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"A QUASI-EXPERIMENTAL STUDY TO EVALUATE THE EFFECTIVENESS OF VIDEO-ASSISTED MICRO-LECTURE ON KEY MEDICATION ADMINISTRATION AMONG NURSING STUDENTS AT SELECTED NURSING COLLEGES, HYDERABAD, TELANGANA"

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Abstract

"An evaluation of the effectiveness of video assisted micro lecture on key medication administration among nursing students at selected nursing colleges, Hyderabad, Telangana" was the goal of the quasi-experimental study. A quantitative methodology and a non-randomized control group design were used in this investigation. The JMJ College of Nursing in Sanathnagar, Hyderabad, Telangana, used a non-probability purposive sampling technique to select 60 samples. To gauge B. Sc(N) 1st year students' familiarity with Key Medication Administration, we created a self-structured questionnaire. Prior to the commencement of the study, the B. Sc(N) 1st -year students were briefed on its objectives. A pre-test was administered to each sample, then the researcher gave the experimental group's samples a video-assisted micro lecture. A week later, every single sample was given another test. Prior to doing the analysis, the data was evaluated and interpreted using descriptive and inferential statistics. According to the study's findings, all B. Sc(N) 1st year students in the experimental group shown appropriate knowledge on the pre-test, while none of them had low knowledge. After taking the post-test, 80% of B. Sc(N) 1st year students showed adequate knowledge, 20% showed moderate knowledge, and none showed deficient knowledge. The scores of the experimental group in the pre-test were increased from 11.43 to 17.63 mean, S. D to 2.15 with 1.80 S. D in the post test after administering video assisted micro lecture on key medication administration and the calculated 't' value was 0.55 for pre-test and 13.65 for post test. The "t" table value is less than the "t" calculated value. Experiment and control groups' levels of knowledge regarding the Key medication administration differed

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significantly before and after the test. Thus, the investigation comes to the conclusion that H1 was approved.

Keywords: Quasi Experimental Study, Evaluate, Effectiveness, Video Assisted Micro Lecture, Key Medication Administration, Nursing Students.

1. INTRODUCTION

Medication administration is an important skill among nursing professionals that has a direct impact on patient safety and treatment outcomes. Nursing students must acquire accurate knowledge and execute medication administration protocols correctly to become competent healthcare professionals. Historically, nursing education has utilized didactic teaching styles, including lectures and textbooks, to teach students about medication administration. But as the intricacy of healthcare provision grows, there is an increasing demand for creative pedagogy that can promote learning achievements, enhance skill development, and improve retention of critical concepts.

Recent innovations in educational technology have given rise to the deployment of multimedia tools to promote more interactive and engaging learning environments. One such approach is the implementation of video-assisted micro-lectures, which offer compact, targeted learning material in an audiovisual presentation. These micro-lectures are intended to present content in small, bite-sized pieces, which are simpler for students to learn and retain than conventional lecture presentations. Video-assisted instruction is particularly valuable within the situation of nursing schooling, in which practical, visual illustration of protocols, like medication administration, can most decidedly improve student understanding and self-assurance.

The utilization of video-assisted learning has been proven to enhance student engagement, offer a self-directed learning environment, and enable students to revisit intricate subject matter at their own pace. This is especially beneficial in clinical education, as students can appreciate viewing real-world situations or simulations that illustrate accurate medication administration skills. Video-assisted learning also addresses different learning styles, so it is an inclusive form of instruction that can reach auditory, visual, and kinesthetic learners.

In nursing education, medication errors are a particular problem, and having students properly understand medication administration is critical to enhancing patient safety and minimizing error in clinical practice. Thus, the use of technology, such as video-assisted micro-lectures, could provide an important addition to conventional teaching practices by enhancing both theoretical knowledge and practical competence concerning medication administration.

