



Assessment of the Use of Visual Aids in Imparting Knowledge and Skills to Nursing Students in Five Higher Institutions in Fako Division, Cameroon

Njualem Karen Awungafac¹, Binwi Florence², Nkengafac N. Fobellah³, Atemlefac Bridget Fontem⁴, Palle John Ngunde⁵

¹Masters in Nursing Education, University of Buea

²Ph D in Educational Psychology, University of Buea

³Masters in Public health, St Monica University higher Institute of Buêa

⁴Ph D in Applied Linguistics, University of Yaounde I

⁵Associate Professor in Surgery, University of Buea

Corresponding Author: Dr Nkengafac N. Fobellah, MD, Masters in Public health, St Monica University higher Institute of Buea.

Received: June 03, 2024; **Published:** June 10, 2024

Abstract

Background: Teaching is made effective by using visual materials that act as stimulants of learning such that students achieve educational goals. Our main objective was to assess educators' knowledge and use of visual aids, and to identify barriers to use of visual aids in imparting knowledge and skills to nursing students in five higher institutions in Fako Division, Cameroon.

Methods: A Cross-sectional and intervention school-based studies were carried out involving 104 educators from five higher institutions in Fako Division, Cameroon. This study was carried out from January 2023 to July 2023. Data were collected using a closed-ended questionnaire, was coded and entered into an excel spreadsheet and analyzed using SPSS version 25.

Results: 85.0% of educators had good knowledge of visual aids, 50 % of them made good use of visual aids, insufficient projectors and huge workloads were significant barriers to the use of visual aids.

Conclusion: Educators have good knowledge and make average use of visual aids, educators face challenges in using visual aids in the teaching of nursing students.

Introduction

Evidence-based practice in nursing education involves the use of suitable teaching materials and methods [1]; the application of technology including visual aids like projectors, simulation videos and real objects is vital to the evolution of evidence-based practice which is therefore beneficial to teaching, learning, and to the field of nursing as a whole [2]. The word 'visual' stems from the Latin word 'visualis' [3] which means to see or to perceive. Visual aids are instructional materials which are absorbed by the sense of sight (and hearing to some degree) with the aim of enhancing understanding and retention of taught material [4]. Assimilating audio and visual cues provides a double effect in the teaching and learning process. Visual aids have been used for generations; however, some technologies are relatively new [5].

Internationally, moving from hospital-based to university based training is the biggest trend of nursing education [6], this has also brought about dynamics in pedagogical approaches. Though complex, the teaching-learning process can be facilitated with the use of visual aids as they stimulate, motivate and enhance the attention of learners [7].

The Golden Rule of Didactics explains that 'the more senses we attract during the teaching process, the more effective learning becomes' [8]. Visual materials come in form of mental maps, charts, diagrams, pictures, power point presentations, real objects and artificial objects [9]; using manikins allow nursing students acquire communication and collaboration skills [10]. Using PowerPoint presentations allows learners visualize key notes such that they produced mental images thus increasing learning outcomes [11]. In Human Anatomy and Physiology, real objects like cadavers provides in depth knowledge of the human

body, enabling students build self-confidence [12]. Since nursing students understand taught material in ways like hearing, seeing, doing, which vary from person to person [13], educators therefore should identify their strengths and limitations and enable them learn as a team [14]. Educators therefore should maximize use of visual aids through available resources [15] while accommodating persons with disabilities. Despite these benefits of visual aids poor use of these materials turns the effect from beneficial to negative [16].

There is poor assimilation of taught material due to lack of use of visual aids. From observation of teaching sessions in higher institutions in our context we have noticed that educators present little visual information when teaching; nursing students depend on pure lectures and black and white print materials such as handouts for learning, this therefore affects the acquisition of knowledge and skills as much as they would if taught with more visual materials. This poses a barrier to effective and efficient training of competent nurses. This study therefore sought to provide data on educators' knowledge and use of visual aids, barriers to use of visual aids, and the effects of teaching nursing students with and without visual aids in five higher institutions in Fako Division, Cameroon.

