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"TO ASSESS THE EFFECTIVENESS OF VIDEO ASSISTED TEACHING VERSUS LIVE DEMONSTRATION ON KNOWLEDGE AND SKILL REGARDING NEUROLOGICAL ASSESSMENT AMONG STUDENTS IN SELECTED NURSING COLLEGES."

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ABSTRACT

Introduction: The neurological examination is a fundamental yet complex component of clinical practice, requiring accurate interpretation and correlation with the neuroaxis. Early and precise assessment is essential to detect abnormalities, reduce complications, and prevent misdiagnosis, thereby minimizing morbidity and mortality. **Background:** This study aimed to compile an annotated list of textbooks on neurological examination, with a focus on monographs published before 1960. Despite its importance, disparities in neurological care persist globally, with 70% of the disease burden in low- and middle-income countries. Neurological disorders account for nearly 9 million deaths annually, and Parkinson's disease is the fastest-growing neurological condition. Access to neurologists, particularly for pediatric care, remains critically limited in resource-constrained regions. **Objectives:** 1. To assess the pretest knowledge score regarding neurological assessment among students of selected Nursing colleges. 2. To assess the pretest Skills score regarding neurological assessment among students of nursing in selected nursing colleges. 3. To Evaluate the Effectiveness of video Assisted Teaching on knowledge and Skills regarding neurological assessment among students of nursing in selected colleges. 4. To Evaluate the Effectiveness of Live demonstration on knowledge and skills regarding neurological assessment among Students of nursing in selected colleges. 5. To compare the Effectiveness of Video assisted teaching versus Live demonstration on knowledge and skill regarding neurological assessment among students of selected nursing colleges.

6. To find out the association of the study finding with selected demographic variables. **Study design & Methodology:** A two-arm interventional comparative design was adopted with 90 nursing students (45 in each group). Data were collected using validated self-structured questionnaires and observational checklists. Following baseline assessment, students received a structured lesson on neurological assessment, with a post-test conducted after seven days. Reliability and validity of the tools were established, and data were analyzed using descriptive and inferential statistics. **Result**: Both VAT and LD significantly improved knowledge and skills. Post-test knowledge scores were higher in LD (17.97 ± 1.68) than VAT (15.60 ± 1.42) ($t = 27.00$, $p <$

0.05). Skill scores were also higher in LD (4.86 ± 0.69) compared to VAT (4.22 ± 0.95) ($t = 15.13$, $p < 0.05$). Age ($p = 0.029$) and area of residence ($p = 0.001$) were significantly associated with knowledge, while gender and religion were not. **Conclusion**: Both teaching methods were effective; however, Live Demonstration was superior in enhancing knowledge and skills. Demographic factors influenced outcomes, suggesting the need for learner-centered teaching strategies. **Recommendation**: Replication of this study on a larger sample is recommended for broader generalization and to evaluate the long-term impact on clinical competence.

INTRODUCTION

The human nervous system plays a vital role in controlling and coordinating body functions. The brain and spinal cord are often difficult to examine directly, so neurological assessments are typically indirect, focusing on evaluating the functions of specific body parts controlled by the nervous system. These assessments provide crucial information that other tests cannot. The ability to perform a neurological assessment depends on the nurse's understanding of neuroanatomy and neurophysiology, as well as their ability to identify and interpret any abnormalities in a patient's neurological state. These evaluations are essential in diagnosing and localizing neurological diseases.[1]

A comprehensive neurological assessment is crucial for providing appropriate care and planning treatment, guiding clinical decisions during the rehabilitation process. Johnson and Thompson (1996) emphasized that the quality of treatment is directly related to the quality of the assessment on which it is based. Therefore, ongoing and continuous assessment is essential to track patients' progress and detect any changes in their neurological condition.[2]

The assessment involves several key components:

Mental Status Examination: Evaluates memory, problem-solving ability, alertness, and mood. Patients may be asked to recall details like the time and date, identify objects, or complete simple cognitive tasks. **Cranial Nerve Examination**: Assesses the 12 cranial nerves, which link the brain to various parts of the body such as the eyes, ears, face, and tongue. The test may involve smelling scents or testing speech by asking the patient to stick out their tongue.