This study aims to evaluate how video-assisted micro-lectures enhance nursing students' understanding of key medication administration principles. The present study compared the performance of nursing students who were taught through video-assisted micro- lectures with that of students who were taught using conventional techniques utilising a quasi-experimental research design. The results of this research may be useful in understanding the potential advantages of incorporating technology-based teaching methods into nursing education, especially with respect to critical clinical skills such as drug administration.

The purpose of this study is to contribute to the ongoing advancement of nursing education by assessing how video-assisted learning affects student performance, engagement, and retention of information. This research will also examine how such technological interventions can aid

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in the development of nursing students as competent, confident, and capable healthcare professionals, ultimately enhancing patient care outcomes.

NEED FOR STUDY

The World Health Organisation (WHO) reports that pharmaceutical errors cause preventable harm and injuries in healthcare systems around the world. However, there are limited global statistics on medication delivery errors, which highlights the urgent need for better medication safety standards. Medication administration errors account for about 34% of all medication errors in 2006. The most common stage for errors is during administration among B. Sc (N) 1st year students.

In India, a study conducted in a tertiary care teaching hospital (2021) has reported a medication administration error at frequency of 15.24% the most common types of errors were omission errors (failure to administer or record administration) and improper dosage. In Telangana, a study conducted in Hyderabad (2019) highlighted that medication related errors were present in 30% of scrutinized cases. Common errors included untreated condition, administration of wrong dosage, failure of administering medication and prescription errors among the B. Sc (N) 1st year students.

2. LITREATURE REVIEW

Chen Yu & Ji-Tseng Fang (2022) carried out a study that was akin to an experiment. Purposive sampling was used to select four classes of sophomore nursing students from Technical University's nursing program in Taiwan, and they were split into treatment and control groups. The final tally was 195; 84 pupils were assigned to the control group and 114 to the experimental group; and 5 students did not finish the test. Prior to participating in the study, all students were asked to provide their informed consent. The experimental group in the study received an intervention in the form of a video-assisted micro lecture technique, whereas the control group was instructed solely through conventional means. The pre-, post-, and integrated exam results of the students were examined using analysis of variance (ANOVA). The control group averaged 2.53 points following the test, but the experimental group averaged 4.43. According to the findings, the experimental group outperformed the control group.

Jerusha Mukonene Mtuankure (2022) claimed that they were not sufficiently equipped to manage the drug administration procedure at the start of their clinical rotation in a cross- sectional study that aimed to investigate the clinical learning environment of nursing students. Additionally, research has indicated that nursing students report medication errors to patients at the highest rate of any medical error—up to 44.8%—and rank second overall. The study found that the traditional ten rights of medication administration should serve as the foundation for teaching student nurses safe medication practices.

Ravi Lal Devananda (2021) participated in a study that resembled an experiment, using a pre- and post-test design. The study involved 45 undergraduate nursing students in their first year. They answered self-administered questions about administering oral medications and demographic information. Following that, participants were divided into two segments {lecture demonstration group & video demonstration}. Two distinct instructional strategies were used to think through the oral drug delivery process. In the end, we looked at how well each group did on the post-test and found that there was a strong relationship between age and where the information came from. There was statistically significant difference in both video & lecture

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demonstration group. According to the student feedback obtained at the end of the study 67% of them preferred to have more video demonstration in their skills classes.

3. OBJECTIVES OF THE STUDY

1. To use a pre-test to gauge the experimental and control groups' B. Sc(N) 1st year students' understanding of important drug administration.

2. To ascertain if the experimental group's B. Sc(N) 1st year students responded well to a video-assisted micro lecture on important medication administration.

3. To determine the relationship between the experimental and control groups' post-test knowledge levels of important drug administration and the chosen demographic factors of B.Sc. (N) 1st year students.

4. METHODOLOGY

The present quasi-experimental study was undertaken to assess the impact of video-assisted micro-lecture on Key Medication Administration among nursing students at selected nursing colleges in Hyderabad, Telangana. The study had as its focus the assessment of knowledge and practical competence of nursing students prior and post-intervention. A systematic approach was followed to ascertain the reliability and validity of the results.

