ORIGINAL RESEARCH

# Analysis of the Effects of Evidence-Based Nursing Interventions on Promoting Functional Recovery in Neurology and General Surgery Intensive Care Patients

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## ABSTRACT

**Objective** • The study aimed to examine how evidence-based nursing contributes to enhancing recovery among patients in the neurology and general surgery departments of intensive care units.

**Methods** • A retrospective analysis was conducted on clinical data of 97 neurology and general surgery patients of Xi'shan People's Hospital in Wuxi, China, who were assigned to control group (n=48, received standard nursing interventions) and observation group (n=48, received evidence-based nursing interventions). The outcomes include treatment compliance, recovery, psychological status, self-perception, and nursing satisfaction.

**Results** • In the observation group, treatment compliance significantly surpassed the control group (97.73% vs. 80.95%, $P < .05$). Post-intervention, the observation group exhibited lower National Institutes of Health Stroke Scale (NIHSS) scores and higher Barthel scores than controls, showed improved SAS and SDS, and had shorter mobilization time and hospital stay compared to controls (all $P < .05$).

**Conclusion** • Compared to traditional approaches, evidence-based interventions enhance treatment compliance, self-perception, reduce negative emotions, and facilitate recovery. (*Altern Ther Health Med.* 2024;30(12):236-241).


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## INTRODUCTION

In today's rapidly developing economic and cultural landscape in China, people's cultural awareness and material expectations have increased. This has led to higher demands on the healthcare industry, particularly in clinical nursing. However, healthcare resources in China remain relatively scarce, and the treatment and care provided struggle to meet the demands of modern development. Medical and nursing practices continue to face challenges that can be detrimental to improving patients' conditions and advancing healthcare.[1] In recent years, with the continuous advancement of medical technology and the evolution of nursing philosophies, evidence-based nursing has garnered widespread attention in clinical practice.[2]

Evidence-based nursing emphasizes the role of clinical nursing interventions and involves synthesized experiences, relevant academic literature, research findings, and more. By tailoring precise care to patients' specific needs, evidence-based nursing aims to provide high-quality services. It also enables the development of individualized, scientifically sound nursing plans by incorporating clinical support.[3]

Neurology and general surgery departments are essential areas of medical specialization that encompass a diverse array of ailments. What unites patients treated in both departments is the involvement of various aspects, including physiological, psychological, and social factors, in their treatment and rehabilitation processes.[4,5] Therefore, it is imperative to employ scientifically proven nursing interventions, such as evidence-based nursing, to enhance patients' functional recovery.

Providing effective nursing interventions that comprehensively address these complex needs is crucial for the successful treatment and recovery of patients in these departments. However, it is important to explore the role of evidence-based nursing interventions, specifically with regard to promoting functional recovery in intensive care patients in these departments.

Therefore, the primary objective of this study is to examine how evidence-based nursing interventions contribute to enhancing the functional recovery of patients in the neurology and general surgery units. Through a thorough analysis of clinical data and comparing the results

of patients who received evidence-based nursing interventions and those who received standard nursing interventions, this study aims to bridge the information gap regarding the influence of evidence-based nursing on patient outcomes in these specific departments.

The research question this study seeks to answer is: Do evidence-based nursing interventions significantly promote functional recovery in intensive care patients in the neurology and general surgery departments? By addressing this question, the study aims to provide valuable insights into the effectiveness of evidence-based nursing interventions and their role in improving patient outcomes, treatment compliance, psychological status, self-perception, and nursing satisfaction in these critical clinical specialties. By elucidating the significance of evidence-based nursing in the neurology and general surgery departments and clearly stating the research question, this study aspires to contribute to the existing knowledge base and inform clinical practice in these fields.

## MATERIALS AND METHODS

### Study Subjects

The researchers' retrospective analysis rests on the clinical data from 97 patients treated in the neurology and general surgery departments of the Xi'shan People's Hospital, Wuxi, China, from January 2021 to January 2023. To be included in the analysis, patients had to meet the following criteria: (1) they had to have been diagnosed with relevant diseases based on clinical tests, (2) they had to complete clinical data available for analysis, and (3) they had to be in a stable medical condition without any mental or consciousness disorders.

On the other hand, potential study participants were explicitly excluded if they had severe organ dysfunction, (2) they had cognitive or consciousness disorders, and (3) pediatric patients and their families with contraindications for the nursing interventions used in this study.

