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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

This quasi-experimental research aimed to determine how well a video-assisted micro-lecture taught nursing students about critical drug administration concepts. 100 nursing students selected from certain nursing colleges in Hyderabad, Telangana, were randomly allocated into experimental and control groups. A pre-test on medication administration was administered, and then experimental group was given a video-assisted micro-lecture whereas control group was given traditional teaching. Post-test scores indicated a marked increase in the experimental group over the control group, with a p-value of <0.001. The research concluded that video-assisted micro-lectures are an effective teaching strategy for improving nursing students' knowledge regarding medication administration and that incorporating such technology-based strategies into nursing programs can enhance student engagement and clinical readiness.

Keywords: *Medication administration, Nursing education, Video-assisted learning, Micro-lecture, Quasi-experimental study, Nursing students, educational intervention.*

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

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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.

The purpose of this study is to assess the impact of video-assisted micro-lectures on improving nursing students' knowledge of major concepts of medication administration. Employing a quasi-experimental research design, the current study compares the performance of nursing students who learned through video-assisted micro-lectures with that of students taught through conventional means. 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.

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With this study, the research aims to add to the continuous development of nursing education by evaluating the effects of video-assisted learning on student performance, engagement, and knowledge retention. This research will also examine how such technological interventions can aid in the development of nursing students as competent, confident, and capable healthcare professionals, ultimately enhancing patient care outcomes.

2. LITERATURE REVIEW

Varanasi (2023) carried out a detailed study on the incorporation of personal technologies into instructional practices in low-income Indian schools. The study, carried out through ethnographic approaches and fieldwork, found that the integration of personal digital devices—like smartphones and laptops—into classrooms generated sociotechnical tensions for teachers. These tensions arose from incongruent expectations between institutional requirements and the limited technological infrastructure in resource-constrained environments. Teachers, already at their limits with paperwork and teaching, were frequently compelled to utilize their own resources in order to meet professional standards, fostering greater stress, exploitation, and burnout. Varanasi stressed the necessity for context-sensitive design models that are attuned to the socio-economic contexts of teachers and students, not imposing uniform digital solutions.

Batra et al. (2021) documented the effects of the COVID-19 pandemic on three vital sectors—education, health, and livelihoods—of India. This report, released by TESF India and the Indian Institute for Human Settlements, presented empirical evidence from various Indian states to demonstrate how the pandemic disproportionately hit marginalized and vulnerable groups, especially in rural and informal economies. Within the education system, school closures and inaccessibility to digital learning tools exacerbated pre-existing inequalities. The study also reported important health-related and economic impacts, such as labor losses, disrupted healthcare services, and food insecurity. The findings placed considerable emphasis on inclusive, equity-driven policies that respond to systemic vulnerabilities and promote long-term resilience.

Beukema (2023) provided a worldwide outlook by documenting the development of online learning and micro credentials in 30 years. In Second Class No Longer, his book, he maintained that the emergence of non-traditional forms of learning—like MOOCs, certificate courses, and online degrees—marked a revolution in higher education and professional education. These modes of learning offered flexible, inclusive, and affordable entry points for learners who had

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previously been barred from top-notch academic schools. Beukema argued that these innovations had a democratizing effect, particularly for adult learners, working professionals, and students in the Global South, where access to traditional higher education continued to be restricted. His work demonstrated how technology-enabled learning transformed both academic institutions and labor markets throughout the world.

Ghosh and Webster (2021) edited book on nanobiotechnology, discussed the application of microbes and plants for the green synthesis of nanoparticles. Although based in biochemistry and nanoscience, the book also highlighted the significance of such innovations for sustainable development, environmental clean-up, and public health. The book illustrated how research in biotechnology was becoming more dependent on cross-sectoral approaches and how education systems need to change to integrate emerging disciplines into curricula. Their work also provided a model of how scientific knowledge production is shaped by global issues, including pollution, climate change, and health emergencies.