4.1. Research Design

This quasi-experimental study included a control group before and after the test. The design allowed for the comparison of results between the experimental group (who underwent the video-assisted micro-lecture) and the control group (who underwent conventional instruction).

4.2. Study area

The research was carried out in two chosen nursing colleges in Hyderabad, Telangana. The institutions were selected through convenience sampling and their willingness to engage in the research.

4.3. Population and Sample

The study population consisted of B.Sc first-year nursing students enrolled in the undergraduate nursing program. The total number of participants was 60, with 30 being assigned to the experimental group and 30 to the control group. This selection was made using a non-probability purposive sampling method.

4.4. Inclusion and Exclusion Criteria

Inclusion Criteria:

Students in their first year of nursing school, who were willing to participate in the research, and who were present for both the pre- and post-test assessments were all considered for inclusion in the study. The criteria allowed for the involvement of participants with a high level of academic understanding and accessibility for the full study process.

Exclusion Criteria:

The exclusion criteria were nursing students who had earlier experience with video-assisted

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lectures aimed at medication administration, since it might have led to biased responses and study results. To ensure consistency and precision of the data collected, students who missed any portion of the study—such as the pre-test, intervention, or post-test—were also kicked out.

4.5. HYPOTHESIS:

H1: There will be a significant difference between the two groups (experimental and control group) in pre-test and post test level of knowledge regarding key medication administration
H2: There will be a significant association between the post test level of knowledge scores of the experimental group along with their selected demographic variables (such as age, source of knowledge regarding key medication administration).

4.6. VARIABLES OF THE STUDY

Dependent variable: Video assisted Micro lecture regarding key medication administration.
Independent variable: knowledge of the nursing students regarding key medication administration

4.7. DEVELOPMENT OF THE TOOL

The tool is divided into two halves.

SECTION-A: Demographic variables of B. Sc(N)1st year students: -

It includes two demographic factors about B. Sc(N) 1st students, like age and where they learnt about key medication administration.

SECTION-B:

A self-structured questionnaire is utilised to assess and compare the B. Sc (N)1st year students' understanding of important drug administration during a video-assisted micro lecture. Thirty multiple-choice questions covering general information on important pharmaceutical administration, medicine administration rights and methods, and parenteral route of administration are included.

INTERPRETATION OF SCORE

The frequency and proportion of video-assisted micro lecture on important drug administration based on the pre- and post-test knowledge levels are interpreted as

SCORE	LEVEL OF KNOWLEDGE
0 -33 % 34-75% 76-100%	Inadequate knowledge Moderate knowledge Adequate knowledge

4.8. Description of the Intervention

The intervention was a video-assisted micro-lecture, which took about 15 minutes, on the Key

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medication administration which includes 10 medication administration rights, 3 checks, routes of medication administration and parenteral route of administration. The video was created with multimedia components such as visuals, voice-over narration, and animation for enhanced understanding.

4.9. Data Collection Procedure

Data collection spanned two weeks. On day one, there was a pre-test for the experimental and the control groups aimed at measuring initial knowledge and skill levels.
Thereafter:

- Experimental group was given the video-assisted micro-lecture.
- The control group simply had their usual routine classroom lecture about drug administration. After 7 days, a post-test was administered using the same tools to both groups.

VALIDITY

The tool's content validity was established by submitting it to medical surgical nursing specialists. Every expert concurred with the statement and added a few insightful recommendations.

RELIABILITY

Karl Pearson's method of calculating correlation coefficients was used to verify the tool's reliability. The tool's reliability was indicated by the computed "r" value of 0.9.

4.10. Data Analysis

The data obtained were coded and put into SPSS software. Descriptive statistics (percentage, standard deviation, and mean) were utilized in summarizing test scores and demographic data. To check the impact of the intervention, inferential statistics such as independent and paired t-tests were used, with p 0.05 serving as the significant level.