The researchers categorized the patients into 2 groups: a control group (n=48, consisting of 24 cases from neurology and 24 cases from general surgery) and an observation group (n=49, including 23 cases from neurology and 26 cases from general surgery) based on the nursing intervention plans they received. The control group received routine nursing interventions, while the observation group received evidence-based nursing interventions.

The recruitment of patients for this study was conducted in accordance with ethical guidelines to safeguard the rights and well-being of patients; institutional review board (IRB) approval was obtained for this study. All patient information was de-identified and anonymized before data analysis to maintain confidentiality and privacy. Due to the study's retrospective nature, which involved analyzing existing clinical data without direct patient contact or intervention, patient consent was not required and was waived by the IRB. Nevertheless, the study adhered rigorously to patient privacy and data protection regulations.

### Methods

**Control Group.** The control group patients were provided with routine nursing interventions, which included the following: familiarizing patients with the ward environment to aid in their quick adjustment, arranging clean and tidy rooms to create a favorable inpatient environment, strict following of instructions for medication administration, closely monitoring patients' vital signs and changes in their medical condition, and promptly reporting any abnormal observations to the medical team.

**Observation Group.** Patients in the observation group received evidence-based nursing interventions, including implementing specific measures. Firstly, evidence-based nursing teams were established separately for the neurology and general surgery departments. These teams underwent specialized training in evidence-based nursing, identified nursing questions based on the patient's medical conditions, and implemented solutions based on evidence-based support. Additionally, individualized nursing plans were developed by the nursing staff. This involved reviewing relevant literature and information, combining clinical experience with successful treatment cases, and conducting a thorough assessment of the medical conditions of neurology intensive care patients and general surgery patients undergoing elective surgery.

This assessment formed the basis for creating detailed individualized nursing plans.[6] Due to the substantial differences between neurology intensive care patients and general surgery patients, the focus of individualized nursing plans varied. For instance, nursing for neurology intensive care patients emphasized "promoting functional recovery and improving quality of life," while nursing for general surgery patients emphasized "reducing surgical trauma and expediting patient recovery."[6]

**The detailed interventions were as follows:**

Nursing staff communicated daily throughout patients' treatment, providing them emotional comfort and psychological support.[7] Their objective was to provide emotional solace and psychological support, considering the patient's reasonable needs while respecting their religious convictions and cultural traditions. The communication was designed to create a positive nurse-patient relationship and alleviate the patients' negative emotions, such as anxiety, tension, and fear, while also fostering trust. Furthermore, the nursing staff motivated patients by sharing stories of individuals who had successfully fought against illnesses in the past, encouraging an optimistic attitude toward treatment.

The nursing staff administered dietary interventions based on the patient's medical conditions. They ensured that the patients' meals were light and easy to digest while focusing on a balanced intake of protein, vitamins, and fiber. They controlled the patients' consumption of spicy and stimulating foods and strictly prohibited smoking and alcohol.

The nursing staff offered timely guidance to patients regarding rehabilitation training. They regularly organized information lectures, emphasizing the importance of

rehabilitation training to patients and their families. The nursing staff guided patients' families to assist with correct rehabilitation training. The training intensity was regulated in accordance with the principle of gradual advancement, commencing at a low level and progressively escalating, along with prolonged training periods. Patients' families were encouraged to supervise and support the patients' daily rehabilitation sessions. Both groups received continuous nursing interventions for 90 days, after which the effects of these interventions were evaluated.

### Observational Measures

**Treatment Compliance.** During the treatment period, treatment compliance was evaluated by assessing the level of patient cooperation during medication and nursing activities such as oral examinations and rehabilitation exercises. Compliance was categorized as follows: (1) full compliance, where patients fully cooperated with the intervention, requiring no reminders or reassurance from medical staff; (2) general compliance, where patients generally cooperated but occasionally showed resistance, requiring occasional reminders and reassurances from medical staff; and (3) non-compliance, where patients displayed poor cooperation even with reminders and reassurance from the medical staff.