Sinha (2024) addressed transformation from a governance and policy angle in his work The Last Mile: Turning Public Policy Upside Down. He believed that the conventional top-down style of policymaking had repeatedly neglected the interests of the most vulnerable groups. Based on case studies and administrative records, Sinha suggested a bottom-up system, where policies were made with people's direct involvement who were to be served by them. He underscored the manner in which last-mile implementation, usually the most difficult but pivotal phase, demanded adaptive, locally rooted strategies that took into account cultural, geographic, and economic differences. Sinha's efforts disrupted traditional models of governance and aligned with participatory models that emphasize community agency and contextual sensitivity.

Kamakoti, Venkat Raghavan, and Krishnan Narayanan (2023) examined the inspirational and transformational potential of leadership communication under the auspices of the "Mann Ki Baat" initiative. This radio broadcast, hosted by the Indian Prime Minister, was a case study for how sustained, compassionate, and culturally sensitive messaging could promote national cohesion, citizen participation, and social change. The authors asserted that such communication platforms held a pivotal role in shaping public debate, nudging behavioral change, and generating collective action. Their work highlighted the role of non-conventional media in bridging policy and people, especially in a multilingual and plural society like India.

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3. METHODS

The present quasi-experimental study was undertaken to assess the impact of video-assisted micro-lectures on major medication administration among nursing students of chosen 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.

3.1.Research Design

There was a pre- and post-test control group used in this quasi-experimental study. 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.

3.2.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.

3.3.Population and Sample

The study population consisted of second or third-year nursing students enrolled in the undergraduate nursing program. The participants were 100 in number, selected through purposive sampling, 30 placed in the experimental group and 50 in the control group.

3.4.Inclusion and Exclusion Criteria

Inclusion Criteria:

Students in their second or third year of nursing school, who were able to provide written agreement 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.

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Exclusion Criteria:

The exclusion criteria were nursing students who had earlier experience with video-assisted lectures aimed at medication administration, since it might have led to biased responses and study results. Students absent during any part of the study such as the pre-test, intervention, or post-test were also excluded from the study to enable uniformity and accuracy of data gathered.

3.5.Development of the Tool

A standard guideline-based knowledge questionnaire and competency checklist were constructed. Standard guidelines for safe administration of medications were followed in their construction. Content validity was assured with expert review from clinical pharmacists and nursing educators. The pilot test on 10 students to check reliability and feasibility was conducted, and modifications were appropriately implemented.

3.6.Description of the Intervention

The intervention was a video-supported micro-lecture, which took about 15 minutes, on the five medication administration rights, dosage calculation, safety measures, and prevention of errors. The video was created with multimedia components such as visuals, voice-over narration, and animation for enhanced understanding.

3.7.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.

3.8.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.

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Inferential statistics, for instance, paired t-tests and independent t-tests, were employed in checking the intervention impact, using $p < 0.05$ as the level of significance.

4. RESULT AND DISCUSSION

Table 1 summarises demographic backgrounds of experimental and control nursing students, which demonstrates similar distributions over important variables. On the matter of age, most students from both groups had ages between 21 and 22 years old, with percentages in both groups being fairly evenly distributed.

Table 1: Demographic Characteristics of Nursing Students

Demographic Variable	**Category**	**Experimental Group (n = 50)**	**Control Group (n = 50)**
Age (in years)	18–20	15 (34%)	16 (36 %)
	21–22	23 (60%)	25 (56%)
	23 and above	12 (6%)	9 (8 %)
Gender	Male	24 (20%)	15 (17%)
	Female	26 (80%)	35 (83%)
Previous exposure to video-assisted learning	Yes	20 (14%)	18 (16 %)
	No	30 (86%)	32 (84%)