5. RESULT AND DISCUSSION

Table 1 lists nursing students' frequency and percentage distribution by age and knowledge source. On the matter of age, most students from both groups had age of 20 years & above and many students gained the source of knowledge from Academic syllabus.

Table 1: Demographic Characteristics of Nursing Students

Demographic Variable	Category	Experimental Group (n=30)	Control Group (n=30)
Age in years	17 years	04 (13.3%)	03 (10%)
	18 years	02(6.7%)	03 (10%)
	19 years	10 (33.3%)	10 (33.3%)

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	20 years & above	14 (46.7%)	14 (46.7%)
Source of Knowledge	Family members / friends/relatives	01 (3%)	03 (10%)
	Books and journals	07 (23%)	09 (30%)
	Television/newspaper	02 (7%)	01 (3%)
	Academic syllabus	20 (67%)	17 (57%)

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Figure 1: Demographic Profile

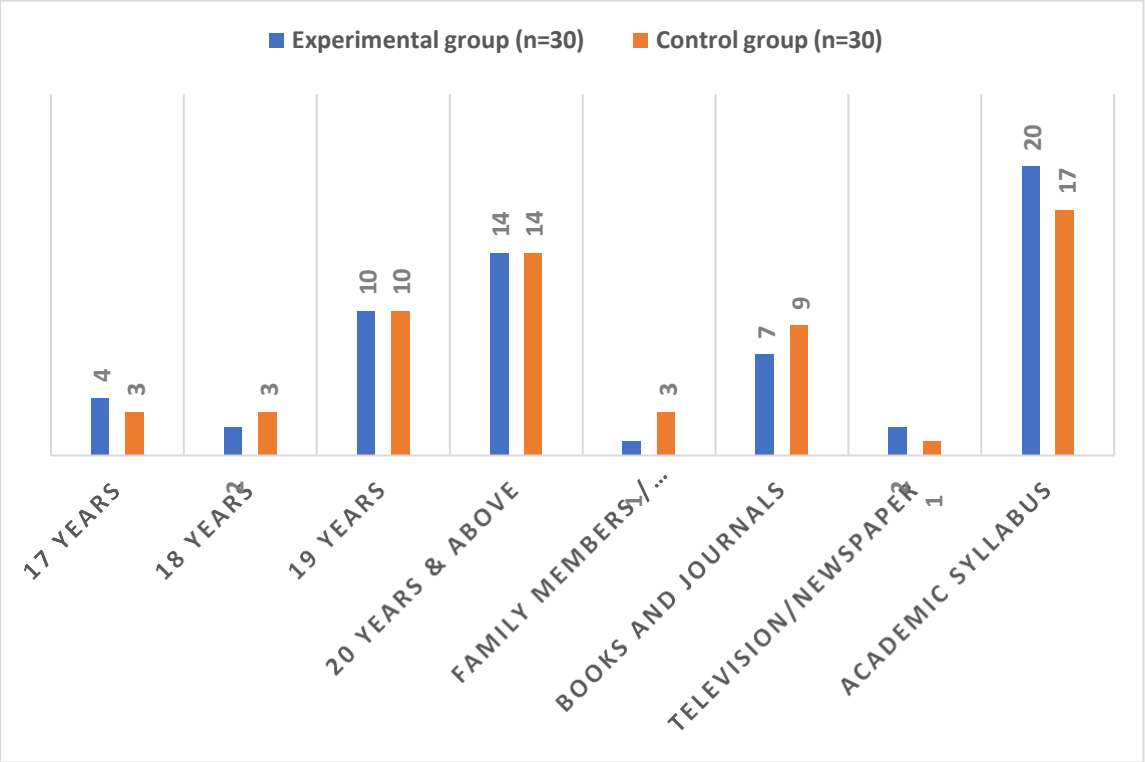

Table 2: Comparison of Pre-Test Knowledge Scores Between Groups

Group	Mean score	Standard Deviation	t-value	p- value
Experimental group	11.43	2.15		
Control group	11.10	2.31	0.55	0.583 (NS)