Materials and Methods

Study Design and Setting

This study was a cross-sectional study among educators who train nursing student, carried out in five institutions in Fako Division, Cameroon. The University of Buea is located about 130 metres away from the mile 17 motor park along the highway leading to Kumba. The Department of Nursing offers a 4 years Bachelor degree program; it is made up of 4 permanent lecturers and about 13 part-time lecturers. It has about 120 on-campus undergraduate nursing students, the capacity of one class is averagely 40 students, a semi equipped demonstration room made up of manikins, surgical instruments, hospital supplies, and one departmental projector. Biaka University Institute of Buea offers a bachelor's degree (1 years) and Higher National Diploma programs (3 years) at the undergraduate level, made up of about 32 lecturers including part-time and averagely 500 nursing students per classroom. It has a fully equipped demonstration room made up of manikins, surgical instruments, hospital supplies, two projectors, as well as 10 classrooms for undergraduate nursing students with a capacity of 800 students. Redemption Higher Institute of Biomedical and Management Sciences, Buea is made up of four undergraduate Nursing programs, 25 nursing teachers and about 1500 nursing students which includes 120 Nursing Assistant students, 150 State Registered Nursing students, and about 1330 students of the Higher National Diploma and bachelor's degree programs. The simulation room is made up of 4 manikins, 2 big and 1 small skeleton manikin. The Training School for Health Personnel, State Registered Nursing- Limbe offers only the state Registered Nursing program which runs for three years; it is made up fifteen lecturers including part-time and about 225 students. The school has one projector and a simulation lab that does not allow for video simulation. It has no skeleton manikin and four manikin babies. Maflekumen Higher Institute of Health Sciences - Tiko is made up of 12 classrooms and a well- equipped simulation lab. There are approximately 20 nursing teachers and about 135 nursing students. The simulation lab is fully equipped with patient manikins, surgical instruments, hospital supplies, wall charts, beds, and urinals.

Study Population and Sampling

The study population included educators aged greater than 18 years of age who teach core nursing courses at undergraduate level and who signed the consent form. The minimum sample size was calculated using the Cochran formula then a formula for a finite population, a total

of 104 educators was recruited by means of simple random sampling taking into account probability proportionate to size.

Study Procedure

Ethical approval was obtained from the Institutional Review Board, Faculty of Health Sciences-University of Buea, an administrative clearance from the Department of Nursing and the Regional Delegation of Public Health, SWR, and administrative authorizations from Directors of the institutions to carry out our study. Data was collected using semi-structured pre tested questionnaires designed as: A: sociodemographic data, B: educators' knowledge of visual aids, C: educators' use of visual aids, and D: barriers to use of visual aids.

Data Management and Analysis

Data obtained from this study was checked for missing values and wrong entries, coded and entered into Microsoft Excel spreadsheets and was stored in a hard drive. Questionnaires kept in a sealed envelope and analyses done using Statistical Package for Social Sciences version 25.

To assess knowledge, we designed 10 closed-ended questions with multiple responses which were scored on a total of 10. A mean score of 6 was used to differentiate between good and poor knowledge of visual aids.

To evaluate use of visual aids, 10 questions were asked and participants had to choose 'always' = every lesson, 'sometimes' = not for every lesson and 'never' = no use at all. A mean score of 10 was used as a cut-off to differentiate between adequate and inadequate use in teaching nursing students. Majority of participants often used power points and simulation rooms/ manikins.

To identify barriers encountered, a Likert scale (agree and disagree) was used to allow participants choose out of 30 questions. Further analysis was done and there was no significantly associated barrier to the use of visual aids at the Redemption Higher Institute of Biomedical and Management Sciences.

Results

Socio-demographic Characteristics of Educators

Out of 104 questionnaires answered, females were the majority of participants at 69 (66.3%), majority of participants, 33 (31.7%) were in the 25 to 29 age group. Majority 46 (44.2%) of participants were in the group 1 to 4 years of teaching experience as seen in Table 1 below.

Knowledge of Visual Aids

Analyzing the question 'which of the following are forms of visual aids?' majority 88 (85.0%) chose the right answer. Analyzing the question 'which visual aid is best for enhancing practical skills in learners?' majority 99 (95.2%) chose the right answer. Responses were pooled together as seen in table 2 and separated into 'good knowledge' and 'poor knowledge' as seen in Figure 1.

Use of Visual Aids

Use of visual aids was assessed with respect to frequency; always (for every lesson applicable): majority of educators used simulation rooms/ manikins 31 (29.8%), sometimes (use but not during every lesson applicable): majority used PowerPoint to represent key points 71 (68.3%), majority 67 (64.4%), and majority never used concept maps 40 (38.5%), as seen in Table 3.

