

NURSING INTERVENTIONS TO PROMOTE SELF-CARE IN CEREBRAL PALSY: A CROSS-SECTIONAL STUDY

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Abstract

Context: Cerebral Palsy (CP) is a non-progressive brain disorder causing motor impairments and related complications affecting health and development. Effective nursing care is essential to improve self-care skills in CP patients. Aim: To assess nurses' knowledge, attitude, and practices (KAP) in managing CP to enhance self-care development in adolescents and adults, ultimately improving neonatal health outcomes in Pakistan. Method: A descriptive cross-sectional study involving 150 nurses assessed KAP regarding CP care and its impact on patients' self-care skills. Data analyzed correlations between nursing interventions and self-care improvements. Results: 85% correctly defined CP; 69% understood self-care interventions, revealing knowledge gaps. 82% believed CP patients could develop self-care with proper nursing support; 90% recognized nurses' critical role. Nursing practices included assisting daily activities (90%), promoting mobility (87%), and family education (83%). Strong positive correlations ($p < 0.001$) were found between nursing interventions and patient self-care improvements. Conclusion: Nursing knowledge, attitudes, and practices significantly influence self-care development in CP patients. Enhancing nurse training can improve patient independence and quality of life, highlighting the critical role of nursing in CP management.

INTRODUCTION

1 Cerebral Palsy (CP) is a static non-progressive brain disorder defined as a group of motor disorders resulting from brain damage before, during, or after birth. Children with CP frequently have feeding problems, growth disorders, feeding complications, communication disorders, mental obstruction, seizure disorders, auditory problems, and visual deficiency, which may significantly impact their health (Wafeek, A A, El-Sharkawy, S S, Abd El-Moniem, I I, & Morsy, M A (2023)

2 Cerebral palsy (CP) is a non-progressive, incurable disorder that affects children's mobility and posture and is caused by restricted movements in the growing fetus or immature infant's brain. Cerebral palsy affects children in a variety of ways, including chronic pain, spasticity, sensory disruptions, vision and language issues, as well as digestive issues and malnutrition. They also face numerous obstacles in performing self-care duties, including eating, changing clothes, moving, and bathing, which can result in long-term

care requirements greatly surpassing those of typical children (Gad Ahmed, S, & Khalil, A A (2023)

3 Birth before full term elevates the likelihood of neurological impairment during developmental phases and is responsible for a considerable number of cerebral palsy incidents In many instances, diabetes and high blood pressure during pregnancy are identified as primary contributing factors Neurological tissue impairment stems from oxygen-deficient and blood flow-restricted trauma experienced during gestation, disrupting the balance between pro-oxidants and anti-oxidants To modulate oxidative stress cascades and mitigate associated complications, medical interventions including cold therapy applications, antioxidant-based treatments, and cellular energy regulation approaches have been suggested Rehabilitative interventions, comprising movement rehabilitation, daily living skills training, communication enhancement, and operative procedures, have enhanced the wellbeing of affected youth Contemporary advancements in this domain encompass the creation of muscular function indicators, AI-driven classification of cerebral palsy variants and motor irregularities, pathology forecasting through ocular examination, motion sensor technology for muscle tone assessment, digital motion study of normative and non-normative infant behavior, cognitive impairment recognition through computational methods, and artificial intelligence applications for cerebral palsy prediction (Nahar, A, Jain, S, & Paul, S (2024)

4 Cerebral palsy represents one of the most prevalent childhood neurological conditions that brings about unfavorable mental, affective, interpersonal and corporeal impacts of caregiving The intensive level of support required for youngsters with cerebral palsy can impact the corporeal, interpersonal, and mental wellbeing of maternal caregivers who attend to these children (Ruetti, E, & Pirotti, S (2024)

5 Cerebral palsy (CP) constitutes neurological impairment resulting from cerebral oxygen deficiency, impacting motor control, equilibrium and bodily alignment, occurring at a frequency of 2 in 1000 births Heightened probability is linked to premature birth, developmental anomalies, infections within the uterus, restricted fetal development, multiple gestations, placental disorders, extended parturition

and assisted birth methods (Liu, A, Zhang, H, & Guo, W (2023)