**Recovery Status.** In this study, the participants included individuals from the neurology and general surgery departments. The evaluation of their recovery status varied between the 2 departments. Neurology patients underwent assessment using the NIHSS scale,[8] which measures the neurological function through 15 different factors and assigns a total score of 42. A higher score indicates more severe neurological damage. Additionally, the Barthel Index[9] was used to evaluate patients' ability to perform daily activities. The index has a total score of 100, with higher scores indicating better self-care ability. On the other hand, the recovery status of general surgery patients was assessed based on perioperative indicators such as the time of first postoperative mobilization and length of hospital stay.

**Psychological State Levels.**[10] The anxiety levels of the patients were measured before and after the intervention using the Serl-Rating Anxiety Scale (SAS). The SAS has a maximum score of 100, with a cutoff point of 50. Lower scores indicate lower levels of anxiety. Similarly, the level of depression was evaluated using the Self-Rating Depression Scale (SDS), which also has a total score of 100 and a cutoff value of 53. Lower scores on the SDS indicate lower levels of depression.

**Self-Perception.** Patients' self-perception levels during treatment were assessed using the Pittsburgh Sleep Quality Index (PSQI)[11] and the General Comfort Questionnaire (GCQ),[12] both before and after intervention. The PSQI scale measures sleep quality on a scale of 0 to 21 points, with lower scores indicating better sleep quality. The GCQ includes 28 physical, psychological, mental, sociocultural, and environmental items. Each item is rated on a 4-point scale, and the total score ranges from 28 to 112, with higher scores indicating higher comfort levels.

**Table 1.** Baseline Data Comparison

| | Control (n=48) | Observation (n=49) | $t/\chi^2$ | *P* value |
|---|---|---|---|---|
| Gender | | | 0.247 | .618 |
| Male | 27 | 30 | | |
| Female | 21 | 19 | | |
| Age (years) | 57.39±7.86 | 57.45±7.72 | 0.037 | .969 |
| Education Level | | | 0.280 | .596 |
| High School | 29 | 27 | | |
| College and Above | 19 | 22 | | |
| Monthly Family Income | | | 0.093 | .759 |
| ≤5000 | 25 | 24 | | |
| >5000 | 23 | 25 | | |
| Residence | | | 0.603 | .437 |
| Urban | 33 | 30 | | |
| Rural | 15 | 19 | | |

**Table 2.** Comparison of Treatment Compliance

| Group | n | Full Compliance | Partial Compliance | Non-Compliance | Compliance (%) |
|---|---|---|---|---|---|
| Control | 48 | 12 | 29 | 9 | 82.00% |
| Observation | 49 | 18 | 30 | 2 | 96.00% |
| $\chi^2$ | - | - | - | - | 5.005 |
| *P* value | - | - | - | - | 0.025 |

**Nursing Satisfaction.** The researchers distributed a locally developed "Satisfaction Survey Questionnaire" to the patients and their families at the hospital. The survey comprised 20 questions that focused on their level of satisfaction regarding the treatment received and the nursing care provided by the hospital. Respondents were asked to rate each question on a scale of 1 to 5. Scores below 70 indicated dissatisfaction, scores equal to or greater than 89 indicated satisfaction, and scores equal to or greater than 90 indicated high satisfaction.

### Statistical Analysis

GraphPad Prism 8 was used to create graphs, while SPSS 22.0 was utilized for data analysis. Descriptive statistics like means and standard deviations were employed to describe the distribution of continuous data, and *t* tests or analysis of variance (ANOVA) were conducted for statistical analysis. For categorical data, frequencies and percentages were used to portray the distribution through chi-square or Fisher's exact tests. A significance level of $P < .05$ was adopted to indicate statistical significance.

## RESULTS

### Baseline Data Comparison

The initial data for both sets of patients were comparable, and there were no significant differences in the comparisons ($P > .05$). See Table 1 below.

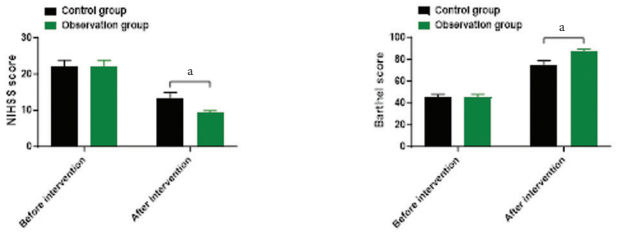
### Comparison of Treatment Compliance

In the control group, the treatment adherence was 80.95%, whereas in the observation group, it reached 97.73%. This indicates a significantly higher level of treatment compliance in the observation group than in the control group ($P < .05$). See Table 2.

