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A study to assess the effectiveness of structured teaching program regarding the Knowledge of Critical Care Nurses in Early Detection, Identification, and Management of Sepsis: Impact on Length of Stay and Patient Satisfaction at Apollomedics Super Speciality Hospitals, Lucknow

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Abstract - Sepsis is a life-threatening medical condition that demands immediate recognition and prompt management, especially within critical care environments. This study evaluates the knowledge base of critical care nurses at Apollomedics Super Speciality Hospital, Lucknow, focusing on their ability to detect, identify, and manage sepsis early. The research also investigates the effect of nurse knowledge on patient outcomes, specifically the expected length of hospital stays and patient satisfaction.

This study examines the extent of knowledge among critical care nurses regarding the early recognition, identification, and management of sepsis, and explores how this expertise influences both the duration of hospitalisation and patient satisfaction at Apollomedics Super Speciality Hospitals, Lucknow. Led by Dr. David Saratha Kalarani, the investigation aims to highlight the crucial role nurses play in sepsis care and its direct impact on patient outcomes. The findings intend to guide improvements in nursing education and clinical protocols, ultimately enhancing the quality of care provided to patients.

Employing a quantitative, questionnaire-based design, the study uncovers significant knowledge gaps and underscores the necessity for targeted training programmes to enhance sepsis care, ultimately aiming to improve patient outcomes. We have selected 100 nurses selected through convenience sampling at Apollomedics Super Speciality Hospitals Lucknow.

A One group pre and post-test design was used to determine effectiveness of structured teaching program regarding the Knowledge of Critical Care Nurses in Early Detection, Identification, and Management of Sepsis among 100 nurses across the hospital. This study reveals that before delivering the knowledge and giving training to registered nurses 'the below-average knowledge is 33%, an average knowledge of 66% and 1% of RN's have scored above average. Whereas after post-test the score was 26% and 74% are above average. Hence, it is proved that after sharing knowledge and giving training to the nurses, there was an increase of 66% in knowledge regarding Early Detection, Identification, and Management of Sepsis. Therefore, after the implementation of structured teaching program on early detection, identification and management of sepsis have made a vast difference in the knowledge of nurses.

Keywords – Sepsis, Knowledge, Early Detection, Patient outcome.

I.INTRODUCTION

Sepsis continues to be a leading cause of morbidity and mortality on a global scale. Globally, sepsis affects an estimated 49 million people annually, resulting in approximately 11 million deaths, which accounts for nearly 20% of all deaths worldwide. In India, studies indicate that the hospital mortality rate for sepsis can range from 25% to 45%, depending on the severity and timeliness of intervention[1]. Morbidity rates remain high, with many survivors experiencing long-term complications and functional impairments following discharge.

The importance of early detection and timely management cannot be overstated, as these factors are pivotal in improving patient outcomes. Nurses are central to this process; their ability to recognise and intervene early in cases of sepsis profoundly influences patient recovery and satisfaction levels. Prior research has demonstrated that deficiencies in nurse knowledge can lead to delayed interventions, increased lengths of stay, and decreased satisfaction among patients.

II. AIM

The primary aim of this study is to assess the knowledge of critical care nurses regarding the early detection, identification, and management of sepsis at Apollomedics Super Speciality Hospitals, Lucknow.

III. OBJECTIVES OF THE STUDY

- To assess the knowledge level of critical care nurses concerning the early detection, identification, and management of sepsis.
- To evaluate the relationship between nurse knowledge and patient outcomes, particularly in terms of length of stay and satisfaction.
- To identify areas that require improvement in nurse education and adherence to established protocols.

IV. HYPOTHESIS

H_{01}: There will be no significant difference on knowledge of training of the critical care nurses regarding early detection, identification and management of Sepsis.

H_{02}: There will be no significant difference on length of stay and patient satisfaction

H_{03}: There will be no significant difference in the adherence of the nurses before and after training regarding management of sepsis.

H_1: There will be no significant difference on knowledge of training of the critical care nurses regarding early detection, identification and management of Sepsis.

H_2: There will be a significant difference on length of stay and patient satisfaction.

H_3: There will be significant difference in the adherence of the nurses before and after training regarding management of sepsis.

