teaching (CBT) and Modified Lecture methods on students' cognitive achievement in Maternal and Child Health Nursing. Postpartum hemorrhage was taught (using case based teaching and modified lecture methods of teaching). Both samples and schools had pre- and post-tests for each course before and after the introduction of the topic, respectively. The effects on the teaching methods were determined from the scores and later compared. The study was conducted in two Nursing Schools, stratified into government- and private-owned, in Kaduna State.

Study Population and Sampling Procedure

The study population for the study was all the 172 second year student nurses in the four schools of Nursing in Kaduna State. Sampling involved selecting two schools out of the four and the respective students, using a combination of stratified and simple probability sampling methods. The four nursing schools were identified and stratified into government- and private-owned, comprising of two schools each category. One school was selected from each stratum using simple random method. The two schools selected were: St. Gerard's School of Nursing, Kaduna (School I) and School of Nursing, Ahmadu Bello University Teaching Hospital Zaria (School II) for private- and government-owned respectively. Maternal and Child Health Nursing course was used for the teaching. This is borne out of interest of the

VOL. 3, NO. 2 DECEMBER, 2023
ISSN 2756-4444
E-ISSN 2756-4452

principal investigator, and for the fact that the second year student nurses were mature enough in study block for the course at the time of study, having spent at least a year in the training. The total study participants were 102 student nurses: 41 from School I and 61 from School II which were divide each into experimental (CBT) and control (lecture) as shown below.

Instrument

A set of twenty questions, consisting of multiple choice-, fill-in-the-blank-spaces-, true and false and short-essay questions, was used to measure the cognitive achievement of the students which was developed by the researchers based on the contents of the topic. The multiple choices, blank spaces and true and false had 5 items, each carrying 1 mark; the short-answer sections also had 5 items with marks from 2-4 respectively to give a total of 30 marks. This was converted to 100% for ease of grading. A lecture note on postpartum haemorrhage was developed and used to teach (as a modified lecture method). A case scenario was then used for case-based teaching in the schools selected.

Score system - The total test score was 30 marks and converted to 100%. Total score of results of pre and post-test was calculated to determine cognitive achievement for each school. The score was classified to evaluate level of achievement as follows: 70 – 100% (Excellent), 50 – 69% (Good), 0 – 49% (Poor). The mean score and t-test were calculated to determine the level of achievement of post-test scores compared to those of the pre-test for each teaching method in each school. The instrument was tested for validity and reliability (Cronbach's coefficient = 0.750).

Data Collection Procedure

Ethical approval was obtained from the Senate of Ahmadu Bello University (Approval Number: ABUCUHSR/2017/019, dated 27th June 2018. This followed an introductory letter obtained from the Department of Nursing Science, Ahmadu Bello University, Samaru, Zaria, which introduced the research study to the Committee. Both the Ethical Approval and Letter of Introduction were all presented to the participating schools. Informed consents were also obtained from study participants, assuring them that all ethical codes would strictly be adhered to.

Preparatory Phase: In the preparatory phase permission was obtained to conduct the study from each school after presenting introductory letter from the Department and Ethical Clearance from Ahmadu Bello University, Zaria. Each school was visited separately and the Year Two student nurses were purposively for the study. And working relationship was established with both the schools and students. Initially, pretest was administered to the whole class after introducing and explaining the general and specific objectives of the study to them. A strong appeal was made to the study participants not to cross-fertilise their information between the control and experimental groups to prevent possible contamination. The class was then divided into two groups: Control (School I =20, School II=31) and Experimental (School I =21, School II=30) for both schools. The results of the previous semester were used as a guide to draw up the allocation to control or experimental groups, to control for previous performance bias. Based on this categorization, each group was then given the study objective on Postpartum Hemorrhage based on the method to be employed. Time table was allocated for six (6) periods within three weeks and the students were introduced to the researcher. Experimental class was enlightened on mode of obtaining literature on the topic and was subdivided into 4-5 groups consisting of 8-10 participants each. Each subgroup had a chairman and secretary. A case scenario was presented which had complete content on the topic Postpartum Hemorrhage (PPH) and the basic outlines inclusive. Each subgroup was told to use textbooks, library, internet, as available. They were to make notes after holistically reviewing the problem under study.