### Comparison of Recovery Status

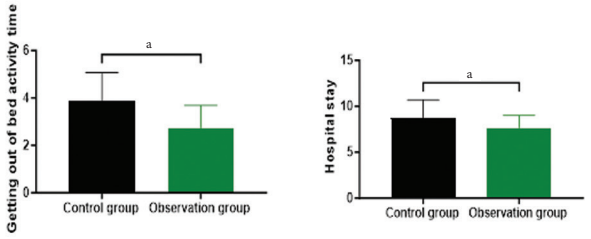
Figures 1 and 2 demonstrate that the NIHSS scores for critical care patients in the control group decreased after intervention, with initial scores of 22.17±1.65 and final scores

**Figure 1.** Comparison of Recovery Status for Critical Care Patients



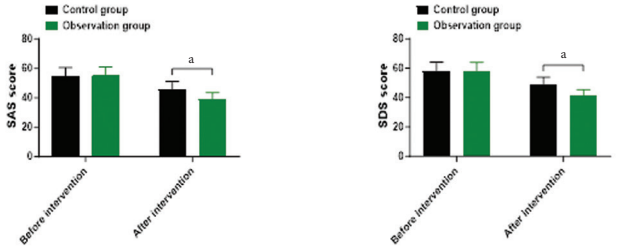

[a]Indicates a statistically significant difference between the groups ($P < .05$).

**Figure 2.** Comparison of Recovery Status for General Surgery Patients



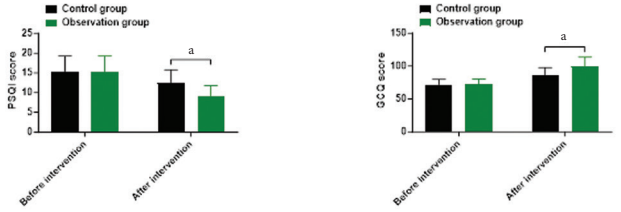

[a]Indicates a statistically significant difference between the groups ($P < .05$).

**Figure 3.** Comparison of Psychological Status




[a]Indicates a statistically significant difference between the groups ($P < .05$).

**Figure 4.** Comparison of Self-Perception




[a]Indicates a statistically significant difference between the groups ($P < .05$).

**Table 3.** Comparison of Nursing Satisfaction

| Group | n | Dissatisfied | Satisfied | Very Satisfied | Total Satisfaction Rate (%) |
|---|---|---|---|---|---|
| Control | 48 | 11 | 29 | 8 | 77.08% |
| Observation | 49 | 2 | 31 | 16 | 95.92% |
| $\chi^2$ | - | - | - | - | 7.411 |
| *P* value | - | - | - | - | .006 |

of 13.38±1.54). Similarly, the Barthel scores improved from 45.18±2.79 to 75.04±3.87. In the control group of general surgery patients, the time for the first postoperative ambulation was 3.86±1.21, and the length of the hospital stay was 8.74±1.96. On the other hand, in the observation group, the NIHSS scores for critical care patients decreased from 22.14±1.59 to 9.23±0.63, while the Barthel scores increased from 45.31±2.67 to 87.85±1.62. For general surgery patients in the observation group, the time for the first postoperative ambulation was the length of hospital stay was 2.74±0.95, and the length of the hospital stay was 7.67±1.35.

Before the intervention, the 2 groups had no significant differences in NIHSS or Barthel scores ($P > .05$). After the intervention, the NIHSS scores for critical care patients in the observation group were significantly lower than those in the control group, and the Barthel scores were significantly higher than those in the control group $P < .05$). Additionally, general surgery patients in the observation group had a shorter time for their first postoperative ambulation and a reduced length of hospital stay compared to the control group.

### Comparison of Psychological Status

As shown in Figure 3, the SAS scores for the control group before and after the intervention were 54.73±5.76 and 45.78±5.29, respectively, while the SDS scores were 57.82±6.33 and 48.78±5.09. As for the observation group, the SAS scores before and after the intervention were 55.07±5.81 and 38.96±4.47, and the SDS scores were 57.76±6.25 and 41.23±4.29.

Before the intervention, the 2 groups had no notable differences in SAS or SDS scores ($P > .05$). However, after the intervention, the SAS and SDS scores in the observation group were significantly lower than those in the control group ($P < .05$).