V. METHODOLOGY

The study was conducted at Apollomedics Super Speciality Hospitals, Lucknow, Uttar Pradesh. This study was conducted for 1month. Prior to the commencement of this study, a pilot study was conducted, and it was found that the HAI Bundle form is as feasible, appropriate, and practicable tool. The population for the study was the registered nurses who were available at the time of data collection at Apollomedics Super Speciality Hospitals, Lucknow, Uttar Pradesh. 100 registered nurses were taken as a convenient sampling method. Data collection was done from 1st of August 2025 to the 31st of August 2025. Analysis and interpretation of the data were made with the help of descriptive and inferential statistics. This study was a Quantitative design, where the study was done by using pre-post evaluation through a structured questionnaire to assess the competency regarding early detection, identification and management of sepsis by staff nurses. The tool was given for content validity to experts in the fields of nursing and medicine. The reliability of the tool was tested by the test and retest method. The Tool used for data collection was divided into three sections in which Section A contains 15 multiple choice questions of 30 marks and each question scores 2 marks. Section B contains 20 multiple Choice questions of 40 marks and Section C contains 4-Likert scale questions which maximum marks is 20.

The researcher has made the category to know how the knowledge can be accessed; therefore, scores are- above average – 75.

VI. RESULT

This study deals with the analysis and interpretation of data collected from the registered nurses. A One group pre- and post-test Design was adopted to determine the effectiveness of the Structured Questionnaire program. The research design had only one group. The test re-test method was used for reliability of the tool. Data was analysed using descriptive and inferential statistics. The analysis and interpretation were done in two parts -

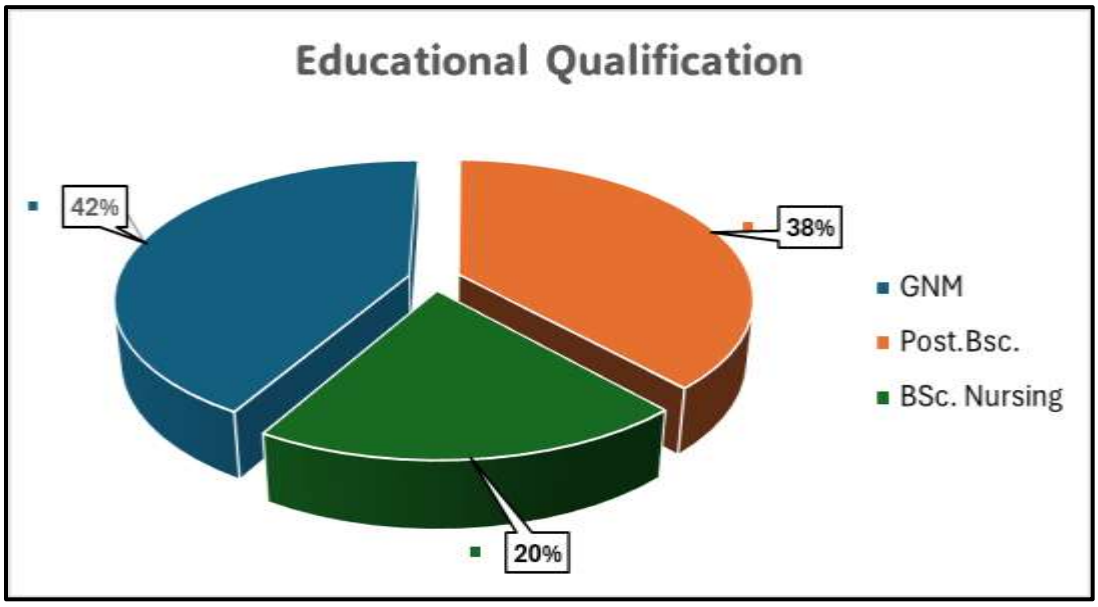

Fig 1: Frequency and Distribution of demographic characteristics (Educational Qualification) of registered nurses

Interpretation:

Data depicted from figure 1 is that majority of the nurses with 42% were GNM qualified, 38% were post-BSc. Nursing qualified and 20% were BSc. Nursing. Qualified.