6 Cerebral palsy (CP) is characterized by several functional restrictions brought on by deviations in the development of the central nervous system The primary limitation of CP is motor dysfunction, although the prevalence of sensory (Siddiqi, S, Haider, S M A, Babar, B, Malik, N A, Javed, S, & Naheed, A (2023)

7 Here is no standard treatment for children with CP, therefore the focus is on prevention, symptom management, and support Physical therapy, occupational therapy, speech therapy, behavioral therapy, medication, and surgery are some of the most common therapies (12023)

8 Nursing professionals possess the capability to make a measurable and meaningful impact on the wellbeing of people living with developmental disabilities (DDs) across clinical settings, public health environments and educational institutions These conditions manifest as functional restrictions across various domains, such as cognitive processing (mental capabilities and organizational control), social competencies (challenges in verbal expression and interpersonal exchange, conduct management, affective control) and bodily performance (Khanlou, N, Khan, A, Landy, C K, Srivastava, R, McMillan, S, VanDeVelde-Coke, S, & Vazquez, L M (2023)

9 The encephalic pertains to the neural organ while paralysis denotes the deterioration or debilitation of movement capabilities The condition known as CP impacts the locomotor region of the encephalon's superficial stratum termed the cerebral cortex, the segment of neural tissue that controls muscular activities In certain instances, the motor region of the cerebrum has experienced abnormal development during prenatal stages In alternative cases, neural trauma occurs as a consequence of harm sustained prior to, throughout, or subsequent to delivery Regardless of the scenario, the neural impairment is permanent and the resultant functional limitations manifest as irreversible damage in either isolated or numerous sites within the underdeveloped central nervous system (Hamed, A, & Abd Elaleam, N A (2023)

10 Cerebral palsy (CP) is a non-progressive, incurable disorder that affects children's mobility and posture and is caused by restricted movements in the growing

fetus or immature infant's brain Cerebral palsy affects children in a variety of ways, including chronic pain, spasticity, sensory disruptions, vision and language issues, as well as digestive issues and malnutrition They also face numerous obstacles in performing selfcare duties, including eating, changing clothes, moving, and bathing, (Gad Ahmed, S, & Khalil, A A (2023)

11 Cerebral palsy represents the foremost physical disability encountered during childhood Among individuals with neurocognitive impairment, persistent or recurring respiratory complications constitute the primary factor in premature mortality and significantly diminish pediatric quality of life Extended hospitalization periods are frequently observed in CP patients experiencing respiratory difficulties Developmental delays in motor function, posture, and cognitive abilities commonly manifest in individuals affected by cerebral palsy The condition's occurrence rate approximates 15-3 cases per 1,000 live births, consistently observed across both industrialized and developing nations Respiratory manifestations demonstrate high frequency among CP-affected children The progression toward bronchiectasis typically involves several key mechanisms: repetitive aspiration events, compromised airway clearance capabilities, and anatomical abnormalities of the vertebral column and thoracic cavity This sequence often initiates with acute respiratory infections, advancing to chronic airway inflammation, and ultimately culminating in bronchiectasis development Various respiratory problems can occur as persistent cough (asthma, aspiration), recurring chest infections (pneumonia, aspiration and bronchitis), noisy breathing during airway blockage, strider and obstructive apnea during sleep (Elslemy, M M, Bahgat, R S, & Baraka,

Literature review

Cerebral Palsy (CP) is a static non-progressive brain disorder defined as a group of motor disorders resulting from brain damage before, during, or after birth Children with CP frequently have feeding problems, growth disorders, feeding complications, communication diseases, internal inhibition, seizure diseases, audile problems, and visual insufficiency, which may significantly impact their health

Investigations routinely demonstrate that caregivers of youngsters with cerebral palsy encounter considerable anxiety Such emotional burden stems from numerous origins, encompassing extensive care responsibilities The emotional burden experienced by these caregivers can be affected by multiple elements, including the intensity of the medical condition, the classification of cerebral palsy, and the accessibility of assistance networks

