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A Quasi-Experimental Study to Assess the Effectiveness of Simulation workshop on Emergency Case Management for Nurses Working in Selected Govt Hospitals, Dubai, UAE

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Abstract

Background: The effectiveness of simulation workshops in enhancing nursing knowledge and skills has gained attention in recent years. This study evaluates the impact of a simulation workshop on knowledge levels among nursing staff across various departments, considering the influence of demographic factors such as age, experience, education, and previous training. Simulation-based training has emerged as a promising educational tool to bridge this gap, offering a safe and controlled environment for nurses to develop and refine their skills. (Smith & Brown, (2023))

Objective: This study aims to assess the effectiveness of a simulation workshop on improving emergency case management skills among nurses in LWCH, Dubai, UAE. The study also aims to compare the difference between pre and posttest levels of knowledge.

Methods: A Quasi - experimental design was used, involving 147 nurses from LWCH, Dubai, UAE. Participants underwent a simulation workshop focused on managing emergency cases. Data were collected by using standardized online knowledge assessment questionnaire.

Results: Across all departments, the simulation workshop led to substantial improvements in knowledge levels from pretest to posttest. The Delivery Suite (DS) saw a dramatic shift from 100% poor knowledge in the pretest to a considerable percentage achieving good to excellent knowledge in the posttest. The Emergency Department (ED) and Intensive Care Unit (ICU) also exhibited significant improvements, with staff moving from poor to very good and excellent knowledge. Although the percentage of staff achieving excellent scores was lower in the ICU and other departments, overall knowledge scores improved notably.

The paired t-test revealed a highly significant difference between pretest and posttest knowledge scores ($p = 0.0001$), indicating a statistically significant improvement in knowledge following the simulation workshop. The null hypothesis, which posited no significant difference in knowledge scores, was rejected in favor of the alternate hypothesis, confirming the positive impact of the simulation workshop.

Furthermore, demographic variables such as age, years of experience, educational background, attendance at mock drills, and type of life support training were found to significantly influence knowledge scores post-simulation. The null hypothesis regarding no significant association between these variables and



knowledge scores was rejected, affirming that these factors play a crucial role in the effectiveness of simulation-based education.

Conclusion: The simulation workshop significantly enhanced the knowledge levels of nursing staff across different departments. The findings suggest that simulation-based education, combined with consideration of demographic factors, is an effective approach to improving the knowledge and skills of nursing professionals.

Keywords: simulation workshop, emergency case management, nursing education, clinical skills, decision-making, patient safety

Introduction:

Nurses are generally the first point of contact in emergencies, making emergency Case Management a key element of their role. Such scenarios may include acute asthma attacks, myocardial infarctions, anaphylactic shock, hypoglycemia coma, convulsions, head traumas, trauma, and others. To effectively save lives, nurses have to possess current knowledge, abilities to communicate, and competence to address these emergencies. They must also be skilled in using relevant equipment, administering emergency drugs, and organizing proper practices for optimal care (Ramanayake, R. P., Ranasingha, S., & Lakmini, S. (2014)²⁵.

The diversity and infrequency of these emergencies can make it difficult for nurses to provide the necessary care. Managing emergencies is one of the most difficult aspects of nursing, as it requires the capacity to handle ambiguity and constantly changing work environments. As a consequence, nurses must be proficient in procedures for emergencies. (Ramanayake, R. P., Ranasingha, S., & Lakmini, S. (2014).²⁵

Emergency nursing is not for the faint of heart; it demands anticipating the worst-case scenario and being ready for anything. Every day is unique, and nurses must be prepared to handle the unexpected while adhering to standard procedures. Anticipation is an essential ability in nursing for emergencies. Nurse educators are facing challenges to provide meaningful and effective learning opportunities for new and experienced nurses. Simulation as a teaching and learning tool is increasingly employed in academic and professional contexts and provides unique educational experiences. It helps assess and develop clinical competency, promote teamwork, and improve care processes (Beth et al., 2021).⁴ Simulation training provides nurses with a realistic, risk-free environment to practice clinical skills, make critical decisions, and engage in problem-solving activities. The effectiveness of these workshops is often measured by improvements in clinical skills, decision-making, communication, and overall preparedness for real-world scenarios.

Simulation-based learning (SBL) has been shown to increase medical knowledge, procedural competency, comfort with tasks, inter-professional communication, teamwork, and teaching skills. (Doe and Smith, 2020).¹¹

The main aim of this study is to assess the impact of a simulation workshop on the emergency Case Management skills of nurses working in a specific government hospital. Nurses who participate in scenario-based emergency education gain the knowledge and confidence to handle real-life situations effectively and implement advanced interventions to save patients' lives.