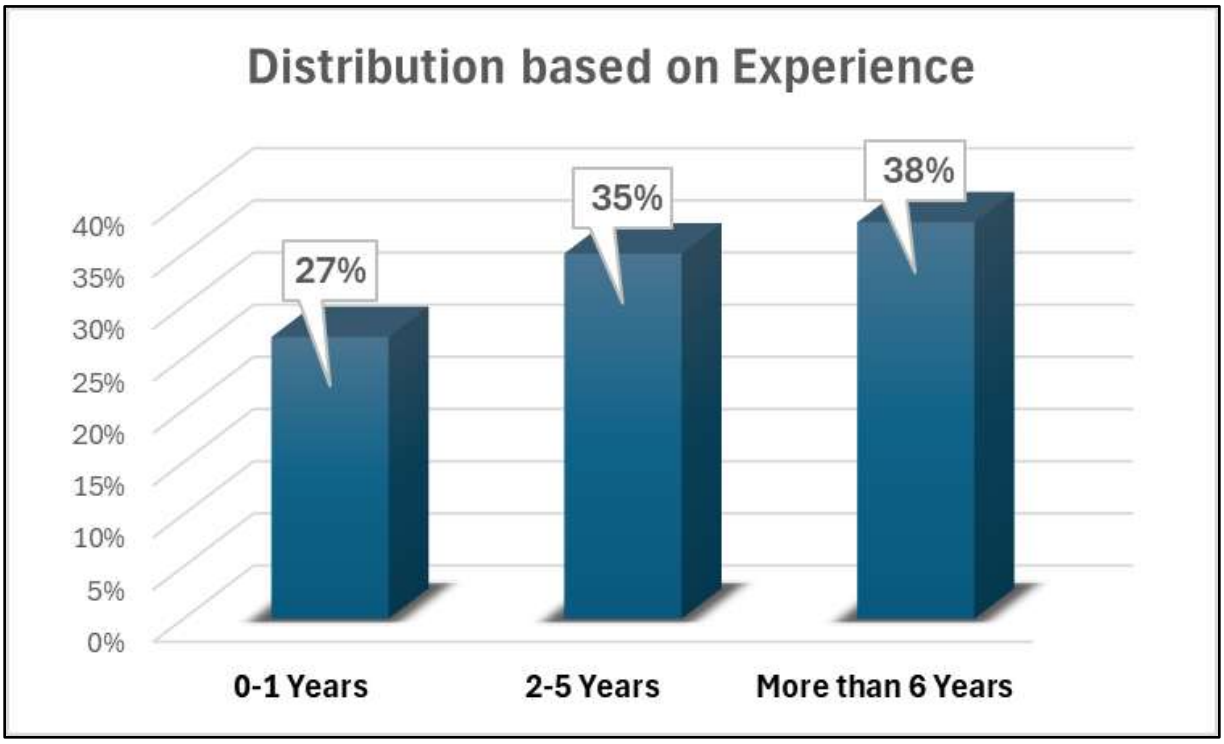

Fig 2: Frequency and Distribution of demographic characteristic (Experience) of registered nurses

Interpretation:

Data depicted from figure 2 is that 27% nurses had 0-1year of experience, 35% nurses had 2-5years of experience and 38% nurses had more than 6years of experience.

Session B- Knowledge level of the nurses regarding Critical Care Nurses in Early Detection, Identification, and Management of Sepsis

Table 1: Knowledge Scores of Nurses Before and After Training of Critical Care Nurses in Early Detection, Identification and Management of Sepsis.

n=100

Knowledge Level	Before Training (Pre-Test)	After Training (Post-Test)
Below Average	33%	0%
Average	66%	26%
Above Average	1%	74%

Interpretation:

Data depicted from table 1 represents the data compares nurses' Knowledge Level of critical care nurses in early detection, identification and management of Sepsis before and after training among 100 participants

Knowledge Assessment	Mean	Median	Standard Deviation
Pre-Test	1.71	2	0.47
Post-Test	2.74	3	0.44

Table 2: Mean, median and standard deviation of Knowledge level of the critical care nurses in early detection, identification and management of Sepsis

Interpretation:

n=100

Data depicted from table 1 represents that in the pre-test, the nurses mean score was 1.71, whereas in the post test it was 2.74, the median in the pre-test was 2 whereas in the post test it was 3 and, at last, the standard deviation in the pre-test was 0.47 and in the post test it was 0.44. hence, there is a significantly improvement after providing the Standardized training program

Table 3: Paired T-test to assess the effectiveness of the training programme regarding knowledge of the staff members

Group	Mean LOS (days)	SD
Pre-training	**12.0**	**3.0**
Post-training	**9.0**	**2.5**

n=100

Knowledge Assessment	Mean	Standard Deviation	Standard error	Paired T-test value
Pre-Test	1.71	0.47	0.046	22.6
Post-Test	2.74	0.44		

Interpretation- Table 3 shows that the Regression coefficient for group effect: **–3.0 days** ($p < 0.001$) which means we can see a significant reduction after training in the length of stay of patient (LOS) dropped from 12 days to 9 days which has reduced 3 days stay.