Barriers to the Use of Visual Aids

Participants identified barriers to use which included: projectors not being enough, inconsistent power supply, and projectors being too

expensive. An ANOVA test was carried out and inability to maintain projectors and huge workload preventing preparation of visual aids were significant as seen in Table 4. An analysis was done to ascertain barriers to the use of visual aids per institution and the results gotten were presented as seen in Table 5 below.

Table 1: Socio-Demographic Characteristics of Educators

Variable	Frequency	Percentage
Sex		
Male	35	33.7
Female	69	66.3
Age		
20 to 24	11	10.6
25 to 29	33	31.7
30 to 34	25	24.0
35 to 39	16	15.4
40 to 45	14	13.5
Above 45	5	4.8
Teaching experience (in years)		
1 to 4	46	44.2
5 to 9	33	31.7
10 to 14	11	10.6
15 to 20	12	11.5
More than 20	2	1.9
Total	104	100.0

Table 2: Educators' Knowledge of Visual Aids

Question	Correct responses n (%)	Incorrect responses n (%)
The following are forms of visual aids	88 (85.0)	16 (15.0)
Visual aid best for:		
Enhancing practical skills in learners	99 (95.2)	5 (4.8)
Presenting differences between concepts	92 (88.5)	12 (11.5)
Presenting key notes	101 (97.1)	3 (2.9)
Presenting illustrating anatomical structures	92 (88.5)	12 (11.5)
Demonstrating procedures	61 (58.7)	43 (41.3)
Enhancing the cognitive domain of learners	43 (41.3)	61 (58.7)
Enhancing affective domain of learners	56 (53.8)	48 (46.1)
Displaying large amount of information	77 (74.0)	27 (26.0)
Judging relative comparisons	78 (75.0)	26 (25.0)

Table 3: Use of Visual Aids

Visual aid	Always Good use n (%)	Sometimes/ Never Poor use n (%)
PowerPoint presentations	18 (17.3)	86 (82.7)
Graphical illustration	12 (11.5)	92 (88.5)
Real objects	30 (28.8)	74 (71.2)
Videos	17 (16.3)	87 (83.7)
Wall charts and posters	28 (26.9)	76 (73.1)
Manikins	31 (29.8)	73 (70.2)
Table illustration	29 (27.9)	79 (72.1)
Concept maps	19 (18.3)	85 (81.7)
Charts	17 (16.3)	87 (83.7)

Table 4: Barriers to the use of visual aids in teaching nursing students

Barriers	Agree n(%)	Disagree n(%)	F-value	p-value
Problem of selection	48 (46.2)	56 (53.8)	1.078	0.385
No formal preparation for role	46 (44.2)	58 (55.8)	0.782	0.604
Do not convey all information	81 (77.9)	23 (22.1)	1.728	0.112
Huge workload	69 (66.3)	35 (33.7)	2.750	0.012
Limited lesson time	51 (49.0)	53 (51.0)	1.434	0.201

Table 5: Barriers to the use of visual aids per institution

Barriers	BUIB	RHI BMS	UB	MAFLE KUMEN	THP/SRN
Lack of projectors	0.146	0.936	0.732	0.097	0.018
Projector store room not always open	0.036	0.918	0.999	0.053	0.299
Lack of technical skills	0.999	0.163	0.014	0.097	0.299

Discussion

The mean age of educators in this study was 32.3 years and modal age 25-29 years, majority of participants were females, these findings are similar to those of a cross-sectional survey carried out in Eswatini-South Africa [17]. This is could be because nursing is assumed to be for females because of the role of mothers in the health and wellbeing of their members. Majority of educators were in the category of teaching experience 1-4 years, this is because most educators who have taught for longer periods are retiring and newer as well as younger personnel are being integrated into the nurse education field.

Majority had good knowledge, while minority, had poor knowledge. The advancement in knowledge as a result of their advancement in their nursing qualification. This was similar to a descriptive study carried out in Kanyakumari-India [18]. This similarity is because there is an ongoing training for nurse educators where they are taught about instructional materials and their uses, also with longevity in service educators get to discover various categories of instructional materials use by their colleagues as such they are aware of the form of visual aids. Majority of participants often used power points and simulation rooms, this study was similar to that carried in Cameroon [19] in which educators used PowerPoint presentations (55%), and simulated manikins (74%). Insufficient projectors, lack of technical expertise, and huge workloads were barriers to use of visual aids, similar to a study in Fako Division, Cameroon [20] where poor access to internet connection, large class size, huge workloads and [21] projectors were expensive to own, were barriers to the use of visual aids. Both findings were similar because the studies were conducted in the same geographical area which might have involved the same participants or the same institutions.