Need for the Study:



Simulation-based education has emerged as a critical tool in nursing education, offering a realistic and safe environment for nurses to develop and refine their clinical skills. The need for this study is underscored by several factors:

1. Bridging the Theory-Practice Gap: Nurses often face challenges in translating theoretical knowledge into practical skills, particularly in high-pressure clinical settings. Traditional didactic teaching methods may not fully equip nurses with the hands-on experience necessary to manage complex and dynamic patient care situations. Simulation workshops provide an immersive learning experience that enables nurses to apply their knowledge in simulated real-life scenarios, bridging the gap between theory and practice.

2. Enhancing Patient Safety and Quality of Care: Patient safety is a paramount concern in healthcare, and nursing errors can lead to adverse patient outcomes. Simulation training allows nurses to practice and refine their skills without risking patient harm. By participating in simulation workshops, nurses can enhance their clinical judgment, decision-making, and critical thinking skills, all of which contribute to reducing errors and improving the overall quality of care.

3. Adapting to Evolving Healthcare Needs: The healthcare environment is rapidly evolving, with new technologies, treatments, and protocols being introduced regularly. Nurses must continuously update their skills and knowledge to keep pace with these changes. Simulation workshops offer a flexible and effective means of ongoing professional development, allowing nurses to stay current with the latest best practices in patient care.

4. Addressing Workforce Shortages and High Turnover: Nursing shortages and high turnover rates are persistent issues in many healthcare systems. Ensuring that nurses are well-prepared and confident in their abilities can help improve job satisfaction and retention. Simulation workshops provide nurses with the opportunity to build competence and confidence in a controlled environment, which may lead to greater job satisfaction and reduced turnover.

5. Supporting Interprofessional Collaboration: Healthcare delivery is increasingly reliant on teamwork and collaboration among different healthcare professionals. Simulation workshops often incorporate interprofessional education, fostering collaboration and communication among nurses and other healthcare team members. This collaborative approach can enhance the effectiveness of the entire healthcare team, leading to better patient outcomes.

6. Responding to the COVID-19 Pandemic and Future Health Crises: The COVID-19 pandemic has highlighted the need for rapid and effective training methods to prepare healthcare workers for emergency situations. Simulation workshops have proven to be an invaluable tool in training nurses to manage COVID-19 patients and other emerging health crises. The ongoing need for preparedness in the face of future pandemics or other healthcare emergencies further underscores the importance of simulation-based education.

Review of Literature:

To prepare nurses for clinical practice, educators must create learning environments that encourage analytical thinking and reflection, according to the National League for Nursing (2003)²¹ and the American Association of Colleges of Nursing (2009).² It is also advised by the National League for Nursing (2005)²³ that nursing educators take the initiative in advocating cutting-edge teaching techniques. One such technique is the application of high-fidelity simulation, which is consistent with fundamental learning concepts that facilitate adult learning (Nagle et al., 2021).²²



The literature demonstrates how high-fidelity scenario-based simulation training improves hospital staff members' performance and clinical practice results. This training has helped nurses and other healthcare professionals become more adept at crisis management and teamwork. To maximize and improve learning results, nurse educators should think about implementing high-fidelity simulation as a teaching technique (Issenberg, McGaghie, Petrusa, Gordon, & Scalese, 2018).¹⁵

Kim et al. (2020) examined how simulation-based training influences nurses' confidence and competency in emergency situations. The research showed that simulation workshops substantially increased nurses' self-efficacy and preparedness, which are crucial for managing high-stress situations.¹⁷

Lee et al. (2020) conducted a study on the role of simulation in improving teamwork and communication among nursing staff. The results highlighted that simulation workshops effectively foster better interprofessional collaboration and enhance communication skills, which are essential for patient safety and quality care (Lee et al., 2020).¹⁸

A study by Cline et al. (2021)⁹ evaluated the impact of high-fidelity simulation on nurses' clinical skills in critical care settings. The study found significant improvements in both technical skills and clinical judgment, highlighting that simulation workshops are effective in preparing nurses for real-life scenarios.⁽³⁾

Smith and Johnson (2021)³⁰ investigated the use of learning analytics in simulation training. They found that incorporating data analytics into simulations can provide valuable insights into participants' performance, identifying areas for improvement and tailoring training to individual needs.

Brown and Adams (2021)⁶ explored the impact of simulation on stress management and resilience among nurses. Their study found that simulation training helps nurses develop coping strategies for managing stress and maintaining performance under pressure.

