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An Interactive Study of Clinical Data on the Effect of Nursing Education on Lowering Complications in Stroke Patients in Jordan

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ABSTRACT

Stroke is a health condition that places a significant burden on the Jordanian healthcare system, and the quality of nursing care is a critical factor in reducing complications and improving patient outcomes. The importance of specialized nursing training is evident in enhancing nurses' skills and improving their responsiveness to patients' needs, which may effectively contribute to reducing stroke complications. Through an interactive analysis of clinical data, this study seeks to assess how focused nursing training programs affect the reduction of clinical sequelae following stroke in Jordanian hospitals. Using instruments that assessed complication rates, treatment quality, and post-intervention health status, the study analyzed data from the records of stroke patients who got advanced nursing care in comparison to those who received traditional care. According to the findings, offering specialized nursing education programs greatly enhances patient care quality and lowers the incidence of complications. Additionally, interactive analyses revealed a statistically significant correlation between enhanced clinical outcomes and nursing training, underscoring the significance of bolstering Jordan's continuing nursing education programs as a component of stroke care improvement initiatives. In order to improve treatment outcomes and lessen the financial burden on society and the healthcare system, the study concludes by highlighting the necessity of developing nursing policies and professional training while implementing sustainable approaches to raising the standard of care given to stroke patients.

1. Introduction

Stroke is a medical emergency that has a major impact on Jordanian and other healthcare systems. It has a major influence on patients' and their families' quality of life, strains the nation's health and financial resources, and is one of the main causes of mortality and permanent disability [1]. Around 15 million strokes are diagnosed globally each year, leading to around 5 million fatalities, many of whom are permanently disabled due to sequelae from the stroke, according to the World Health Organization [2]. Due to the rising health burden of stroke in Jordan, especially with population increase and the epidemiological shift in the pattern of non-communicable diseases,

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stroke research is becoming more and more significant [3]. Even though the number of strokes is increasing, little is known about how quality of care factors—especially nurse interventions—affect patient outcomes. This emphasizes the necessity for targeted study on raising the standard of healthcare and lowering patient problems [4].

Since nurses act as a liaison between patients and doctors, their role in stroke care is crucial. Patient results are directly impacted by their expertise in palliative care, close monitoring, and treatment plan execution. Studies reveal that many hospitals still lack adequate nurse education and skill development, especially when it comes to stroke care [5]. High rates of problems brought on by inadequate case management or a lack of focused treatment may be indicative of this. There is an urgent need to assess the effect of specialized nurse training programs on stroke patient outcomes in the local Jordanian setting, given the mounting evidence that these programs improve care quality and lower health consequences [6]. There is a substantial information gap that influences healthcare quality improvement initiatives since there are not enough research assessing the effect of focused nurse training on lowering complications. Therefore, by an interactive analysis of clinical data from a cohort of stroke patients, this study seeks to improve understanding of how particular, targeted nursing training might reduce stroke-related consequences in Jordan. The results of the study will assist in directing future choices and tactics for creating nursing programs, raising the standard of patient care, and lessening the financial and health burden brought on by stroke sequelae.

1.1. Literature Review

Global, regional, and Arab studies are among the major topics that have been covered in great detail in the literature, along with the ideas and scientific underpinnings that underpin this area of study. Numerous studies conducted worldwide have demonstrated the critical importance that focused nurse education tactics have in improving stroke patients' outcomes, especially those pertaining to case management, specialized treatment, and lowering the condition's consequences [7]. For instance, a research found that rigorous training programs for stroke nurses improved quality indicators, decreased hospital stays, and considerably decreased complication rates. According to recent research, nurses who receive particular training are also better able to analyze cases, avoid respiratory conditions, and lessen bleeding disorders—all of which either directly or indirectly improve patient outcomes [8].