References

1. Mackey A. & Bassendowski S. "The History of Evidence -Based Practice in Nursing Education and Practice". *Journal of Professional Nursing*. Volume 33(1), Pages 51-55, 2017.
2. Liu C. & Elms P. (2019) "Animating student engagement: The impacts of cartoons instructional videos on learning experiences". *Research in Learning Technology* 27.
3. Melor M.D, Yunus, H., Dexter S. & Anak J. (2013) "Using Visual Aids as a Motivational Tool in Enhancing Students in Reading Literary Text". *Recent Advances in Educational Technology*.
4. Ibragimoua A. R & Safarush. (2023) "The Effectiveness of the Use of Visual Materials in English Lessons". *American Journal of Interdisciplinary Research and Development*. vol.12.
5. Jayasekera R. (2021) "Transforming nursing education: Behaviorism to humanism and evidence-based practice". *Progress in Education*. Volume 67, pg 249-260.
6. Adeyanji L. (2003) "Teachers Perception of the Effects and Use of Learning Aids in Teaching: A Case Study of Winneba Basic and Secondary Schools". *Faculty of Education, Institute Educational, Obafemi Awolowo University, Nigeria*.
7. Mavluda B.K. (2022) "Implementation of Visual-didactic games in ecological education of students of preschool educational organizations". *Current Research Journal of Philological Science*. Volume 03(01) Page 2.
8. Hadi S., Dexter S. & Anak J. (2014) "Using Visual Aids as a Motivational Tool in Enhancing Students in Reading Literary Texts". *Recent Advances in Educational Technology*.
9. Joruun A. V, Andreas P, Else M, & Fossum E. K. (2021) "The Role of manikins in nursing learning: A systematic review and thematic metasynthesis". *Nurse Educ Today*.
10. Ozgu B, Tastan S, et al; (2020) "Comparison of Pechakucha and traditional PowerPoint presentations in nursing education: A randomized controlled study". *Nurse Education in Practice* Volume 42, January.
11. Njabulo M, Shakila D, et al; (2021) "A scoping review of the use of visual aids in health education materials for persons with low-literacy levels". *Patient Education and Councelling*. Volume 104(5) Pg 998.
12. Mahasneh D., Noordeen S., & Charleen S. (2021) "From the classroom to Dr. Youtube: Nursing Students Experience of learning and teaching styles in Jordan". *Teaching and learning in Nursing*. Volume 16(1).
13. Fatemeh V. & Torabizadeh C. (2018) "The effect of teaching based on dominant learning style on nursing students' academic achievement". *Nurse Education in Practice*. Volume 28, Pages 103-108.
14. Gafuwva N. V, Churilova E. You. (2015) "Pedagogical application of multimedia tools: a textbook-Krasnoyarsk": *Siberian Federal University*. p.116.
15. Petrenko L. A. & Philippov M. N. (2017) "Using video materials in teaching foreign language". *Humanities and Social Science in Europe*. 3(3), pp108-115,
16. Abbas P. G. (2012) "Visual, auditory, kinaesthetic learning styles and their impacts on English Language Teaching". *Journal of Studies in Education*. 2(1), 104-113,
17. Mthethwa P. (2022) "A Comparative Use of Traditional & Multimedia Modes of Teaching Curriculum Studies in English". *TESOL and Technology Studies*. Volume 3, Issue 1: pp1-14.
18. Kumar S., Chendraya P., & Sattanathan M. (2020) "Knowledge on effectiveness of audio- visual aids in teaching INNMC". *Journal of Nursing Education and Administration* 8(2), 15-20,
19. Metuge E. M. (2018) "The Importance of Instructional Materials in Nurse Education in the North West and South West Regions of Cameroon: The Nurse Teacher's Perspective". *International Journal of Humanities, Social Sciences and Education*. 5(3): pp68-84.
20. Zinkeng M, Buamaa E. B, et al; (2020) "Use, challenges and barriers to use of problem based learning by nurse educators: A study in Fako Division, Cameroon". *International Journal of Educational Research and Review* Vol. 1(1) pp. 013-024.
21. Metuge E. M. (2018) "The Importance of Instructional Materials in Nurse Education in the North West and South West Regions of Cameroon: The Nurse Teacher's Perspective". *International Journal of Humanities, Social Sciences and Education*. 5(3): pp68-84.