NS – Not Significant at $p > 0.05$

Table 2 shows that the experimental and control groups' pre-test knowledge scores did not differ statistically significantly. The control and experimental groups' initial baseline knowledge levels before to the intervention were similar, according to the not-significant p-value. It thus implies the two groups were equally comparable in terms of characteristics at the outset of the research and therefore represents a good base from which comparisons on post-test scores could continue, in this case, testing for the effectiveness of the intervention.

Table 3: Comparing Group Post-Test Knowledge Scores

Group	Mean score	Standard Deviation	t-value	p- value

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Experimental group	17.63	1.80		
Control group	12.30	2.00	10.23	<0.001***

p < 0.001 – Highly Significant

Table 3 demonstrates a statistically significant difference in post-test knowledge judgements and instructional tactics between the experimental and control groups. Compared to the control group, which got instruction through traditional methods, students in the experimental group—who saw the video-assisted micro-lecture—performed better on the post-test. This implies that the micro-lecture using video-assisted was more successful in improving the understanding and knowledge of the students concerning major concepts of medication administration. The outcomes advocate for the incorporation of new, technology driven teaching strategies in nursing education to enhance learning results.

Table 4: Pre-Test vs. Post-Test Scores in Experimental Group

Group	**Mean score**	**Standard Deviation**	**t-value**	**p- value**
Experimental group	11.43	2.15		
	17.63	1.80	13.65	<0.001***

p < 0.001 – Highly Significant

Table 4 demonstrates that the experimental group's knowledge scores before and after the video-assisted micro-lecture intervention differed statistically significantly. The post-test mean showed a noticeable improvement, since it was significantly higher than the pre-test mean. This notable increase in knowledge following the intervention provides compelling evidence that the video-assisted micro-lecture is successful in improving students' understanding of key medication administration principles. The findings favor the incorporation of such novel pedagogies into nursing curricula to promote knowledge retention and clinical performance.

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Discussion

The results of this quasi-experimental study illustrate the value of video-assisted micro-lectures in improving nursing students' knowledge on prime medication administration. The large post test score improvement on the experimental group is consistent with existing studies supporting that multimedia instructional tools can boost cognitive interaction and recall in clinical education.

The absence of a significant difference in pre-test scores indicates that both groups were equivalent prior to the intervention and hence the efficacy of the video-assisted lecture. The post-test improvement in scores indicates the intervention aided in filling the gap between theoretical and practical knowledge of medication safety, probably because of the visual and auditory reinforcement provided by the video.

The evidence supports the embedding of technology-enacted teaching and learning strategies in nursing education for enhanced learning effectiveness. The work also implies video-assisted instruction is most suited to difficult safety-critical knowledge like administering drugs.

6. CONCLUSION

The current quasi-experimental research was undertaken to test the efficacy of a video-aided micro-lecture on important medication administration among nursing students in chosen nursing colleges of Hyderabad, Telangana. Students' knowledge scores in the intervention group increased significantly compared to the control group, according to the results. This suggests that video-assisted micro lectures are an effective pedagogical tool in facilitating the knowledge of key clinical skills like administering medication. The research favors the use of technology-driven learning strategies in nursing instruction to enhance better understanding, memory, and implementation of theoretical knowledge in clinical practice. Thus, the use of video-assisted instruction is advised for enhancing nursing students' academic and clinical skills in medication safety and administration.

LIMITATIONS:

- B. Sc(N)1st year students at JMJ college of nursing, Sanathnagar, Hyderabad, Telangana.
- The study is limited to 60 samples only.

RECOMMENDATIONS:

The findings led to the following suggestions being made;

- A comparable study with a bigger sample size might be carried out to validate the findings
- A comparative study can be conducted between two colleges on key medication administration.

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