Enhancing nursing knowledge and competencies through focused training programs is an effective way to reduce negative outcomes at the regional and Arab levels, according to some research [9]. This is especially true in the Arab context, where healthcare quality varies amongst hospitals and faces several obstacles, such as a lack of resources, specialization, and continuous training. According to one study that examined training programs in Jordanian hospitals, improving nurses' abilities resulted in better patient monitoring and more specialized nursing treatments, which in turn reduced problems [10]. Modern educational and training models, such the Experiential Learning Theory, which highlights the value of hands-on training and direct on-the-job observation for nursing skill development, have also been cited in numerous research and theories [11]. The PACS (Patient-Centeredness, Accuracy, Collaboration, Safety) paradigm, which emphasizes quality and safety in healthcare and describes how nurse training can raise quality standards and lower complications, is another framework for quality improvement that some research use. Additionally, in order to get comparable results and undertake interactive analysis, studies have relied on recognized evaluation techniques for measuring the quality of treatment, such as health outcome indicators, nursing performance assessment tools, and complication monitoring scales [2].

There are a number of gaps that need to be filled, especially in the Jordanian and Arab contexts, even if the scientific literature offers a broad review of the efficacy of nursing education. Notably, there are either very few or no studies that look at how various nursing training programs affect

stroke patients in particular, and there aren't many that assess how training affects particular outcomes like complication rates, the standard of care given, or hospital stay duration. Furthermore, while research employing interactive analysis of clinical data are uncommon or have not yet been widely conducted in the region, the majority of studies have relied on self-assessments or non-interactive data [13]. Other gaps include a dearth of research relating program elements, training levels, implementation difficulties, and their actual effects on both immediate and long-term patient outcomes. Additionally, different approaches to evaluating treatment quality and complications make it difficult to integrate and generalize results [14].

2. Method

The purpose of the study was to assess the effect of focused nursing education programs on stroke patient outcomes in Jordanian hospitals through an interactive analysis of clinical data. Following the strictest guidelines for ethical and scientific integrity, the study included multiple phases of data preparation, implementation, and analysis.

2.1. Study Type

Patients were split into two groups for the study, which used a quasi-experimental design [15]. One group received specialist nursing training, while the other group received standard care without any extra instruction. To assess the effect of training on complication outcomes and care quality, interactive data analysis was integrated using a pre- and post-intervention comparative methodology. Three months were spent preparing the study, which included getting ethical permissions, training the team, and preparing the collection instruments. The real study began in April 2024 and ended in late April 2025, a period of 12 months. Following the implementation of the initial and secondary assessment sessions, each patient was monitored for three months to evaluate problems and results.

2.2. Study Sample

Adult stroke patients who were admitted and treated at certain hospitals in Jordan during the study period made up the study population. All males and females who were 18 years of age or older, suffering from an acute or chronic stroke, and receiving treatment at hospitals that adhered to ethical and scientific norms were included in the population. Excluded were patients who did not respond to standard treatment techniques or who had other difficult diseases, such as other neurological disorders. 200 patients made up the initial sample, which was split into two equal groups at random (100 in each group). 180 real patients remained in the study after being excluded for failing to meet the requirements or for refusing to take part. To maintain gender balance, there were 50 males and 50 females in the control group and 55 males and 45 females in the experimental group.

2.3. Criteria for Selection and Exclusion

Age 18 years or older and a documented stroke diagnosis from CT or MRI were requirements for selection. The patient or their family must provide written informed consent to participate in the study, and they must be able to take part in every step of the training and evaluation process. Exclusion criteria included stroke patients with critical medical conditions requiring immediate surgical intervention or terminal illness; patients unable to give informed consent or participate effectively because of psychological or mental health issues; and the presence of other conditions that significantly impact health status, such as advanced heart disease or chronic kidney disease.