Anderson et al. (2021)³ discussed the barriers related to resource constraints in simulation training, including high costs and limited availability of advanced simulation equipment. They emphasized the need for strategic planning and resource allocation to overcome these challenges

A study on cardiopulmonary resuscitation (CPR) training for nursing students evaluated the effectiveness of a simulation-based CPR training program. The results showed significant improvements in the students' knowledge, practices, satisfaction, and self-confidence. The qualitative data revealed that the students perceived an increase in their levels of knowledge and skills. Post-simulation training, satisfaction, and self-confidence scores were notably high and self-confidence scores were notably high (Ayla Demirtas et al., 2021).¹⁰

Recent literature has explored how technological advancements are enhancing simulation training. Virtual Reality (VR) and Augmented Reality (AR): Wilson et al. (2022)³² explored the integration of VR and AR into simulation training. Their study demonstrated that these technologies provide immersive learning experiences, allowing nurses to practice complex procedures and scenarios in a more interactive and realistic manner.

Miller et al. (2022) highlighted the challenges in standardizing simulation scenarios and ensuring consistent quality across different training programs. Their study stressed the importance of developing standardized protocols and evaluation metrics to maintain the effectiveness and reliability of simulation-based education.

¹⁹

Recent literature suggests several areas for future research and development in simulation training. Nguyen et al. (2023)²³ called for studies to assess the long-term impact of simulation training on clinical



performance and patient outcomes. Understanding how simulation training translates into real-world practice is crucial for evaluating its overall effectiveness.

Garcia and Evans (2023) explored the integration of simulation with other training methods, such as online modules and hands-on workshops. Their study suggested that a blended approach could enhance learning outcomes and provide a more comprehensive training experience.¹³

Statement of the problem:

A Quasi-Experimental Study to Assess the Effectiveness of Simulation workshop on Emergency Case Management for nurses Working in Selected Govt Hospitals.

Objectives:

- 1A. To assess the Effectiveness of Simulation workshop on Emergency Case Management for nurses Working in Selected Gov’t Hospital.
- 1B. To compare the Pre-test and post test knowledge scores of Nursing staff Simulation workshop on Emergency Case Management for nurses Working in Selected Gov’t Hospital.
- 2. To assess the association between selected demographic variables with the pre and posttest knowledge of Nurses on Emergency case management.

Hypothesis:

H0: There is no significant difference in the level of knowledge between the pre-test and post-test among nurses on emergency Case Management.

H1: There is a significant difference in the level of knowledge between the pre-test and post-test among nurse’s emergency Case Management.

H0: There is no significant association between selected demographic variables and the level of knowledge among Nurses on emergency Case Management.

H2: There is a significant association between selected demographic variables and the level of knowledge scores among nurses on emergency Case Management.

Operational definitions:

Emergency Case Management: Responding to clinically deteriorating or respiratory cardio arrest cases and managing the case effectively to save the patient.

Simulation workshop on Emergency Case Management (SEM): It is a hands-on educational program that teaches the skills needed to deal with clinically deteriorating or respiratory cardio arrest cases effectively.

Study group: Nurses who attend Simulation workshop on Emergency case management in selected government hospital.

Variables under study

Independent variable: Emergency care management workshop is the independent variables.

Dependent variable: It is the effect of the action of the independent variable and cannot exist by itself. In this study Nurses knowledge score, outcomes are the dependent variable.

Research Methodology

Research design: Quasi experimental quantitative Pre & Posttest research design will be used in this research study.

The research design can be represented as:

Group	Pretest	Intervention	Posttest
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Experimental	O ₁	X	O ₂
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X –Simulation workshop on Emergency case management

O₁ – Pre-test before the Simulation workshop on Emergency case management

O₂ – Post-test Simulation workshop on Emergency case management

Population: The population in this study consists of all the employees of Latifa Women and Children hospital, Dubai.

Sampling technique: Sampling is the process of selecting a portion of the population to represent the entire population. Non-probability Purposive sampling technique will be used to select the sample.

Sample size: 147 samples collected online - questionnaire for the study participants.

Sample Criteria

Inclusion Criteria

- Staff who attends simulation workshop
- Are willing to participate in the study.

Exclusion Criteria

- Have attended simulation workshop previously.
- Staff Nurses who are not available during the study period

Setting and participants:

The study conducted in one of the largest maternity hospitals in Dubai- Latifa women and children's hospital.

The hospital has around 700 nurses working in various maternity units.

The hospital has yearly census of 5000-6000 deliveries and all normal vaginal deliveries conducted by obstetric nurses or midwives.

Tool:

Part: A - Demographic variables.