### Comparison of Self-Perception

As shown in Figure 4, the PSQI scores for the control group showed a decrease from 15.37±3.92 to 12.42±3.36 before and after the intervention, while the GCQ scores increased from 71.59±8.34 to 85.21±12.46. In the observation group, the PSQI scores decreased from 15.29±4.03 to 9.17±2.63 before and after the intervention, and the GCQ scores increased from 72.03±8.16 to 99.52±14.27. Before the intervention, the 2 groups had no significant difference in PSQI scores or GCQ scores ($P > .05$). However, after the intervention, the PSQI scores in the observation group were significantly lower than in the control group, and the GCQ scores were significantly higher ($P < .05$).

### Comparison of Nursing Satisfaction

In the control group, the nursing satisfaction level was 77.08%, whereas in the observation group, it reached 95.92%. The nursing satisfaction in the observation group was significantly higher than in the control group ($P < .05$). See Table 3 for details.

## DISCUSSION

In the contemporary field of medicine, nursing interventions have changed due to advances in medical technology and the increasing demand for personalized patient care. One approach that has gained considerable

attention is evidence-based nursing, which relies on the latest scientific evidence and focuses on the unique differences among patients.[13] Patients in the neurology and general surgery departments face dual challenges stemming from their illnesses and the treatment they receive, making comprehensive rehabilitation care crucial.[14] Neurology patients typically seek medical services for disorders of the central nervous system,[15] while general surgery patients may require special nursing care due to surgical or other interventions.[16] Although these 2 departments serve patients with distinct characteristics, both groups encounter complex issues throughout their treatment and recovery. As a result, there is a significant interest in applying evidence-based nursing to improve outcomes and facilitate the recovery process for those patients.

This study is based on a retrospective analysis of patient clinical data from the neurology and general surgery departments to gain an in-depth understanding of the effectiveness of evidence-based nursing in these 2 departments. By dividing patients into control and observation groups, the study compared the impact of conventional and evidence-based nursing on patient treatment compliance, recovery status, psychological well-being, self-perception, and nursing satisfaction.

Treatment compliance is a crucial factor during the patient's treatment process and directly relates to the quality of treatment outcomes.[17] Whether evidence-based nursing can positively improve patient treatment compliance is one of the critical focuses of this study.

The findings of this study indicate that the adherence to treatment in the control group was 80.95%, whereas in the observation group, it reached 97.73%. Moreover, the treatment compliance in the observation group was significantly higher than in the control group ($P < .05$), which aligns with previous research.[18] These results suggest that evidence-based nursing intervention can effectively improve the cooperation of critically ill patients in neurology and general surgery, thereby enhancing their treatment adherence.

The study also assessed the impact of evidence-based nursing on patient recovery, specifically by evaluating NIHSS and Barthel scores in neurology, as well as monitoring the time it took for patients in general surgery to ambulate for the first time and the length of their hospital stay.

After intervention, this study suggests that the NIHSS scores of critically ill neurology patients in the observation group were significantly lower than those in the control group. The Barthel scores were considerably higher than the control group ($P < .05$). For general surgery patients in the observation group, the time taken for first ambulation and length of hospital stay were significantly shorter than those in the control group ($P < .05$). These research findings indicate that evidence-based nursing intervention can effectively promote the recovery of critically ill neurology and general surgery patients, including their neurological and physiological functions. The reasons behind these findings may be related to evidence-based nursing interventions targeting and analyzing various risk indicators affecting neurology and general surgery patients and formulating clear nursing intervention plans, thereby making nursing measures more scientific, accurate, and specific.

Psychological well-being and self-perception are often overlooked in the patient's recovery process. Previous research[19] has confirmed that negative emotions such as anxiety, depression, and poor treatment experiences can have an adverse impact on a patient's recovery. An additional facet of this study investigated whether evidence-based nursing interventions can positively influence patients' psychological well-being and self-perception.