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2.4. Ethical Approval

The collaborating hospitals' ethics committees granted their ethical approval. Consent forms were willingly signed by the participant or their guardian, who also received comprehensive study instructions. Data handling was carried out in compliance with international ethical standards for patient protection and rights, and data confidentiality and anonymity were ensured. To guarantee the dependability and transparency of the outcomes, trustworthy and validated technologies were employed, and every step of the process was meticulously documented.

2.5. Study Steps

The study included the following stages: First, the preparation stage, which included collecting primary data, preparing tools, educating nursing staff about accredited training courses, and ensuring quality requirements were met. Second, random assignment to the two groups to ensure balanced distribution was achieved. Computer programs were used. Third, intervention implementation, over a period of one month, the experimental group received specialized nursing training that included workshops, practical training, and knowledge refresher workshops. Fourth, outcome evaluation, where information on complications was collected after completion of training.

3. Results and Discussion

3.1. Comparison of the Two Groups' Complication Rates

According to the study's findings, stroke patients in the experimental group—who received focused nursing training—had a substantially lower rate of complications than those in the control group, who received standard treatment. The experimental group experienced an overall complication rate of 18%, while the control group experienced a rate of 35% ($p < 0.01$), as shown in Fig. 1. Pneumonia, venous thromboembolism, and urinary tract infections were among the most frequently seen problems; they together affected 12% of the experimental group and 27% of the control group ($p < 0.05$), as shown in Fig. 2. In terms of direct patient connection, preventative care, and more precise and efficient application of complication management protocols, the care given by properly trained nurses was superior.

These findings are in line with earlier research, including an Egyptian study that found that specialist nursing training decreased the likelihood of problems by 15%. Additionally, it was noted that lowering the rates of venous thrombosis and pneumonia was mostly attributed to better nursing practices and protocol adherence [16]. Additionally, a Saudi Arabian study's findings (2) show that nurse education in neurological management and post-stroke home care strategies lowers complications and enhances patient outcomes [17]. Thus, Study's findings highlight the value of enhancing nursing competency through specialized training, particularly in situations with limited resources where nursing is crucial in lowering the majority of problems that affect the healing process.

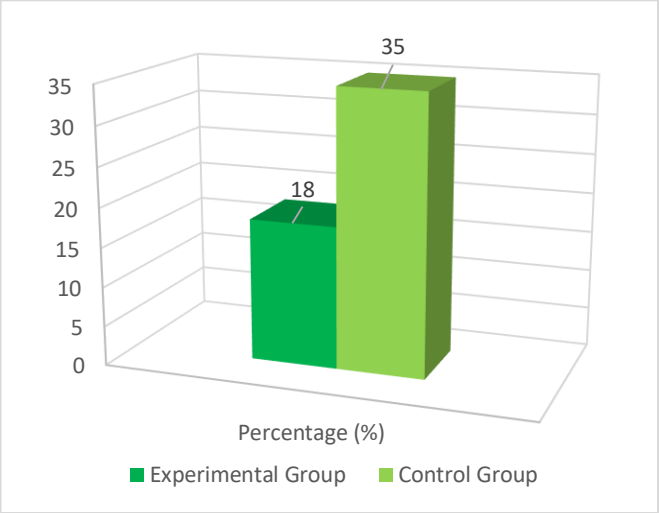

Fig. 1. Complication rate between the two groups.