Part B: Knowledge Questionnaire on emergency Case Management

Validity of the tool:

To determine the content validity of the data collection tool, the prepared instrument along with the problem statement, objectives, operational definition, and blueprint for validation was submitted to 3-5 experts. The experts were requested to give their opinion on the appropriateness and relevance of standardized tools. The modifications have been made according to the expert opinion.

Ethical Considerations:

The ethical permission was obtained from the Institutional Ethical Committee. The study was conducted after obtaining written informed consent from all the participants. Assurance was given to all the participants that confidentiality would be maintained throughout the study.

Pilot study:

One-tenth of the population tested with the designed approved tool to know the feasibility of conducting the study, based on the value modification was accepted. A pilot study was conducted among 10 samples who met the inclusion criteria.

Data Collection:

The participants were informed about the aim and significance of the study beforehand, and staff attending the simulation workshop received pretests and posttests to ascertain the knowledge and perception



questionnaire used to obtain the answers. The subjects were free to withdraw their consent at any point, and the researchers maintained their objectivity when gathering data by distributing the questionnaire to the participants via Microsoft form.

Data Analysis:

Both descriptive and inferential statistics were used to analyze the data.

Part: A

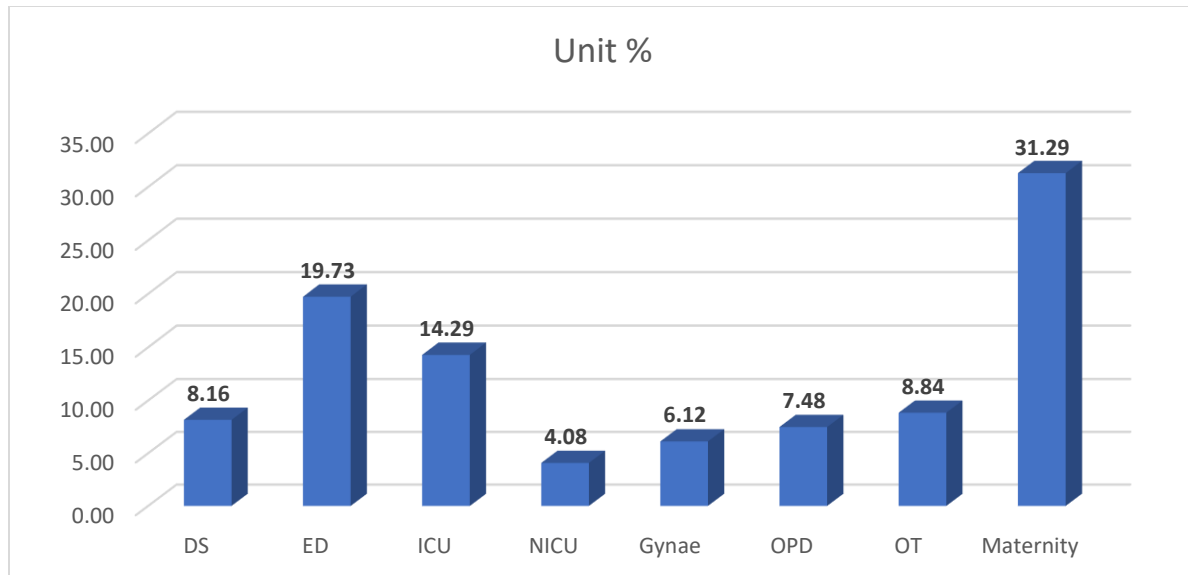
Table 1 -Frequency and Percentage distribution of Bio demographic variables of the Participants.

S. N	Bio Demographic Variables	FREQUENCY	n (147)	%	Mean	SD
1	Age	25 – 30 yrs	20	14	21	11.7
		31 – 35 yrs	33	23		
		36 – 40 yrs	20	14		
		41 – 45 yrs	37	25		
		46-50 yrs	20	14		
		51 – 55 yrs	16	11		
		> 56 yrs	1	1		
2	Years of nursing experience	< 5 yrs	16	11	24.5	11.6
		6 -10 yrs	35	24		
		11 – 15 yrs	23	16		
		16 -20 yrs	41	28		
		21 – 25 yrs	22	15		
		> 25 yrs	10	7		
3	Education Status	Diploma	12	8	49	68.46167
		Bachelor	128	87		
		Master	7	5		
4	Attended mock drill previously	yes	88	60	73.5	20.5061
		no	59	40		



5.	Mode of Life support course training attended	BLS	56	38	73.5	24.74874
		Advance	91	62		
6.	Unit or Area of work	DS	12	8	18.375	13.3517
		ED	29	20		
		ICU	21	15		
		NICU	6	5		
		Gynae	9	6		
		OPD	11	8		
		OT	13	8.84		
		Maternity	46	31.29		