Motor System Evaluation: Tests muscle movement and coordination through tasks such as walking in a straight line or performing simple hand-eye coordination tasks.

Deep Tendon Reflexes: Assesses automatic responses, such as a knee jerk when tapped, to evaluate the nervous system's function.

Sensation: Involves testing a patient's ability to perceive touch, temperature, pain, and vibration through various objects.

Cerebellum and Autonomic Functions: Tests functions controlled by the brainstem, including heart rate, breathing, and digestion. Blood pressure and pupil response to light are often evaluated.[3] Neurological assessment can be challenging, especially in cases of neurological disorders. It requires specialized training and awareness of both normal and abnormal findings. The examination should be adapted to each patient's specific needs, such as a more detailed cognitive assessment for elderly patients with memory deficits. Proper assessment helps with early detection of abnormalities, reducing complications, and preventing incorrect diagnostic procedures.[4]

OBJECTIVES OF THE STUDY

1. To assess the pre-test knowledge score regarding neurological assessment among students of selected Nursing colleges.
2. To assess the pre-test Skills score regarding neurological assessment among students of nursing in selected nursing colleges.
3. To Evaluate the Effectiveness of video Assisted Teaching on knowledge and Skills regarding neurological assessment among students of nursing in selected colleges.
4. To Evaluate the Effectiveness of Live demonstration on knowledge and skills regarding neurological assessment among Students of nursing in selected colleges.
5. To compare the Effectiveness of Video assisted teaching versus Live demonstration on knowledge and skill regarding neurological assessment among students of selected nursing colleges.
6. To find the association of study findings with selected demographic variables.

HYPOTHESIS

H01- There is no significant difference on knowledge score regarding neurological assessment among students after video assisted teaching and live demonstration.

H02 - There is no significant difference in skill score regarding neurological assessment among students after video assisted teaching and live demonstration.

H1 - There is significant difference on knowledge score regarding neurological assessment among students after video assisted teaching and live demonstration.

H2 - There is significant difference in skill score regarding neurological assessment among students after video assisted teaching and live demonstration.

MATERIAL AND METHODS

Research design

Two arm interventional comparative research design

Research setting:

The study will be conducted in selected nursing colleges of Nagpur district, Maharashtra, India.

Participants: Nursing Students. **Sample size calculation:** Formula used:

$$n = \frac{(Z_{1-\frac{\alpha}{2}}\sqrt{2\bar{P}\bar{Q}} + Z_{1-\beta}\sqrt{P_1Q_1 + P_2Q_2})^2}{(P_1 - P_2)^2}$$

Where, P_1, P_2 = expected proportions in Group 1& Group 2

$Q_1 = 1 - P_1$, $Q_2 = 1 - P_2$

$\bar{P} = (P_1 + P_2)/2$, $\bar{Q} = 1 - \bar{P}$

$Z_{1-\alpha/2}$ = 1.96%95)□□□□□□□□□□□□ □□□□□)

$Z_{1-\beta}$ = 0.84%80)□□□□□)

- Putting these values in formula, the required sample size = 81
- Adding 10% nonresponse rate, i.e. 8.1 The required sample size is 89.1 = 90

Sampling Technique: Non-Probability Convenience Sampling

Inclusion criteria

In this study, the inclusion criteria were:

- Nursing student who has given written consent to participate in study.
- B.Sc. Nursing students of 4th Semester.

Exclusion criteria

In this study, the exclusion criteria were:

- Nursing student who has already undergone specialized training on neurological assessment.

VARIABLE:

Independent variable: Video assisted teaching and live demonstration.

Dependent variables: Knowledge and Skill.

Demographic variables: Age, Gender, Residence and Religion.

DESCRIPTION OF THE TOOL

The data collection tool consisted of three sections.

Section A included demographic variables such as age, gender, area of residence, and religion.

Section B comprised a structured questionnaire with 32 items to assess knowledge regarding neurological assessment; each correct response was awarded one mark, with a maximum score of 32 and no negative marking.

Section C included a 10-item observation checklist to assess skills related to neurological assessment. Knowledge levels were classified as inadequate (0–50%), moderate (51–75%), and adequate (76–100%) based on the percentage of scores obtained.