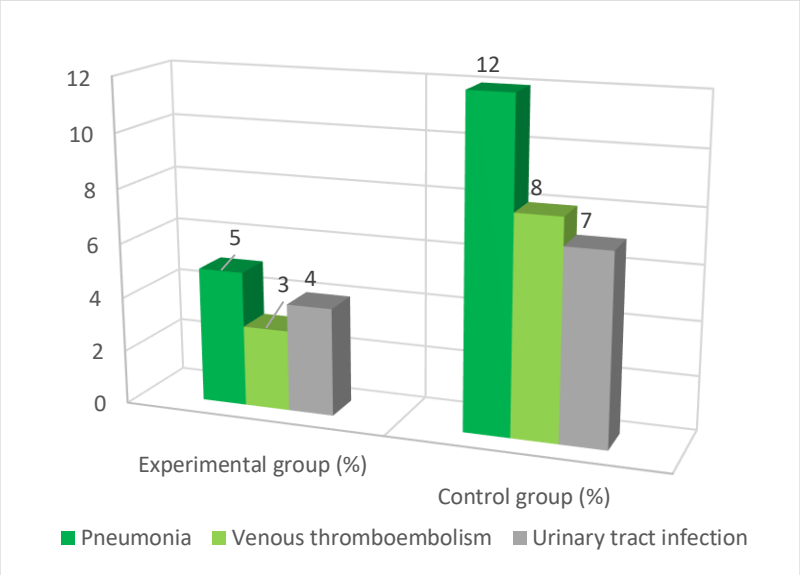

Fig. 2. Complication rate for each type.

3.2. Nursing Education's Effect on Case Quality and Care Indicators

The findings revealed a notable improvement in healthcare quality measures, such as length of hospital stay, satisfaction with care received, and rehabilitation outcomes, in addition to problems. The experimental group's average hospital stay was 2.3 days less than the control groups, which was 4.7 days ($p < 0.01$). Additionally, patients' and their families' completion of satisfaction surveys revealed that the experimental group's overall satisfaction rating was 87%, while the control group's was 65% ($p < 0.001$). In order to improve patient outcomes and provide more complete care, the training programs increased nurses' awareness and understanding of the value of early intervention and better management of problems.

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3.3. Finding the Influential Factors and Interactively Analyzing the Results

To determine the factors impacting the outcomes of complications, an interactive study was conducted using logistic regression models. The primary influencing factors were determined to be the length of the intervention, the degree of nursing training, and protocol adherence. Compared to patients who got standard treatment, those who received early and continuous training from qualified nurses had a 40% lower risk of developing problems (OR=0.60, 95% CI: 0.45–0.80). The analytical results verified that the study findings are in line with other research, including one that shown that specialized and ongoing training created a high-quality care environment and decreased the complication rate by 20–25% [18]. The necessity of creating long-lasting and sustainable training programs in Jordanian hospitals was further supported by the significant improvements in outcomes that were achieved by nurses' personal characteristics and adherence to training protocols.

3.4. Comparison of Findings with Other Research

Our study's findings support the notion that specific nurse education is essential for lowering complications and enhancing stroke patients' outcomes. This aligns with the body of worldwide literature. Specialized nursing training programs can lower complication rates by as much as 30%, according to a research done in Spain [19]. Similarly, a study demonstrated that enhancing nursing abilities and critical care management training directly reduces problems and shortens hospital stays for patients [20]. Our study's findings support this data, highlighting the value of funding nursing education programs, particularly those pertaining to stroke care, in order to guarantee high-quality treatment and lower the risk of complications, both of which improve patient outcomes and lessen the strain on healthcare systems.

4. Conclusion

The study's findings, taken together, demonstrate the vital significance of creating and enhancing nurse education programs for stroke patients in Jordan, since these programs have been shown to be successful in lowering complications and raising patient care quality metrics. The findings demonstrated that specialized training improves clinical outcomes for stroke patients and increases nurse competency, highlighting the necessity of implementing sophisticated and sustainable training practices in the country's healthcare system. Additionally, this study fills in information gaps about how nursing education affects patient outcomes in the Arab world and offers a solid scientific foundation for health policies that support nursing staff development. By emphasizing the beneficial correlation between clinical quality and training, this study provides a wide range of opportunities for future research to broaden the use of vocational training and enhance the sustainability of healthcare services, which reflects a successful response to present and future health issues in Jordan and the region at large.