From the above table, 25% of the staff were aged 41-45 years, 23% were aged 31-35 years, 13% were aged 25-30 years, 14% were aged 36-40 years, 14% were aged 46-50 years, and 11% were aged 51-55 years with a Mean score of 21 and SD of 11.7. Majority (28%) had 16-20 years of nursing experience. With regard to experience, 24% had 6–10 years, 16% had 11–15 years, 11% had less than 5 years, and 7% had more than 25 years with the mean and SD of 24.5 ± 11.6 . 87% of the individuals had bachelor's degrees, 8% had diplomas, and 5% had master's degrees. The mean and SD value is 49 ± 68.4 . 60% of participants in hospital simulated drills had attended, compared to 40% who had not, according to the above table with Mean and SD of 73.5 ± 20.5 . It is obvious that 62% had attended an advanced course prior to the emergency workshop, while 38% had attended only basic advance course with Mean and SD of 73.5 ± 24.5 . The participants were from various departments as follows: 20% were from the Emergency Department (ED), 15% from the Intensive Care Unit (ICU), 5% from the Neonatal Intensive Care Unit (NICU), 8% from Delivery Suite (DS), 8% from Outpatient Department (OPD), and 6% from the Gynaecology unit. The Mean and SD for this variable shows 18.37 ± 13.35 .



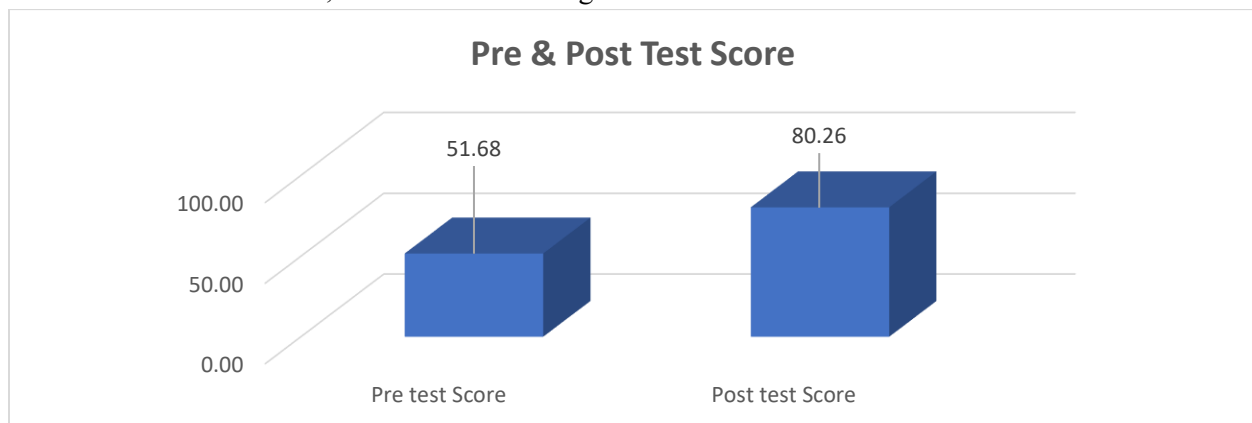
Part B.

Objective-1A: To assess the Effectiveness of Simulation workshop on Emergency Case Management for nurses Working in Selected Gov't Hospital.

Table: 2 - Frequency Distribution of Pre-score & Post Score n=147

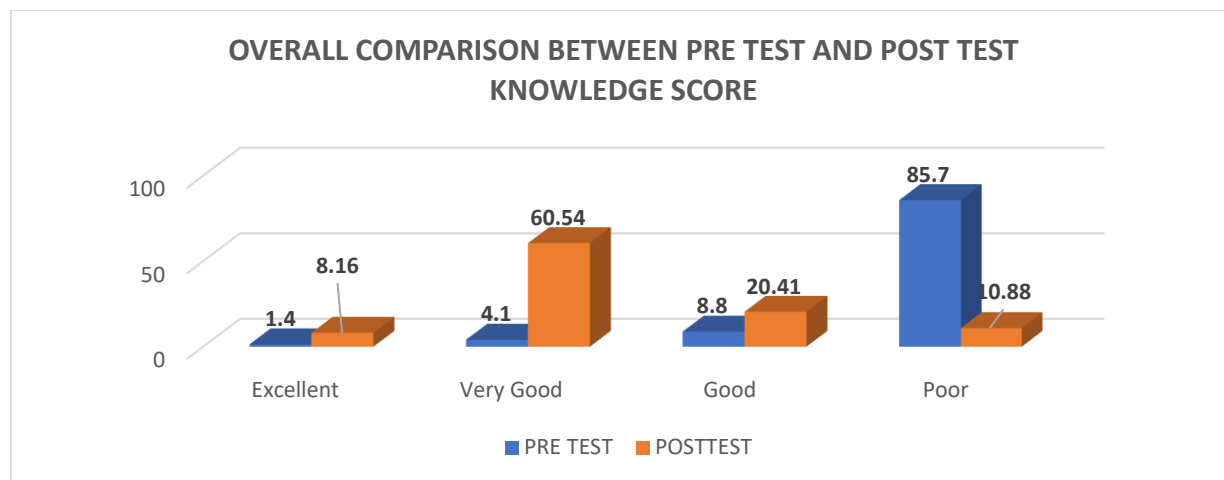
Criteria	Pre-test	%	n	Post-test	%	Average
90 – 100 % =Excellent	2	1.4	51.68%	12	8.16	80.26%
80-90% = Very Good	6	4.1		89	60.54	
70-80% = Good	13	8.8		30	20.41	
<70% = Poor	126	85.7		16	10.88	