The current investigation seeks to evaluate the magnitude of psychological distress among maternal caregivers of youngsters with profound cerebral palsy and to evaluate their psychological distress measurements against those of maternal figures of non-disabled offspring

Grasping these interrelationships is essential for advancing scholarly work that enhances the expanding research highlighting the requirement for all-encompassing treatment methodologies that target both physiological and psychological wellness requirements of households impacted by CP

The research emphasizes the significance of implementing methodical care-based protocols in the treatment regimen for households of children with cerebral palsy

The study underscores the importance of holistic care in enhancing the safety and efficacy of advanced treatments for neurological conditions By adopting a comprehensive care plan tailored to the specific needs of children undergoing trans nasal neural stem cell transplantation, healthcare providers can improve clinical outcomes and reduce the risk of complications This approach involves not only medical interventions but also educating and guiding caregivers to ensure proper home care and support for the children

Research indicates that caregivers' lack of knowledge and inadequate practices contribute significantly to the poor respiratory health outcomes in CP children Educational interventions have been identified as crucial in bridging this knowledge gap These interventions typically involve structured training sessions, practical demonstrations, and continuous support, which collectively enhance caregivers' ability to manage respiratory issues effectively

The synthesis of the reviewed literature identified three main concepts: impediments and obstacles to medical care interventions, enabling factors

supporting healthcare delivery, and strategic guidance for educational development, administrative directives, and clinical operations. While healthcare professionals encounter considerable difficulties in delivering services to people with DDs, there are also key facilitators that can enhance care delivery. By addressing barriers through targeted education, supportive policies, and practice improvements, nursing can play a crucial role in improving health outcomes for this vulnerable population.

Background and Rationale

Adolescents and adults with CP often struggle with activities of daily living (ADLs) due to physical and cognitive impairments. Effective nursing interventions can potentially improve their ability to perform self-care tasks, fostering greater independence and self-esteem. Previous studies have indicated that tailored nursing interventions can lead to significant improvements in various aspects of health and functionality in individuals with CP. However, there is a need for more comprehensive research focused on specific interventions and their outcomes.

Research Objectives

To assess the current level of self-care skills among adolescents and adults with CP.

To implement specific nursing interventions aimed at enhancing self-care skills.

To identify factors that influence the success of nursing interventions in promoting self-care.

Rational of the study

Increase in the number of neonatal mortality as well as morbidity in Pakistan had a great impact on health day by day and role of nurses is going to be more specific and vital in health facilities and communities as well, nurses' sufficient knowledge and vision regarding prevention and newborn care practices can bring better outcomes. Resulting from improved newborn care will be much helpful to achieve healthy outcomes/indicators of Pakistan.

Research Question

What are the perceptions of nurses, their preparedness to tackle neonatal resuscitation?

Definition of key Terms

BIRTH ASPHYXIA

When a neonate is unable to initiate and maintain breathing patterns within 60 seconds post-delivery, this leads to a medical complication referred to as neonatal asphyxiation.

CEREBRAL PALSY

Cerebral palsy (CP) is a non-progressive, incurable disorder that affects children's mobility and posture and is caused by restricted movements in the growing fetus or immature infant's brain. Cerebral palsy affects children in a variety of ways, including chronic pain, spasticity, sensory disruptions, vision and language issues, as well as digestive issues and malnutrition.

NEONATE

A neonate refers to a newborn baby, specifically one who is less than 28 days old. This period is critical for the infant's development, as it encompasses significant physiological changes and adaptations to life outside the womb.

SELF CARE

Self-care is the practice of individuals taking initiative to maintain and improve their own health and well-being. It encompasses a wide range of activities, including personal hygiene, nutrition, exercise, medication management, and emotional well-being.

Aims

To improve neonatal Health in Pakistan by assessing knowledge, attitude and practice of Nurses in management of CP towards better future outlook of neonates.