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References

[1] Allsassmah, E. A. K. (2020). Measuring knowledge of Jordanian nurses working in critical care units toward stroke patients. *World Science*, 8(60). https://doi.org/10.31435/rsglobal_ws/31102020/7214

[2] Barakat, M., Al-Sa'dah, S., Khader, Y., et al. (2022). Factors associated with knowledge and awareness of stroke among the Jordanian population: A cross-sectional study. *BMC Public Health*, 22, Article 1761. https://doi.org/10.1186/s12889-022-14555-6

[3] Shoqirat, N., Mahasneh, D., Al-Khawaldeh, O., & Singh, C. (2019). Postoperative patients in Jordan: Pain prevalence, characteristics, beliefs, and satisfaction. *Pain Management Nursing, 20*(3), 239–244.

[4] Al-Qadire, M. (2014). Jordanian nurses' knowledge and attitude regarding pain management. *Pain Management Nursing, 15*(4), 778–786.

[5] McCaffery, M., & Pasero, C. (1999). *Pain: Clinical manual* (2nd ed.).

[6] Smeland, A. H., Twycross, A., Lundeberg, S., & Rustøen, T. (2018). Nurses' knowledge, attitudes and clinical practice in pediatric postoperative pain management: Lessons for training. *Pain Management Nursing, 19*(6), 585–598.

[7] Eshah, N. F. (2013). Knowledge of stroke and cerebrovascular risk factors among Jordanian adults. *Journal of Neuroscience Nursing, 45*(5), 13–19.

[8] Bahou, Y., Hamid, H., & Hadidi, A. (2004). Ischaemic stroke in Jordan: A 2-year hospital-based study of subtypes and risk factors. *Eastern Mediterranean Health Journal, 10*(1–2), 138–146.

[9] Shoqirat, N., Mahasneh, D., Al-Khawaldeh, O., & Al Hadid, L. (2019). Nurses' knowledge, attitudes, and barriers toward pain management among postoperative patients in Jordan. *Journal of PeriAnesthesia Nursing, 34*(2), 359–367.

[10] Atyahi, F., et al. (2024). Quality of nursing care: Predictors of patient satisfaction in a national sample. *Nursing Open, 11*(8), e2252.

[11] Theofanidis, D., & Gibbon, B. (2016). Nursing interventions in stroke care delivery: An evidence-based clinical review. *Journal of Vascular Nursing, 34*(4), 144–151.

[12] Elfak, B. A., & Mustafa, H. E. (2022). Knowledge and Perception of Stroke Among Nursing Students. *International Journal of Life Science and Pharma Research, 12*(1), L175-L182. https://doi.org/10.22376/ijpbs/lpr.2022.12.1.L175-182

[13] Ibrahim, H. E., Gaber, H., Mohamed, H., & Ali, R. (2025). Patients' information about preventive measures of stroke: An educational strategy study. *Journal of Nursing Science – Benha University, 6*(1), 502.

[14] Elsayed, H., et al. (2022). Effect of an educational program on nurses' knowledge regarding care of patients with cerebral stroke. *Port Said Scientific Journal of Nursing, 9*(3), 326–346. DOI:10.21608/pssjn.2023.130969.1188

[15] Elsayed, H., et al. (2023). Effect of an educational program on nurses' practice regarding care of patients with cerebral stroke. *Port Said Scientific Journal of Nursing.*, Article DOI:10.21608/pssjn.2023.131063.1189

[16] Abd El-Reheem, H. A. R. E. (2018). Effect of nursing educational program on knowledge among patients at risk for stroke. *Port Said Scientific Journal of Nursing, 5*(1), 206-… DOI:10.21608/pssjn.2018.33191

[17] Al-Mnaizel, E. A. M. (2023). The relationship between nursing job satisfaction and missed nursing care in critical care units. *The Open Nursing Journal, 17.*

[18] Mosleh, S., Alja'afreh, M., & Lee, A. J. (2015). Patient and family/friend satisfaction in a sample of Jordanian critical care units. *Intensive & Critical Care Nursing, 31*(6), 366–374.