The findings of this study indicate that following the intervention, the observation group displayed significantly lower SAS and SDS scores compared to the control group ($P < .05$). Several potential mechanisms can be attributed to the observed improvements in psychological well-being. Firstly, the individualized nursing plans implemented in the observation group took into account the psychological needs of the patients. The nursing staff engaged in daily communication, provided emotional comfort, and offered psychological support, thereby alleviating negative emotions such as anxiety, tension, and fear. Establishing a positive nurse-patient relationship and providing support and encouragement fostered a sense of trust and optimism among the patients. Secondly, the involvement of patients' families in the rehabilitation training and overall care process significantly improved psychological well-being. The nursing staff guided the patients' families in assisting with rehabilitation training and encouraged them to support and supervise the patients' daily activities.

This active participation of families enhanced the interventions' effectiveness and provided emotional support to the patients, reinforcing their motivation and determination to recover. Furthermore, emphasizing holistic patient care in evidence-based nursing interventions improved psychological well-being. They addressed the patient's physical, psychological, and social requirements and provided comprehensive support and care, positively impacting their overall health and mental state.

Additionally, the observation group exhibited considerably lower PSQI scores than the control group, while the GCQ scores were significantly higher ($P < .05$). These findings indicate that evidence-based nursing interventions can enhance patients' psychological well-being and self-perception. These findings may be due to the emphasis on psychological care in evidence-based nursing interventions. Nurses consider issues from the patient's perspective and proactively observe the patient's mental state while establishing a positive doctor-patient relationship during the nursing process.

After conducting a thorough evaluation, the researchers analyzed the commitment levels of patients and their familiarity with nursing care, which directly affects the doctor-patient relationship. The findings of this research indicate that the satisfaction rate for nursing care in the

control group was 77.08%, while in the observation group, it reached 95.92%. Notably, the nursing satisfaction in the observation group was significantly higher than that of the control group ($P < .05$). These results align with previous studies[20] and affirm that evidence-based nursing interventions can potentially enhance patient and family satisfaction with nursing care. This outcome holds immense significance in fostering doctor-patient harmony.

This study provides evidence of the significant impact of evidence-based nursing interventions in promoting functional recovery and improving psychological well-being among intensive care patients in the neurology and general surgery departments. Compared to routine nursing interventions, evidence-based approaches demonstrated improved adherence to treatment, heightened self-awareness, decreased levels of anxiety and depression, and increased nursing satisfaction.

The findings of this study have significant implications for evidence-based nursing. They emphasize incorporating evidence-based practices into nursing care, particularly in critical clinical specialties such as neurology and general surgery. The results highlight the effectiveness of individualized nursing plans, psychological care, dietary interventions, and rehabilitation training in promoting patient recovery and well-being. By adopting evidence-based nursing interventions, healthcare professionals can enhance patient outcomes, improve patient and family satisfaction, and foster harmonious doctor-patient relationships.

Additional research is required to verify these findings and explore the long-term effects of evidence-based nursing interventions. However, the results of this study contribute valuable insights into the role of evidence-based nursing in promoting functional recovery and holistic patient care in the neurology and general surgery departments.

## CONCLUSION

Applying evidence-based nursing interventions in critical care patients within the neurology and general surgery departments has shown significant effectiveness. When compared to conventional nursing interventions, evidence-based nursing can effectively enhance patient treatment compliance and self-perception, reduce negative emotions such as anxiety and depression, and promote the recovery of patients' physical functions. Furthermore, evidence-based nursing interventions enhance both patient and family satisfaction with nursing care, thereby playing a crucial role in fostering harmonious doctor-patient relationships.

It is important to acknowledge that despite the positive findings obtained from examining the implementation of evidence-based nursing for neurology and general surgery patients, this study has several limitations that require further study.

This study utilized a retrospective analysis approach, inevitably influenced by data acquisition and selection bias. The completeness and accuracy of patients' clinical data may be affected by inconsistencies in recording and missing information, potentially affecting the credibility of the study results.

Secondly, the sample size in this study was relatively small, including only 97 patients from the hospital's neurology and general surgery departments over the past 2 years. Due to the sample size limitations, the generalizability and applicability of the research results may be constrained.

Lastly, this research encompasses a range of topics, including treatment compliance, recovery status, psychological conditions, self-perception, and nursing satisfaction. However, it did not include monitoring some physiological indicators in the study design, such as vital signs and laboratory tests. This omission may limit a comprehensive understanding of the overall physiological condition of the patients. In summary, despite making initial progress in exploring the role of evidence-based nursing in neurology and general surgery patients, the limitations above need to be addressed and improved in future research.

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