Objectives

- To assess the knowledge of cerebral palsy among the nurses working in Bahawal Victoria Hospital Bahawalpur.
- To understand attitude of nurses regarding cerebral palsy among nurses of Bahawal Victoria Hospital Bahawalpur.

- To assess the practices of cerebral palsy among nurses at Bahawal Victoria hospital Bahawalpur

METHODOLOGY

Study Design

This study utilizes a descriptive cross-sectional research design to evaluate the effects of nursing interventions for self-care development in adolescents and adults with cerebral palsy (CP). Cross-sectional data can be used to explore relationships between variables at a point in time, giving an indication of the efficacy of nursing interventions in this sector. The study intends to determine the knowledge, attitude, and practice of nurses regarding CP care and assess their impact on CP patients' development of self-care.

Study Setting

Study will be conducted at Bahawal Victoria Hospital (BVH), Bahawalpur, Pakistan. Here is the work in a leading area hospital with specialized pediatric and neurology wards where nurses caring for CP patients. The hospital study is ideal because it provides an opportunity to work closely with experienced nurses who are used to dealing with working with CP patients in the clinical setting.

Study Population

The study population constitutes all nurses who work in the pediatric and neurology wards at BVH Hospital. They are key nurses trained to implement interventions to increase self-care skills in patients with CP.

Inclusion Criteria

Registered Nurses with a minimum of 5 years of experience in pediatric and neurology wards. Nurses providing direct care of adolescents and adults with CP. Participation in the study on willingness.

Exclusion Criteria

Nurses on leave during the study period. Other nurses or student nurses working outside of the neurology and pediatrics department. Assessing participation among oxygen therapy nurses unwilling to consent.

Sampling Method

Participants will be selected using a convenient sampling technique. This is a non-probability sampling method appropriate to ensure that participants had an understanding of the specialized knowledge needed for CP care and that there were expert nurses in the targeted hospital wards. Although convenience sampling may reduce generalizability, it guarantees that participants with appropriate expertise are included.

Data Collection Methods

Data Collection Tools

Quantitative data will be collected using a questionnaire structured to include both open-ended and closed-ended questions. The study will use a questionnaire adapted from validated tools, including both closed-ended and open-ended questions to provide a holistic response to its objectives. The instrument will consist of the following sections: Demographics: Age, education level, years of experience, current role. Knowledge assessment: Questions assessing nurses' knowledge on CP care and nursing actions. Attitude assessment: Likert-scale questions assessing attitudes toward CP care. Historical ID: Self-reported and clinically observed CP management practices.

Collection Procedure Data

Data collectors will be trained and supervised by the principal investigator to collect the data. The form will be self-administered, but there will be assisted sessions to clear doubts. Before responding, participants will be assured of confidentiality and anonymity. Data will be secured and used for research only.