Validity and reliability: The research instrument was validated by experts in medical–surgical nursing and statistics. Content validity was confirmed using I-CVI (0.83–1.00) and S-CVI (0.96), indicating excellent content coverage. Reliability of the knowledge questionnaire, assessed by the parallel-form method on 12 samples, yielded a correlation coefficient of 0.9888, demonstrating high consistency and stability of the tool.

INTERVENTION:

A two-arm interventional comparative design was employed to evaluate the effectiveness of teaching strategies on neurological assessment among nursing students. Ninety participants were allocated into two groups: Group A received Video-Assisted Teaching, while Group B received Live Demonstration. Baseline knowledge and skills were assessed using a validated self-structured questionnaire and an observation checklist. The interventions encompassed a structured lesson on neurological assessment, including review of neuroanatomy and physiology, patient health history, mental status evaluation, cranial nerve and motor function assessment, sensory and cerebellar function evaluation, reflex testing, and interpretation of diagnostic findings. The Video-Assisted Teaching group engaged with a video-based instructional module combining synchronous and face-to-face guidance, whereas the Live Demonstration group received direct demonstration and guided practice in a classroom setting. Seven days post- intervention, both groups underwent post-test assessments to measure changes in knowledge and skill. This design enabled a rigorous comparison of the pedagogical impact of video-assisted learning versus traditional live demonstration on student competence in neurological assessment.

DATA COLLECTION

A two-arm interventional study was conducted to compare the effectiveness of Video-Assisted Teaching and Live Demonstration on the knowledge and skills of 90 4th-semester B.Sc. Nursing students, selected via convenience sampling. Students who consented and had no prior neurological assessment training were included and allocated to Group A (Video-Assisted Teaching n=45) or Group B (Live Demonstration n=45). Pre- and post-intervention knowledge and skills were assessed using a validated 32-item questionnaire and a 10-item observation checklist. Group A received structured video-based instruction with face-to-face guidance, while Group B received live demonstrations followed by guided practice, covering neuroanatomy, physiology, patient history, mental status, cranial nerve, motor, sensory, cerebellar, and reflex assessments. Data were recorded systematically, with post-assessment conducted seven days later. Ethical approval, informed consent, confidentiality, and voluntary participation were maintained. Data collection occurred from 1st January 2024 to 7th January 2025.

STATISTICAL ANALYSIS

Data were analyzed using SPSS. Descriptive statistics (frequency, percentage, mean, and standard deviation) were used to summarize demographic variables and baseline scores. Paired *t*-tests were applied to assess pre-test and post-test differences in knowledge and skill scores within each group. Independent *t*-tests were used to compare post-test scores between the Video Assisted Teaching and Live Demonstration groups. Associations between pre-test knowledge scores and selected demographic variables were analyzed using the Chi-square test. A *p*-value of <0.05 was considered statistically significant.

RESULTS

A total of 90 nursing students participated in the study, with 45 students each in the Video Assisted Teaching group and Live Demonstration group. Both groups were comparable in baseline demographic characteristics.

Effect on Knowledge Scores

Both Video Assisted Teaching group and Live Demonstration interventions produced a statistically significant

improvement in post-test knowledge scores compared to pre-test scores ($p < 0.05$). However, the Live Demonstration group demonstrated significantly higher post-test knowledge scores than the VAT group.

Effect on Skill Scores

Skill scores improved significantly in both groups following the intervention ($p < 0.05$). The Live Demonstration group achieved higher post-test skill scores compared to the Video Assisted Teaching group, indicating superior skill acquisition through live demonstration.

Comparison of Teaching Methods

Independent *t*-test analysis revealed that Live Demonstration was significantly more effective than Video Assisted Teaching in improving both knowledge and skill regarding neurological assessment ($p < 0.05$).