The preceding table makes it evident that, before to the simulation workshop, over 85% of the staff had inadequate knowledge, and that, following the exam, over 60% of the staff received a very good score, 8% received an excellent score, and 20% received a good score.





From above there was a notable overall increase of 80.26% in the posttest scores, rising from a pretest average of 51.68% score.



The above tables show that 60.05% achieved a very good score, up from 4.1% in the pretest whereas 8.16% scored excellently, compared to 1.4% in the pretest also 20.41% obtained a good score, compared to 8.8% in the pretest.

Table: 3 - Frequency and Percentage Distribution of Pre-& Post Test Score of staff working in different units

Unit	Poor (1)		Good (2)		Very Good (3)		Excellent (4)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
DS	100	0.00	0	33.33	0	58.33	0.00	8.33
ED	72.41	6.90	23.81	13.79	14.29	79.31	0.00	0.00
ICU	61.90	14.29	28.57	14.29	4.76	61.90	4.76	9.52
Other units	94.12	12.94	2.35	22.35	2.35	54.12	1.18	10.59

Pretest scores for DS staff indicated that 100% of them had poor knowledge; posttest results showed that 33% of DS staff had good knowledge, 54% had very good knowledge, and 8% had excellent knowledge. Pretest scores for ED staff indicated that 72% had poor knowledge; posttest results showed that 79% had very good knowledge and 14% had excellent knowledge; ICU staff pretest results showed that 61% had poor knowledge; posttest results showed that 62% had very good knowledge and 5% had excellent knowledge. Pretest results for other departments.



Objective-1B: To compare the pretest and posttest level of knowledge on Simulation workshop on Emergency Case Management for nurses Working in Selected Gov't Hospital.

TABLE 5: Comparisons of Pretest and Post test level of knowledge scores by using Paired t test:

Level of Knowledge scores	Mean	SD	t	DF	SE	p-vale
Pre-test	48.95	13.73	13.1	54	2.201	0.0001***
Post Test	78.09	9.58				

The above table presents a comparison of knowledge scores before and after Simulation education using a paired t-test. The paired t-test reveals a highly significant difference between the pretest and posttest knowledge scores, as indicated by the extremely low p-value (0.0001). The t-value of 13.1 and the large mean difference between pretest (48.95) and posttest (78.09) suggest that the intervention or learning experience had a substantial positive effect on knowledge improvement. The standard deviations indicate variability in scores, with the posttest scores being less dispersed compared to the pretest scores. **So the Null hypothesis is rejected and Alternate hypothesis is accepted.**

Objective-2: Association between selected Demographical variables with the level of Knowledge scores of Nursing Staff

Association between selected Demographical variables with the level of Knowledge scores of Nursing Staff Chi square test was used.

The intervention led to a statistically significant improvement in knowledge, as evidenced by a p-value of 0.001.

Table: 6: To assess the association between demographic variables and knowledge scores of nursing staff on simulation workshop on Emergency Case Management

Demographic variable	Value	Df	p-value	Interpretation
Units	174.22	7	0.09	Not Significant
Age	12.6	5	0.02**	significant
Years of experience	6.1	5	0.01**	significant
Education	16.6	2	0.02**	significant
Mock drill attended	14.1	1	0.02**	significant
Type of life support course trained	2.18	1	0.01**	significant