Variables of the Study

Dependent Variables

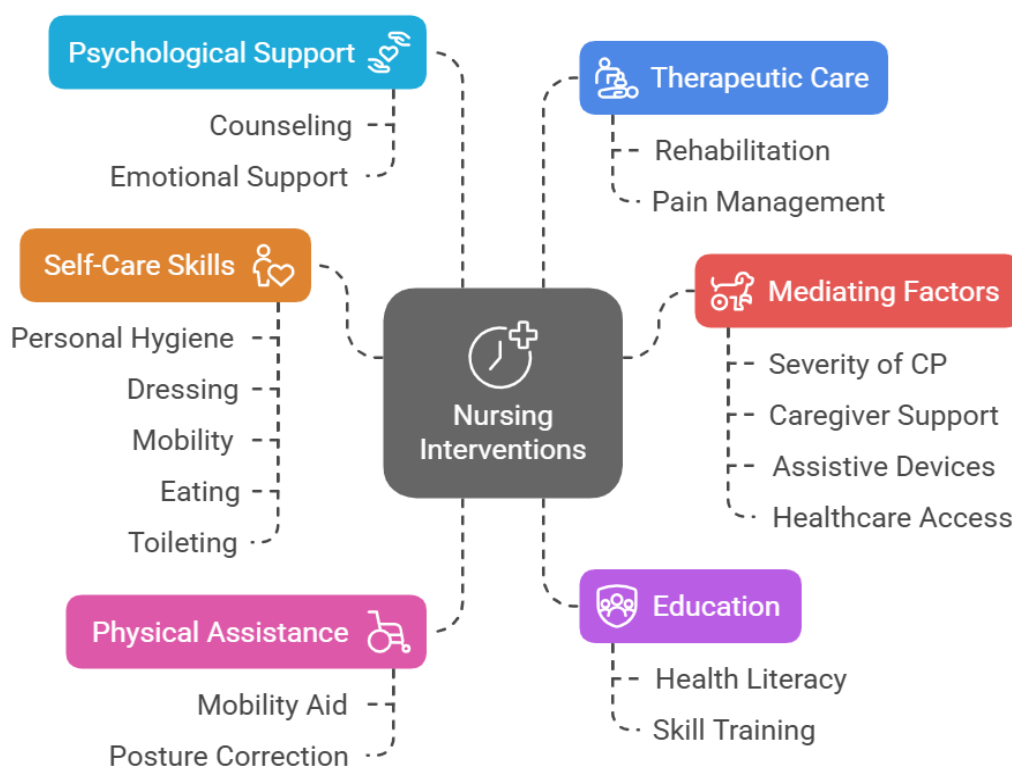
- Knowledge of nurses about CP care
- Attitude of nurses toward CP care
- Practice of nurses in managing CP-related self-care interventions

Independent Variables

- Age of nurses
- Educational qualifications
- Number of years of experience

CONCEPTUAL FRAME-WORK

Nursing Interventions and Self-Care Skills Development



Analysis

Data entry will be performed in SPSS version 20, and the principal investigator and research supervisor will cross-verify it. Demographic details and responses will be summarized using descriptive statistics (percentages, frequencies). Inferential statistics (chi-square tests) will be used to explore the association between nursing interventions and self-care skills in patients with CP. Correlation analysis relates to the degree of relationships between variables, either positive or negative. Results will be presented in the form of tables, graphs and charts for easy interpretation.

This chapter presents the findings of the study, including demographic data, nursing knowledge, attitudes, practices, and the correlation between nursing interventions and self-care skill improvement in CP patients. Statistical analysis was performed using SPSS version 20.

41 Demographic Characteristics of Participants

A total of 150 nurses participated in the study. The demographic distribution is presented in **Table 4**.

Table 41: Demographic Characteristics of Respondents (N=150)

Variable's	Frequency	Percentage
AGE		
25-30	50	333%
31-40	60	40%
41-50	30	20%
>50	10	67%
Total	N=150	100%
Gender		
MALE	40	267%
Female	110	733%
Total	N=150	100%
Education		
Diploma Nurses	65	433%
BS Nursing	55	367%
MS Nursing	30	20%
Total	N=150	100%
Year Of Experience		
5-10 years	45	30%
11-15 years \	55	367%
16 -20 years	35	233%
>20 years	15	10%
Total	N=150	100%

42 Nurses' Knowledge of Cerebral Palsy and Self-Care Interventions

The knowledge of nurses regarding CP and self-care interventions was assessed The summary of responses is presented in **Table 42**

Table 42: Nurses' Knowledge about Cerebral Palsy (N=150)

Variables	Response Correct (%)	(Incorrect Response (%)
Definition of Cerebral Palsy	85% (1275)	15% (225)
Causes of Cerebral Palsy	78% (117)	22% (33)
Common Symptoms in CP Patients	82% (123)	18% (27)
Importance of Self-Care Interventions	69% (1035)	31% (465)
Effective Nursing Strategies for CP Management	65% (975)	35% (525)

Key Findings:

- Most nurses (85%) correctly identified the definition of CP
- 69% had knowledge of self-care interventions, indicating gaps in awareness
- 65% were aware of nursing strategies for CP management, highlighting the need for further training

43 Nurses' Attitudes Toward Cerebral Palsy Care

The attitudes of nurses toward CP care were evaluated using a 5-point Likert scale The summary of responses is presented in **Table 43**