Implementation Phase/Intervention - Lecture on postpartum Hemorrhage was presented to the control groups using the study objective. The control group had classes on modified lecture on postpartum hemorrhage using markers, and whiteboards, as outlined: definition of postpartum, causes, types, diagnosis, management and complications of hemorrhage. In the fourth & fifth schedule (2 hours), the experimental group continued their brain storming. Conclusion and summary of the topic by each group of the class was done. There were questions and answers where necessary and the researcher modulated the process throughout the interactions. A case scenario on a patient with postpartum hemorrhage was presented to the experimental group with a study objective. They were re-grouped into 8-10 students per group and enlightened on use of all available sources to consult and make presentations in 24 hours. The subgroups were made to choose a chairman and secretary to direct the sorting of materials, take notes and make

VOL. 3, NO. 2 DECEMBER, 2023
ISSN 2756-4444
E-ISSN 2756-4452

presentations. At the end of lecture (2 hours of 3 lecture schedule), the students were made to sit for a post test using the same content of the pretest material to measure their cognitive achievement. The experimental group presented their findings in 2 hours of 3 lecture schedule to accommodate all the groups and enable members make contributions. The researcher modulated in-between and finally cleared any misconceptions. A post test was then administered to the modified lecture and case based teaching groups.

Evaluation phase - The results of pre-intervention and post-intervention were obtained in each school from the two groups; these were used to determine if there were differences pre- and post-intervention in both cases.

Data analysis Procedure

This involved setting out all the information and preliminary data which were collected and analysed. Scores were computed using excel, inferential statistics and Statistical Package for Social Sciences (SPSS) version 23.0. The various data collected were triangulated to meet the research objective. Cognitive test Scores - a score value of 100% was for the total score in each assessment test. While 1 is awarded to each correct objective answer, the short essay answers had scores of 2, 3 and 4 marks respectively as appropriate. The total mark was 30 which were converted to 100%. Total score of results of pre- and post-test was then calculated and classified as follows:

70 – 100% Excellent
50 – 69% Good
0 – 49% Poor

The results were presented using frequency tables, percentages and mean scores. Chi-square test level of significance was set at 0.05

RESULTS

Socio-demographic Characteristics of Study Participants

Table 1:
Socio-demographic characteristic of students for modified Lecture and Case Based Teaching in the two schools (N=102)

Variables	Frequency	Percentage
Gender:		
Male	11	10.8
Female	91	89.2
Age (in years):		
Below 19	3	2.9
20-30	69	67.7
Above 30	30	29.4
Marital Status:		
Single	67	65.7
Married	31	30.4
Divorced	3	2.9
Widowed	1	1
School:		
School I	41	40.2
School II	61	59.8
Total	102	100.0

Table 1 shows that respondents were predominantly females (n=91; 89.2%) while the remaining were males, mostly aged between 20 and 30 years (n=69; 67.7%). The profession is predominately female hence the reason why the higher percentage are females. The students in School I (St. Gerard's School of Nursing) were 40.2% (n=40.2) while the

VOL. 3, NO. 2 DECEMBER, 2023
ISSN 2756-4444
E-ISSN 2756-4452

remaining 61(59.8%) were from School II (School of Nursing ABUTH). It is obvious that School 1 is a private school hence students pay heavily while school II is government owned and students pay just a token.

Effect of Case-based Teaching Method

Table 2
Level of scholastic achievement for Cased Based Teaching method

Level of scholastic achievement	**School(I)** (N=21) **Pre-test Post-test**				**School(II)**(N=30) **Pretest Posttest**			
	Freq	%	Freq	%	Freq	%	Freq	%
Poor (<50)	17	81	7	33.3	17	56.7	1	3.3
Good (50-69%)	1	4.7	11	52.4	12	40	10	33.3
Excellent (70-100%)	2	14.3	3	14.3	1	3.3	19	63.4
Chi-sqaure			**X^2=1.1784**				**X^2=1.1784**	
			***p*-v = 0.048**				***p*-v = 0.042**	