Table 4: Paired T-test to assess the effectiveness of the training programme regarding feedback of patient satisfaction n=100

Score (1–5)	1 (POOR)	2 (FAIR)	3 (GOOD)	4 (VERY GOOD)	5 (EXCELLENT)
Pre-training Feedback of Patient Satisfaction	10	20	40	20	10
Post-training of Patient Satisfaction	5	10	20	40	25

INTERPRETATION: Table 4 shows the results of the chi-square test which indicate a highly statistically significant difference in patient satisfaction levels between the pre-training and post-training groups ($\chi 2 \approx 25.6$, ($p<0.0001$)

Discussion

The structured teaching program significantly improved critical care nurses' knowledge on early sepsis detection, identification, and management, shifting from predominantly average/below-average pre-test scores (66 average, 33 below, 1 above) to mostly above-average post-test scores (74 above, 26 average) among 100 nurses at Apollomedics Super Speciality Hospitals, Lucknow. Mean knowledge scores rose from 1.71 (SD=0.47) pre-training to 2.74 (SD=0.44) post-training, with paired t-test confirming statistical significance ($t=22.6$, $p<0.001$). This mirrors findings from a Nigerian study where an educational intervention on Surviving Sepsis Campaign guidelines boosted nurses' mean knowledge scores by 4.9 points ($p<0.001$), emphasizing regular training's role in bridging gaps.

- ***Key Outcomes***

Patient length of stay (LOS) reduced from a mean of 12 days (SD=3.0) pre-training to 9 days (SD=2.5) post-training, with regression showing a significant 3-day drop ($p=0.001$). Patient satisfaction improved markedly, with high ratings (4-5) rising from 30 pre-training to 65 post-training (chi-square=225.6, $p<0.0001$). Comparable results appear in U.S.

nurse-led sepsis programs, where interactive education cut LOS, lowered readmissions, and enhanced early identification, aligning with global trends in reduced morbidity.

- ***Global Comparisons***

Similar pre-post improvements occurred in an Indian study on sepsis monitoring, where planned teaching raised nurses' mean scores by 10.23 ($t=21.11$, $p<0.05$), supporting structured programs' efficacy. A multisite review found nurse training via simulations and bundles increased confidence, guideline adherence, and survival rates while shortening ICU stays, consistent with this study's patient-centered gains. Cross-sectional analyses in Switzerland and Singapore also link nurse education to better sepsis recognition, though baseline deficits persist without intervention.

CONCLUSION

Targeted structured teaching programme on early detection, identification, and management of sepsis proved highly effective in strengthening the knowledge and clinical performance of critical care nurses at Apollomedics Super Speciality Hospitals, Lucknow. Pre-test findings showed that most nurses had only average or below-average knowledge, whereas post-test results demonstrated a substantial shift towards above-average scores, supported by improved mean scores and a highly significant paired t-test value. This confirms that focused, protocol-driven education meaningfully enhances nurses' competency in recognising and managing sepsis. Importantly, these knowledge gains translated into measurable improvements in patient outcomes. After the training, mean length of stay decreased from 12 to 9 days, with regression analysis indicating a significant 3-day reduction attributable to the intervention, reflecting both clinical and economic benefits. Patient satisfaction levels also improved markedly, with more patients rating their care as 4 or 5, and chi-square analysis revealing a highly significant difference between pre- and post-training satisfaction scores.

Overall, the study concludes that structured sepsis education for critical care nurses is essential, feasible, and impactful in a tertiary care setting. By improving nurse knowledge, shortening hospital stay, and enhancing patient satisfaction, the programme underscores the pivotal role of continuous professional development and strict protocol adherence in sepsis care. Sustained institutional support, ongoing training, and regular audits are strongly recommended to maintain these gains and further reduce the sepsis burden.

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