Table 43: Nurses' Attitudes Toward Cerebral Palsy Care

Statement	Strongly Agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly Disagree (%)
CP patients can develop self-care skills with proper interventions	55% (825)	30% (45)	10% (15)	3% (45)	2% (3)
Nurses play a crucial role in improving CP patients' quality of life	60% (90)	28% (42)	8% (12)	2% (3)	2% (3)
Nursing interventions should be an essential part of CP management	62% (93)	27% (405)	6% (90)	3% (45)	2% (3)
Additional training is needed to improve CP care	68% (102)	22% (33)	6% (9)	3% (45)	1% (15)

Key Findings:

- 82% of nurses agreed or strongly agreed that CP patients could develop self-care skills with proper interventions
- 90% acknowledged the crucial role of nurses in improving CP patients' quality of life

- 68% emphasized the need for additional training

44 Nurses' Practices in CP Self-Care Interventions

Nurses' practices were assessed based on their responses. The results are summarized in table

Table 44: Nurses' Practices in CP Care

Practice	Always (%)	Often (%)	Sometimes (%)	Rarely (%)	Never (%)
Assisting CP patients with daily activities	70% (105)	20% (30)	6% (9)	3% (45)	1% (15)
Encouraging mobility and physiotherapy	65% (975)	22% (33)	8% (12)	3% (45)	2% (3)
Educating families about CP management	58% (87)	25% (375)	10% (15)	5% (75)	2% (3)
Using assistive devices for patient independence	55% (825)	28% (28)	10% (15)	5% (75)	2% (3)

Key Findings:

- 90% of nurses regularly assisted CP patients with daily activities
- 87% encouraged mobility and physiotherapy
- 83% engaged in patient education, though gaps remained

45 Correlation Between Nursing Interventions and Self-Care Skills in CP Patients

A Pearson correlation test assessed the relationship between nursing interventions and self-care skill development in CP patients. The results are shown in Table 45 Cross Tabulation.

Table 45: Correlation Between Nursing Interventions and Self-Care Skills

Variables	Correlation Coefficient (r)	P-Value
Nursing Knowledge vs Self-Care Improvement	0.72	<0001
Nursing Attitude vs Self-Care Improvement	0.68	<0001
Nursing Practices vs Self-Care Improvement	0.75	<0001

Interpretation:

- A **strong positive correlation** was found between nursing interventions and self-care skill improvement ($p < 0001$)

- Higher **nursing knowledge** and **positive attitudes** were linked to better patient outcomes
- Improved **nursing practices** significantly enhanced self-care skills in CP patients

Discussion

The results of 150 nurses ($n=150$) demonstrate a strong positive correlation between nursing knowledge and self-care improvement, evidenced by a correlation coefficient (r) of 0.72. This suggests that as nurses' knowledge increases, there is a corresponding significant enhancement in patients' self-care practices. The magnitude of this correlation highlights the importance of equipping nurses with in-depth knowledge, as it can substantially impact patient outcomes.

The p -value of less than 0.001 further supports the statistical significance of this relationship, suggesting that the results are highly unlikely to have occurred by chance. This reinforces the reliability of the findings, underlining their potential value for nursing education and practice. It implies that healthcare institutions should prioritize the enhancement of nursing education programs to enable nurses to educate patients more effectively about self-care strategies, ultimately improving health outcomes. Future research could focus on identifying the specific areas of nursing knowledge that have the greatest impact on self-care and whether this correlation varies across different patient populations and conditions.

Similarly, the study reveals a notable positive correlation between nursing attitudes and self-care improvement, as indicated by a correlation coefficient (r) of 0.68. This suggests that positive nursing attitudes are linked to better self-care practices among patients. The strength of this correlation emphasizes the critical role that nurses' attitudes play in engaging patients and influencing their health outcomes.

The p -value of less than 0.001 further supports the statistical significance of this finding, suggesting that the observed correlation is unlikely to result from random chance.