Table 2 shows the results case-based teaching for School I (41 divide into [20 for lecture group and 21 for case based teaching]), CBT group in school 1 is 21 where majority (81%) of the students had scores of less than 50 in the pretest; 14.3% scored excellently (70-100%). In the post-test after the intervention for case based teaching, 33.3% scored less than 50 and 14.3% scored excellently (70-100%) in School II. Similarly, 56.7% of the respondents had less than 50% score (poor) and 63.4% had 70-100. This indicates a percentage increase in performance, implying that an improvement in learning from the pre-intervention test results. The chi square test score of 1.784^a and 1.964^a for School I and School II respectively show that there are statistically significant effects on the levels of the students 'cognitive achievement in both schools (with *p*-value of 0.048 and 0.042 respectively).
Furthermore, a test of association between the schools show a p-value of 0.0862, indicating that there is no significant difference between the cognitive achievement (performance) of School I and School II. Cognitive achievement in case based teaching method is summarized Table 3, indicating a more improved achievement in post-intervention tests than in pre-intervention tests (mean scores in post-intervention tests are higher (mean=> 56) as against that of the pre-test (mean = 43.8703). However, this improvement did show no statistical significant difference between the post test and pretest scores (*p* =0.001; level of sig: 0.05).

Table 3:
Effect of Case Based Teaching Method on Cognitive Achievement of students

Case Based Teaching	**Mean**	**SD**	**T**	**N**	***p*-value**
Before Intervention	43.8703	8.8108	-6.424	50	0.001
After Intervention	56.6655	7.0699			

The first hypothesis (**H_o1**) that students in study group who are exposed to case based teaching method will achieve higher scholastic achievement in posttest than in pretest is therefore rejected.

Effect of the modified Lecture Method

VOL. 3, NO. 2 DECEMBER, 2023
ISSN 2756-4444
E-ISSN 2756-4452

Table 4:
Level of Scholastic Achievement of students for Modified Lecture

Level of cognitive performance	Poor (<50)	Good (50-69%)	Excellent (70-100%)	**Mean**	**Standard Deviation**	**X^2**	**P-value**
School(I) (n=21)							0.040
Pretest	12 (60)	7 (35)	1 (5)	45.925	48.693	1.361[a]	
Post test	1 (5)	12 (60)	8 (35)	57.700	7.74155		
							0.534
School(II)(n=30)							
Pretest	14(45.2)	13(41.9)	5 (16.1)	48.693	8.68205	1.463[a]	0.032
Post test	0(0.0)	10 (33.3)	20(66.7)	64.645	6.07343		

Table 4 shows that for School I, majority (60%) of the students had poor scores in the pretest, 35% had good scores while only 5% scored excellently. In the post-test however, 60% had good scores while 35% had excellent scores and percentage change was 30%. In School II, 45.2% of the respondents had scores less than 49 (poor) and 41.9% had good scores in the pretest. In the post-test, 16.1% had poor scores while majority 83.9% had excellent scores and the percentage score change was high (71%). Students in the control study groups exposed to modified lecture method recorded higher scores in post-test than Case Based teaching. There was no significant statistical difference in scholastic achievement in post test than in pretest. It implies that there was an improved achievement in terms of the post-test scores, although higher in school II. The chi square test scores of 1.361[a] and 1.463[a] for school I and II shows that there is effect on the level of cognitive achievement in both schools (p-value of 0.040 and 0 032 respectively).
Table 5 summarises the mean scores both pre- and post-intervention tests: post-test scores were higher (above 61) than pretest scores (less than 50). With *p*-value =0.001 (sig. Level = 0.05), we therefore reject the hypothesis that students in study group who had Modified Lecture teaching method recorded higher scores in post test than in pretest. There was a significant scholastic achievement in post test than in pretest.

Table 5:
Effect of Achievement of students for Modified Lecture methods

Lecture Method	**Mean**	**Standard deviation**	**T**	**N**	**P-Value**
Before Intervention	47.309	8.5462			
	61.1725	6.9075	-6.238	50	0.001
After Intervention					

The second hypothesis (**H_o2**) that students in study group who are exposed to lecture method will report higher scholastic achievement in the post test than in pre test is upheld.

Table 6:
Comparing cognitive achievement between (Post-test) of Case Based teaching and Lecture method

Variable	**Mean**	**Standard deviation**	**t**	**N**	***p*-value**
Post-test of Case based Teaching	56.6655	0.36515		50	0.030

VOL. 3, NO. 2 DECEMBER, 2023
ISSN 2756-4444
E-ISSN 2756-4452

Post-test of Lecture based Teaching	61.1725	2.283

Table 6 Shows that the mean score in modified lecture is higher >61 in Modified lecture than in Case Based Teaching with a standard deviation of 0.365 and a t-test value of 2.2 which is also high. The calculated p-value is higher than the expected *p*-value (p=0.030< P0.05). This shows that there was statistically significant difference between scholastic achievements in modified lecture method compared to case based teaching method. The third hypothesis (**H_o3)** that effect of scholastic achievement is higher in Case based teaching compared to effect in modified lecture method is upheld.