No significant difference (NS) $p > 0.05$

* Significant difference $p < 0.05$

The table outlines the statistical association between various demographic variables and the knowledge scores of nursing staff who participated in a simulation workshop on Emergency Case Management. The associations are assessed using chi-square tests, with degrees of freedom (DF) and p-values provided for each variable. No significant association observed between the Area of work with knowledge scores ($p > 0.05$). There is a significant association with knowledge scores ($p < 0.05$), indicating that age may impact knowledge levels. And also Significant association ($p < 0.05$), suggesting that more years of experience are



related to better knowledge scores. Significant association ($p < 0.05$), highlighting that higher education levels are associated with improved knowledge scores. Significant association ($p < 0.05$), showing that attendance at mock drills is related to higher knowledge scores. Significant association ($p < 0.05$), indicating that different types of life support training influence knowledge scores. **So the Null Hypothesis is rejected and alternate Hypothesis is accepted.**

Limitations:

Control Over Life Support Course Information: The investigator had no control over the life support course information received by subjects from other sources. This external information could have influenced the outcome variables and was beyond the study's scope, potentially impacting the validity of the results.

Data Collection Method: Data were collected via questionnaires completed by subjects, with no direct observation of practices in hospital settings. This reliance on self-reported data may introduce bias and does not capture real-time performance.

Constraints in Long-Term Follow-Up: The study faced limitations in conducting long-term follow-ups due to time constraints. This limitation may affect the ability to assess the sustained impact of the simulation workshop over a longer period.

Recommendations:

Conduct Regional Studies: To validate the findings across different settings, it is recommended to conduct similar studies in other regions of the UAE. This would help determine if the observed effects are consistent across diverse environments.

Investigate Real-World Performance Challenges: Future research should explore difficulties encountered in hospital environments related to real-life performance. Understanding these challenges can provide deeper insights into the practical applications of simulation training.

Comparative Study on Life Support Courses: A comparative study between staff who have undergone advanced life support courses and those who have not should be conducted. This comparison would help assess the specific impact of advanced training on knowledge and performance.

Larger Sample Sizes: To enhance the generalizability of the results, it is recommended to replicate the study with larger sample sizes. This would provide more robust data and increase the applicability of the findings to a broader population.

Discussion

The findings of this study proved the effectiveness of simulation workshops in significantly enhancing the knowledge and preparedness of nursing staff in emergency case management. The results are consistent with recent literature, which has increasingly recognized simulation-based education as a critical tool in nursing training, particularly in high-stakes areas such as emergency care. For instance, a systematic review by **Cant and Cooper (2020)**⁷ highlighted the positive impact of simulation-based learning on clinical competence and confidence among nursing students and professionals. The review emphasized that simulation not only improves theoretical knowledge but also enhances the practical application of skills in real-world scenarios, which is critical in emergency case management.

Moreover, a study by **Shin et al. (2021)**²⁸ demonstrated that simulation training significantly improved the critical thinking abilities and decision-making skills of nurses in emergency departments. The findings



revealed that nurses who underwent simulation training were better equipped to manage acute patient situations, reflecting similar improvements in knowledge and preparedness as seen in the current study.

Similarly, **Al-Ghareeb and Cooper (2020)**¹ found that high-fidelity simulation exercises were particularly effective in preparing nurses for managing obstetric emergencies. This is particularly relevant given the notable improvements observed in the Delivery Suite (DS) within this study, where knowledge levels transitioned from predominantly poor to significantly better post-intervention.⁽¹⁾

The association between demographic variables such as age, years of experience, educational background, and knowledge improvement also aligns with findings from recent literature. A study by **Choi et al. (2020)**⁸ revealed that more experienced nurses and those with advanced educational backgrounds tended to benefit more from simulation-based training. These nurses were able to integrate their prior knowledge with the hands-on experience provided by simulations, leading to greater improvements in their ability to manage emergency cases.

Additionally, participation in mock drills and advanced life support training has been consistently linked to better performance in simulation exercises. A study by **Padilha et al. (2019)**²⁵ highlighted that nurses with prior exposure to life support training showed significantly better outcomes in simulated emergency scenarios, supporting the findings of this study.

The improvements observed across various departments, such as the DS, ED, and ICU, demonstrate the broad applicability of simulation workshops. This is corroborated by a study by **Kim and Park (2020)**¹⁷ which reported that simulation training led to substantial improvements in knowledge and skill retention across different nursing specialties. The study emphasized the importance of tailoring simulation scenarios to the specific needs of each department, a practice that likely contributed to the success observed in the current study.

The positive impact of simulation workshops on emergency preparedness and knowledge retention highlights the need for continuous education and regular simulation exercises. This is in line with the recommendations of the International Nursing Association for Clinical Simulation and Learning (INACSL), which advocates for the integration of regular simulation training into nursing curricula to maintain and enhance clinical competencies (**INACSL, 2021**).¹⁴

However, while the short-term benefits of simulation training are well-documented, there is a need for further research to explore its long-term impact on clinical performance. Studies such as that by **Foronda et al. (2020)**¹² suggest that while simulation training is effective in the short term, additional research is required to determine its sustained impact on patient outcomes and clinical practice over time.