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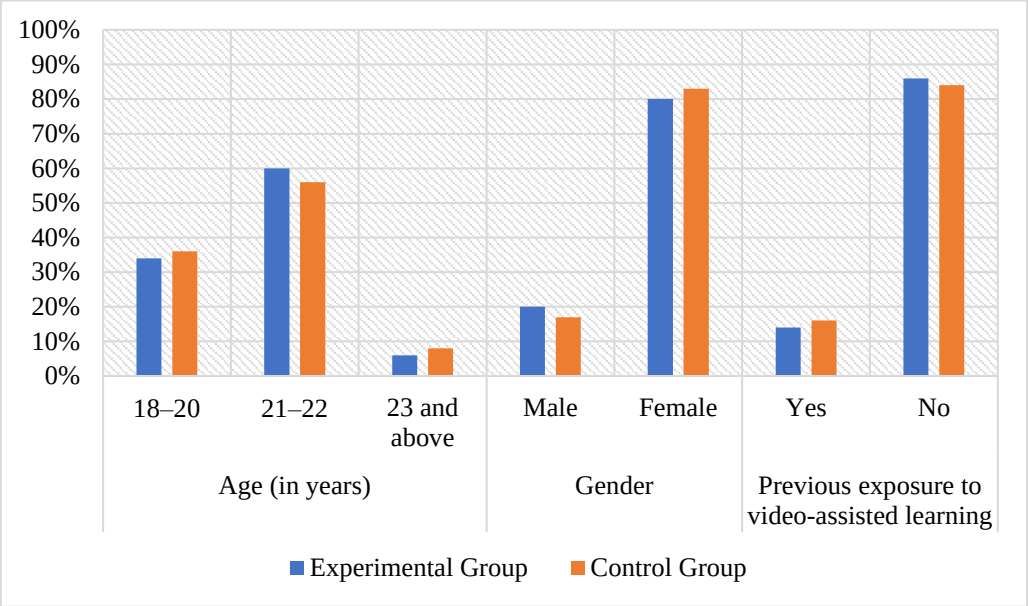

Figure 1: Demographic Profile

The gender breakdown was also higher as a percentage of female students among both groups, with females having the majority of both the control and experimental groups. As far as previous experience with video-aided learning, both groups had a somewhat higher percentage reporting no prior use of such types of learning. These results show that the two groups were demographically identical, which is important to help ensure that differences in post-test outcomes can be explained by the intervention and not by demographics.

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

Group	Mean Score	Standard Deviation (SD)	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 $p > 0.05$

In Table 2, we can see that there was no statistically significant difference in the pre-test knowledge scores of the experimental and control groups. The not-significant p-value indicates that the start levels of baseline knowledge before the intervention were comparable in the control and experimental groups. 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

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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 (SD)	t-value	p-value
Experimental Group	17.63	1.80		
Control Group	12.30	2.00	10.23	<0.001 ***

p < 0.001 – Highly Significant

Table 3 reveals the difference in post-test scores of knowledges between the experimental and control groups and portrays a statistically significant gap in the quality of teaching approaches adopted. Experimental group students who watched the video-assisted micro-lecture performed better in the post-test than the control group students who were taught through traditional methods. 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

Test Phase	Mean Score	Standard Deviation (SD)	t-value	p-value
Pre-Test	11.43	2.15		
Post-Test	17.63	1.80	13.65	<0.001 ***

p < 0.001 – Highly Significant

The results in Table 4 reveal that there is a statistically significant difference in the pre-test and post-test scores in the experimental group's knowledge after the video-assisted micro-lecture intervention. The post-test mean was much greater than the pre-test mean, which shows a remarkable improvement. This significant improvement in knowledge after the intervention strongly proves that the video-assisted micro-lecture is effective in enhancing the students' comprehension of major concepts in medication administration. The findings favor the

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incorporation of such novel pedagogies into nursing curricula to promote knowledge retention and clinical performance.

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.

5. 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. The results indicated statistically significant improvement in the knowledge score of students within the experimental group after the intervention compared to that of the control group. 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.

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