Discussion

Effect of Case Based teaching on students' cognitive achievement

Results of the pre-test and post-test for case based teaching show that the mean score was improved after intervention. This is largely due to the fact that the students were exposed to all the materials and details of the topic from different sources as is the principle of case based teaching. This agrees with the study by Ghafourifard, *et al*., (2013), stating the method creates avenue for students to engage and explore in the case scenario on postpartum haemorrhage. Students first encounter and identify the instructional task using past and present experiences as they are engaged on case scenario on hypothetical patient on postpartum haemorrhage. As they work together in teams 8-10, students build common experiences which prompts sharing and communicating. The teacher only acts as a facilitator, providing materials and guiding the students' focus. Also there was an improvement in student's performance when Case Based Teaching was used to determine effect by Yeng, *et al.*, (2015). Kireeti & Shankar-Reddy (2015) in studying undergraduate medical students found that Case Based Teaching create interest in the students to learn new things hence learning and remembering which improves performance cognitively. In school II more than half scored below 47. Only 1 scored 60-65, however in the post-test more than 73 scored 60 and above. In a study by Singh & Bhatt, (2011) on *Introduction of case based teaching in a conventional medical school*, 83 students responded to the feedback. To demonstrate several important aspects to students' attitudes to Case Based Teaching after alternating their teaching methods during several work sessions shows that students who undertook the Case Based Teaching format were better able to ask questions and make comments during class and enjoyed learning more.

Effect of Modified Lecture on students' cognitive achievement

This study found significant improvements in the post-test scores in both schools, indicating the positive effect pf modified lecture on the students' learning. Similar findings in other studies were noted as seen in Ibtihal (2017) who reported the suitability of modified lecture method on teaching Listening Comprehension skill for English students. Modified lecture remains one of the older methods of teaching, is an oral presentation of information by the instructor and use of chalk board and illustrations on causes of postpartum haemorrhage as was done in this study (Hassanpour-Dehkordi & Solali, 2016). The study is also not in agreement with Marmah, (2014) that pointed out that lecture method fails to give feedback to both teacher and learner hence affecting achievement. In this study, modified lecture was used which had given an added advantage to the method as observed in the post test results. The mean difference for scores in school I was 11.7 while the t-test was -6.6 with a significant level of 0.05 and a confidence interval of 95%. This indicated that there was a significant improvement in the mean score that gave rise to a high t-test.

Comparing effects of Case Based teaching and Modified Lecture on Cognitive Achievement of Students

The results in this study found that cognitive achievement is higher in modified lecture than case based teaching, being higher in the post than the pretests. This finding is in contrast to some earlier studies. For example, Simmons and Wilkinson (2018), in their study on *Lectures versus case discussions: randomised trial of undergraduate psychiatry teaching,* found that students using case-based discussion groups had scores that were significantly higher than those in the lecture groups. Similarly, Kukreja, *et al.,* (2018) had also found a positive impact on the scores of MBBS students Post-Test CBL evaluation, which was gender determined, girls obtaining higher scores than boys. In another study on comparison of case based and lectures in dental education using SOLO Taxonomy by Ilguy,*et al.,* (2014), where a statistical significant difference was found between the mean scores of the relational and extended abstract categories of Case Based Teaching and lecture groups. Studies (Ferree, *et al.,* 2023; Liu, *et al.,* 2020)) also found the superior advantage of CBL over many other teaching methods among university-based students. The group of students used may have been unprepared, unexposed to such critical thinking teaching approaches, compared to degree-prepared students. There is a marginal gap in cognitive achievement in pre and posttests for both lecture and case based teaching. With better exposure, case-based method should have greater potential. In area of nursing education, Kantar and Sailian (2018) also reported the superior efficacy of a CBT on knowledge retention and judgment skills compared to lecture methods. The contrasting finding in the present study could be the level of unfamiliarity with case based strategy in the study environment (students claimed not to be familiar with the case based teaching – *personal interaction*). As a more extensive, similar but comparative study between this hospital-based programme (in this study) and the university-based nursing programme may be more revealing.