Summary Following are the findings being summarized from the study:

The age distribution of staff shows a broad range of experience and seniority, with a mean age of 21 and a standard deviation of 11.7. The majority of staff have significant nursing experience, with a mean experience of 24.5 years and a standard deviation of 11.6. Educational backgrounds are predominantly at the bachelor's level, with a mean score of 49 and a high standard deviation, indicating varied scores. Attendance at hospital simulated drills and previous training in advanced courses show a positive trend in scores, with mean scores of 73.5 and standard deviations of 20.5 and 24.5, respectively. Departmental representation varies, with the highest mean score of 18.37 and a standard deviation of 13.35, reflecting diverse departmental backgrounds.



When assessing the level of knowledge among different units, Delivery Suite (DS) saw a dramatic improvement from 100% poor knowledge in the pretest to a notable percentage of staff achieving good, very good, and excellent knowledge in the posttest. Emergency Department (ED) also showed significant improvement, with a majority of staff moving from poor to very good and excellent knowledge. Intensive Care Unit (ICU) had a substantial shift in knowledge levels, with a shift from predominantly poor knowledge to a high proportion having very good knowledge, though fewer achieved excellent scores. Other Departments displayed a general improvement, with a reduction in poor knowledge and increases in good, very good, and excellent knowledge, though the percentage of excellent scores was low.

Overall, the simulation workshop appears to have had a positive impact across all departments, with significant improvements in knowledge scores from pretest to posttest.

When comparing the pre and posttest knowledge scores, The paired t-test reveals a highly significant difference between pretest and posttest knowledge scores, with a p-value of 0.0001. This p-value is far below the conventional alpha level of 0.05, indicating that the observed difference is statistically significant. The null hypothesis, which posits that there is no significant difference in knowledge scores before and after the simulation education, is rejected. The alternate hypothesis, which suggests that there is a significant improvement in knowledge scores due to the simulation education, is accepted. This implies that the simulation workshop had a substantial positive effect on enhancing the knowledge of the participants.

Similarly, when associating the selected demographic variables with the knowledge scores, The findings indicate that factors such as age, years of experience, educational background, attendance at mock drills, and type of life support training significantly impact the knowledge scores of nursing staff following the simulation workshop. The null hypothesis, which posits that there is no significant association between the demographic variables and knowledge scores, is rejected. The alternate hypothesis, which suggests that there are significant associations between the demographic variables and knowledge scores, is accepted.

Conclusion:

The study aimed to assess the effectiveness of a simulation workshop for nurses on emergency case management. The findings provide compelling evidence that the simulation workshop significantly enhances nurses' knowledge and preparedness in handling emergency situations.

Improvement in Knowledge Scores: The paired t-test analysis demonstrated a highly significant improvement in knowledge scores from pretest to posttest, with a substantial mean increase and a p-value of 0.0001. This indicates that the simulation workshop had a substantial positive impact on the participants' understanding and application of emergency case management concepts.

Demographic Influences: The study revealed significant associations between several demographic variables and knowledge scores. Age, years of experience, educational background, attendance at mock drills, and type of life support training were all positively correlated with better knowledge outcomes. These findings suggest that both experience and educational factors play a crucial role in enhancing the effectiveness of simulation-based learning.

Departmental Improvements: Across various departments, the workshop led to significant improvements in knowledge levels. Departments such as the Delivery Suite (DS), Emergency Department (ED), and Intensive Care Unit (ICU) showed notable gains in knowledge from poor to good or very good levels post-intervention. This highlights the workshop's broad applicability and effectiveness in improving emergency case management skills across different clinical settings.



Educational Impact: The results underscore the importance of continuous training and simulation exercises in maintaining and enhancing emergency response skills. The observed improvements in knowledge scores suggest that simulation workshops are an effective method for bridging gaps in emergency case management and ensuring that nurses are well-prepared for real-life emergencies.

Overall, the study confirms that simulation workshops are a valuable educational tool for improving emergency case management among nurses. By addressing key areas such as hands-on practice, theoretical knowledge, and the incorporation of realistic scenarios, these workshops effectively enhance the capabilities of nursing staff, ultimately contributing to better patient care and outcomes in emergency situations.

Future research should explore the long-term effects of simulation training and its impact on actual clinical performance to further validate and refine these findings. Additionally, expanding studies to include larger and more diverse samples could provide more comprehensive insights into the effectiveness of simulation workshops across different healthcare settings.

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