Table:1 Comparison of difference between skill score in pre and post-test of Nursing Students
n=90

Group		Mean	SD	Mean Difference	t-value	p-value
Video Assisted Teaching		3.37	1.49	0.75±0.26	2.80	0.006 S, p<0.05
Live Demonstration		4.13	1.01			

This table shows the comparison of mean difference in pretest and posttest skill scores of nursing students regarding Neurological Assessment from selected nursing colleges. Mean, standard deviation and mean difference values are compared and student's paired 't' test is applied at 5% level of significance. The tabulated value for n=45+45- 2 i.e. 88 degrees of freedom was 1.98. The calculated 't' value i.e. 2.80 are much higher than the tabulated value at 5% level of significance for overall skill score of nursing students which is statistically acceptable level of significance. Hence it is statistically interpreted that Video Assisted Teaching versus Live Demonstration on skill regarding neurological assessment among nursing students from selected nursing colleges was effective. Thus, the H_1 is accepted.

Table:2 Comparison of difference between knowledge score in pre and post-test of Nursing Students

n=90

Group	Mean	SD	Mean Difference	t-value	p-value
Video Assisted Teaching	7.60	1.88	4.17±0.38	10.72	0.0001 S, p<0.05
Live Demonstration	11.77	1.80			

This table shows the comparison of mean difference in pretest and posttest knowledge scores of nursing students regarding Neurological Assessment from selected nursing colleges. Mean, standard deviation and mean difference values are compared and student's paired 't' test is applied at 5% level of significance. The tabulated value for n=45+45-2 i.e. 88 degrees of freedom was 1.98. The calculated 't' value i.e. 10.72 are much higher than the tabulated value at 5% level of significance for overall knowledge score of nursing students which is statistically acceptable level of significance. Hence it is statistically interpreted that Video Assisted Teaching versus Live Demonstration on knowledge regarding neurological assessment among nursing students from selected nursing colleges was effective. Both teaching methods were effective; however, Live Demonstration was superior in enhancing knowledge. Thus, the H_1 is accepted. **Association with Demographic Variables**

Chi-square analysis showed a significant association between pre-test knowledge scores and age ($p = 0.029$) and area of residence ($p = 0.001$). No significant association was found with gender or religion.

DISCUSSION

The present study demonstrated that both Video Assisted Teaching and Live Demonstration were effective in improving nursing students' knowledge and skills regarding neurological assessment. However, live demonstration showed statistically superior outcomes compared to video assisted teaching. In the Video Assisted Teaching group, post-test knowledge (15.60 ± 1.42) and skill scores (4.22 ± 0.95) increased significantly from pre-test levels, confirming the effectiveness of video-based instruction. These findings are consistent with earlier studies by Chitra and Pooja Godiyal (2022)[5] and Usha Rani Kandula (2022)[6], which reported significant improvements in neurological assessment knowledge following structured and video-supported teaching programs. The Live Demonstration group achieved higher post-test scores in both knowledge (17.97 ± 1.68) and skills (4.86 ± 0.69). The difference between Video Assisted Teaching and Live Demonstration was statistically significant for knowledge ($t = 27.00$, $p < 0.05$) and skill ($t = 15.13$, $p < 0.05$), indicating the greater effectiveness of live demonstration. This finding supports studies by Balasubramanian et al. (2023)[7] and Ogunlowo (2024)[8], which emphasized that demonstration-based teaching enhances clinical skill acquisition more effectively than indirect methods.

CONCLUSION

The study concludes that both Video assisted teaching and live demonstration significantly improved nursing students' knowledge and skills regarding neurological assessment. Pre-test scores were low, but a marked and statistically significant improvement was observed in post-test knowledge and skill scores following the interventions. These findings indicate that video assisted teaching is an effective learning strategy for enhancing knowledge and skill acquisition in neurological assessment and can serve as a valuable instructional method in selected nursing colleges.

RECOMMENDATIONS

- A similar study can be conducted on large scale.
- A similar study may be replicated with the other course of nursing students.
- A similar study can be replicated by using other innovative teaching methods.
- A comparative study can be done to evaluate the effectiveness of video assisted teaching versus live demonstration on Neurological assessment.

LIMITATION

- The availability of time is limited for data
- The study was confined to a small number (90) nursing students which limit the generalization that can be made.

CONSENT AND ETHICAL APPROVAL

The present study was approved by the Institutional Ethics Committee and concerned authorities of Government Medical College, Nagpur (GMC/IEC/2024/2102 dated 23.02.2024). All participants of this study were asked to read and sign the written informed consent form.

Conflict Of Interest: Authors declare no conflict of interest.

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