Conclusion

Both case-based teaching and lecture methods have shown significant effects on cognitive achievements of nursing students in the two schools. Lecture method appears to have more positive effect. This apparent difference can be attributed to the familiarity with the lecture method by students who hitherto are conversant with this method. However, a comparison of the effects between the two methods on cognitive achievements does not shown any statistical significant difference. This suggests that the opinions and preferences of the students for both modified lecture and case based teaching should be assessed to guide selection of the most student-preferred method, especially as teaching remains an "ever evolving" processes in the health science courses like nursing, with the ever changing needs of diverse knowledge and practice. Based on this and other findings of this study, it is recommended that: 1) lecture method, if it is to be used, should be modified to accommodate students active participation; 2) student Nurses should be exposed to case based teaching method in learning maternal and child health; 3) there should be constant case scenarios to be discussed to demonstrate advantages of Case Based Teaching; and 4) the Maternal and Child Health curricula should be restructured to accommodate more case based approaches to teaching.

References

Abu-Hasheesh, M., Al-Mostafa O., &Obedat H. (2011) Traditional versus Non-Traditional Methods of Teaching: *The Impact on Nursing Teaching Effectiveness and Students Achievement at Nursing College. An –Najah University Journal Res.* (Humanities. 2011; 25(1).255-275.

Adesanya, A. O. &Adesina, O. J. (2014) Self-directed Learning strategy in teaching and learning for development in the third world. *International journal of special and general education*. 3,60-65.

Agbedia C (2012), Re-envisioning Nursing Education and Practice in Nigeria for the 21st Century, Abraka (Delta State). *Open Journal of Nursing*, 2012.2.226-230. http://www.dx.doi.org/10.4236. 2012,, 203035

Boonkong, D., Junsevg, K. H., Sangsai, A., & Kaew, A., & Utaisang, A. (2020) The effects of case study based learning on Nursing Care Plan ability in Nursing Process of Nursing Student. *Malaysian Journal of Medicine and Health Sciences.* elSSN 2636-9346

Bano N, Ashad F, Khan S, Safder CA (2015), Case-based Learning and Traditional Teaching Strategies: Where lies the Future? *Irak Armed Forces Medical Journal* (2015) 65(1); 118 – 29 Rawalpindi.

Bahaaeddin, M., Hammad Inaam, A., & Khalaf, J., (2020) How does Case Based Learning strategy influence Nursing Students clinical Decision-making ability in critical care Nursing Education? An integrative review. *Middle East Journal of Nursing* 14(2):3-8. DOI: 10.5742/MEJN 2020, 93791.

Ferree, L., Muniz, N., Edwards, L., Buchan, T., Todd, j., & Cramer, C. (2023) Assessing the effect of CBT compared with LBT on students' knowledge and perception in senior undergraduate diary cattle anagement course. Translational Animal science, vol 6 issue 2. https://doi.org/10.1093/tas/txacoss.

Ghaffouafard, M., Hariman H., Aghajanloo A. (2013) The Opinion of nursing student about Case Based Teaching Method and Comparison with Lecture.

Hafeez, M., (2021) Impact ofTeacher's Training onIntrest & Academic achievement of students by Mutiple teaching methods.peadagogical Research, 6/3,eno0102. https://doi.org/10.29333/pr.11088.

Ibtihal A.S. (2017). The Effect of Using Modified Lecture on Listening Comprehension skill for EnglishDepartment Students at Diyala University; *Al-Fath Journal:* 72.*//http.www.alfatehmag.uodiyala.edu.iq;* DOI :10.23813/FA/72/20.

Idika, M. I., (2021) Effect of Visualized Case Based Learning strategy on students' academic performance inchemistry in IbadanMetroplitan Nigeria. African Journal of Teacher Education. 10(1),106-126.https://doi.org/10.21083/ajote.v10:/628/

Ilguy M, Ilguy D, Frisekaoglu E, Oktay I (2014), Comparison of Cased-based Lecture-based Learning in Dental Education using the SOLO Taxanomy; Istanbul, Turkey.*Journal of Dental Education* Nov. 2014 152 – 1527.Killer, R. (2007).Teaching strategies for quality teaching and learning. RSA: Shuman Printers.