These results underscore the need to cultivate positive attitudes among nursing staff. Training programs that not only focus on clinical skills but also emphasize the development of supportive and empathetic attitudes could improve patient care. Additionally, future research could explore which specific aspects of nursing attitudes most effectively promote self-care improvement.

The study also demonstrates a strong positive correlation between nursing practices and self-care improvement, with a correlation coefficient (r) of 0.75.

This suggests that the quality of nursing practices plays a significant role in enhancing patients' self-care abilities. The high correlation coefficient highlights the potential impact of well-executed nursing interventions on patient outcomes.

The p -value of less than 0.001 further confirms the statistical significance of this finding, indicating that the observed relationship is unlikely to have arisen by chance. This strong evidence reinforces the idea that the quality of nursing practices is a key factor in promoting self-care among patients.

These findings emphasize the need for healthcare institutions to prioritize the development and implementation of best nursing practices. Training and continuing education programs should focus on evidence-based strategies that empower patients to manage their own health. Moreover, ongoing evaluation and improvement of nursing practices could further enhance self-care.

Future research could investigate which specific nursing practices are most effective in promoting self-care improvement, as well as explore the relationship between these practices and various patient demographics or health conditions.

In conclusion, the strong correlations and significant p -values highlight the importance of effective nursing practices in facilitating self-care improvement, leading to better patient health outcomes and overall well-being.

Limitations

1. Sample Size and Generalizability: The sample size in this study may be limited, which could affect the generalizability of the results. If the sample is not representative of the broader population, the findings may not be applicable to different settings or demographics.

2. Self-Reporting Bias: If data on nursing knowledge, attitudes, and practices were collected through self-reporting, there may be biases introduced. Nurses may overestimate their knowledge or underreport their attitudes and practices, which could affect the accuracy of the results.

3. Cross-Sectional Design: This study employs a cross-sectional design, which collects data at a single point in time. As a result, it is difficult to establish causality.

between nursing knowledge, attitudes, practices, and self-care improvement over time

4.External Factors: Other unaccounted variables, such as patient demographics, socioeconomic status, and health conditions, may influence self-care practices These factors could confound the observed relationship between nursing variables and self-care improvement

Strengths

1.Strong Correlation Coefficients: The study presents strong correlation coefficients ($r = 0.72$ for nursing knowledge, $r = 0.68$ for nursing attitudes, $r = 0.75$ for nursing practices), indicating meaningful and statistically significant relationships These strong correlations support the importance of nursing variables in influencing self-care

2.Statistical Significance: The p-values (<0.001) associated with each correlation provide strong evidence that the findings are not due to chance, enhancing the credibility of the results

3.Implications for Practice: The study's findings have important practical implications for nursing education and practice By highlighting the connection between nursing knowledge, attitudes, practices, and self-care improvement, the study emphasizes the need for targeted training programs to enhance patient outcomes

4.Foundation for Future Research: The study establishes a strong foundation for future research, identifying critical areas for further exploration, such as which nursing practices most effectively improve self-care and the influence of patient demographics This can guide future research in enhancing nursing interventions

Ethical Considerations

Ethics approval for this study will be obtained from the Ethical Review Committee at King Edward Medical University Data collection will be conducted with informed consent from all participants, ensuring confidentiality Participants will be informed that they may withdraw from the study at any time without any consequences

Conclusion

This descriptive cross-sectional study underscores the vital role of nursing interventions in improving self-care among individuals with cerebral palsy (CP) The study highlights significant positive correlations between nursing knowledge, attitudes, and practices, and the self-care improvement of CP patients With correlation coefficients ranging from 0.68 to 0.75, the findings stress the importance of providing nurses with comprehensive knowledge and fostering positive attitudes towards CP care

The results indicate that effective nursing practices not only improve patient outcomes but also enhance the independence and self-esteem of individuals with CP Healthcare institutions should prioritize ongoing education and training for nursing staff, ensuring they are equipped with the best practices for managing cerebral palsy This study aims to provide valuable insights into the role of nursing interventions in promoting self-care skills among adolescents and adults with CP The findings are expected to inform clinical practice and contribute to the development of more effective care strategies

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