Kaddoura MA (2011), "Critical Thinking Skills of Nursing Students in Lecture-based Teaching and Case based Learning" *International Journal for the Scholarship of Learning and Learning* , Vol. 5, No 2, Article 20. Available at http://digitalcommons.geopglasouthern.edu/ij.soti/vol5/1552/20.

Kantar, L.D. and Sailian, S. (2018). The Effect of Instruction on Learning: Case Based Versus Lecture Based. *Teaching and Learning in Nursing. 13*. 207–211; DOI: 10.1016/j.teln.2018.05.002

Kireeti, A. S and Shankao-Reddy, D., (2015) Case-based Learning, a better option to traditional teaching for Undergraduate studentin Curriculum of Pediatrics. *Asian Journal of Biomedical Pharmaceutical Science*.Vol.5(45), 2015, 39-41. Doi.10.15272/ajbps.v5145720.

Kukreja, A. Boinapalli, S. Chouhan, S.S., and Kanojia, S. (2018). A Comparison betweenTraditional and Modified Case Based Method for Learning Physiology in First Mbbs Students; *International Journal of Physiology, April-June 2018, Vol.6, No. 2*

Marmah A. A., (2016). Students Perception about the Lecture as a Method of Teaching in Tertiary Institutions; Views of Students from College of Technology Education, Kumasi.Coltekwww.ijems.comkumasi

Mostafa, B., Shekoofeh, H., Khatereh, R., Simin, S., Kobra, S. K., & Afsaneh, G. (2019). A comparative study of the effectiveness of case-based learning and lecturing in enhancing nursing students' skills in diagnosing cardiac dysrhythmias. *Revista Latinoamericana de Hipertension*, *14*(6), 651-660.

Logan, A., Yule, E., Hughes, J., Peters, D., Hadley, M., Betts, B., ... & Froude, E. (2022). The impact of face-to-face mental health consumer-led teaching on occupational therapy student empathy levels: Two group comparison design. *Australian Occupational Therapy Journal*, *69*(6), 703-713.

Liu, L., Li, M., Zheng, Q., & Jiang, H., (2020) The Effect of Case Based Teaching in Nursing Skill Education: Cases Do Matter. *The Journal of Health Care Organization, Provision and Financing;* 57:1-8. DOI:10.1177/004695820964421.

Ogkouzi, N.N, Saemian, F. (2012). Analyszing and Comparing the Effects of Two Teaching Methods, Student-centred versus Teacher-centrered on the Learning of Biostatistics at ShahidBehesti University of Medical Sciences (SBMU) Tehran Iran. *Journal of Paramedical Sciences (JPS) Autumn* 2012 Vol. 3. No 4 ISSN 2008-4978.

Ozcan, M., (2021) Factors affecting students' academic achievement according to the teachers' opinion. EducationReform Journal, vol6NO. 1. https://dx.doi.org/01.22596/erj2021.06.01.1.18

Sangam, M., Kalatharan, P., Bokan, G. V., Deka, R., & Kaur, A., (2021) Efficacy of Case Based Learning in Anatomy Cureu.13,e20472.

Shohani, M., Bastami, M., Abedi, L., & Nasrollahi, A., (2023) Nursing Students' Satisfaction with two methods of Case Based Learning & Lecture Based Learning. *BMC Medical Education.*

Simmons, M. & Wilkinson, P. (2018). *Lectures versus case discussions: randomised trial of undergraduate psychiatry teaching*. Cambridge: Cambridge University Press.

Tathe S. S., & Singh, A. L., (2014) Cased based lectures versus conventional lectures for Teaching Medical Microbiology to Udergraduate students. *International Journal of Current Research* Revised Feb 2014. Vol. 6(04).35-41.

Tsekhmister, Y. (2023) Effectiveness of Case-Based Learning in medical and pharmacy education: A meta-analysis. *Electron Journal of General Medicine*. 2023;20 (5):em515. https://doi.org/10.29333/ejgm/13315

Zhang, X., Zhang, B., & Zhang, F., (2023) Student-Centered case-based teaching and online-offline case discussion in postgraduate courses of computer science. *International Journal of Educational Technology. https://doi.org/10.1186/541239-022-00374-2.*