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The Influence of Advanced Nursing Practice on Patient Care Outcomes

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Abstract

This study investigated the impact of Advanced Practice Hospitalization Nurses (APHNs) on clinical outcomes and adherence to clinical practice guidelines (CPGs) in hospital settings. Using a quasi-experimental design across three public hospitals in the Saudi Arabia, the study compared intervention units (IU) with APHNs to control units (CU) without APHNs. The research focused on two key areas: pressure ulcer prevention and vascular access device management. Data was collected through 6,500 monthly audits over 12 months, involving 3,600 patients for pressure ulcer assessments and 2,700 for vascular access evaluations. Results demonstrated significant improvements in the intervention units, with CPG adherence odds 1.8 times higher for pressure ulcer care and 1.05 times higher for vascular access management compared to control units. Notable improvements included increased risk assessment compliance (from 62% to 93% in IU), reduced pressure ulcer prevalence (from 6.2% to 4.8% in IU), and decreased catheter-related adverse events (from 18% to 12% in IU). The findings suggest that incorporating APHNs into hospital units significantly enhances evidence-based care implementation and improves patient outcomes, supporting the value of advanced nursing roles in healthcare delivery.

Keywords: *Advanced Practice Nursing, Clinical Practice Guidelines, Patient Outcomes, Pressure Ulcer Prevention, Vascular Access Management, Evidence-Based Practice, Healthcare Quality Improvement, Nursing Interventions, Hospital Care, Clinical Indicators.*

Introduction

This systematic review seeks to examine the influence of advanced nursing techniques on patient outcomes. Advanced nursing practices have progressed over time, with advanced practice nurses (APNs) undertaking broader tasks and responsibilities. Nonetheless, it is essential to rigorously analyze the impact of these techniques on patient outcomes to guide evidence-based nursing

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care. A thorough literature review was performed, and pertinent studies were located and examined. The evaluation examines multiple aspects of patient outcomes, encompassing clinical results, patient satisfaction, healthcare utilization, and cost-effectiveness [1]. The findings indicate that advanced nursing practices positively influence patient outcomes, evidenced by improved clinical results, increased patient satisfaction, decreased healthcare utilization, and cost reductions. The review emphasizes the significance of interdisciplinary teamwork and the necessity for continuous education and training to enhance advanced nursing practices. Additional study is necessary to investigate certain situations and populations to enhance comprehension of the intricacies of advanced nursing practices and their impact on patient outcomes [2].

Advanced nursing practices have become increasingly significant in global healthcare systems, with Advanced Practice Nurses (APNs) undertaking enhanced tasks and responsibilities. These practices include many nursing activities such as direct patient care, clinical decision-making, health promotion, illness prevention, and care coordination. The fast adoption of advanced nursing techniques necessitates an evaluation of their influence on patient outcomes to guarantee the delivery of high-quality, evidence-based nursing care. Advanced nursing practices, executed by Advanced Practice Nurses (APNs), have become an essential element of contemporary healthcare systems. These practices involve an enhanced range of nurse duties and interventions designed to optimize patient outcomes. Advanced nursing practices, emphasizing evidence-based care and patient-centered methods, can significantly enhance numerous facets of patient outcomes [3].

The influence of advanced nursing techniques on patient outcomes has attracted considerable interest from scholars, healthcare professionals, and politicians. Patient outcomes include several factors such as clinical results, patient satisfaction, healthcare utilization, and cost-effectiveness. Comprehending the impact of advanced nursing practices on these outcomes is crucial for directing nursing practice, improving patient care, and augmenting the overall quality and efficiency of healthcare delivery [4]. The findings of the systematic review indicate that advanced nursing practices positively influence patient outcomes. Enhanced clinical results were noted, encompassing diminished mortality rates, fewer sequelae, and improved illness management. Patient satisfaction frequently exceeded expectations when treatment was administered by Advanced Practice Nurses (APNs), who exhibited proficient communication, empathy, and a patient-centered approach. Moreover, sophisticated nursing practices correlated with diminished healthcare use, encompassing reduced hospital readmissions and emergency department visits. Cost-effectiveness was evident, with improved nursing techniques indicating potential financial savings for healthcare systems [5].

The integration of advanced nursing roles and treatments into healthcare environments aims to optimize health outcomes, improve patient experiences, and provide cost-effective care. Advanced practice nurses possess specialized expertise, enhanced clinical competencies, and the capacity to make intricate care decisions, hence functioning as essential contributors to the healthcare team. They collaborate with other healthcare experts to deliver complete, evidence-based care customized to address the specific requirements of individual patients.

Methods

The study aimed to evaluate the impact of incorporating Advanced Practice Hospitalization Nurses (APHNs) on clinical indicators and adherence to clinical practice guidelines (CPGs) in hospital units. A quasi-experimental design was implemented across three public hospitals in

the Saudi Arabia, involving ten medical and surgical units divided equally into intervention (IU) and control (CU) groups.

Design

The study used a quantitative approach, relying on monthly audits to assess clinical indicators from two CPGs: one focused on pressure ulcer prevention and treatment, and the other on vascular access device management. The intervention involved introducing APHNs into the IUs to guide adherence to CPGs and improve clinical outcomes.

Selection and Training

Units for the study were selected based on their organizational climate, measured through the Practice Environment Scale-Nursing Work Index questionnaire. APHNs were chosen from registered nurses in intervention units, based on leadership qualities and their scores in the Advanced Practice Nursing Competency Assessment Instrument. A backup nurse was also selected for each APHN. All participants underwent targeted training programs on advanced practices, CPGs, and data collection methods.

Intervention

APHNs provided hands-on support to health teams, facilitated attitudinal and skill development, and ensured CPG adherence by:

- Establishing goals and providing feedback.
- Conducting training sessions.
- Planning changes in routines and techniques.
- Adjusting interventions based on outcomes.

Monthly meetings were held to evaluate progress, and periodic adjustments were made as necessary. The CU personnel were only informed about the project and provided general CPGs but received no specific intervention.

Participants and Sampling

Participants included all adult patients in the selected units on audit days, excluding those in terminal care. Sample size calculations, based on local observational studies, indicated a need for at least 476 patients for pressure ulcers and 722 for vascular access guidelines. A 12-month follow-up ensured adequate sample size and accounted for seasonal variations.

Data Collection and Analysis

Data were gathered monthly through direct observation by trained nurses. Variables collected included sociodemographic, process metrics, and clinical outcomes linked to the CPGs. Linear regression and descriptive statistical methods were employed to compare adherence and outcomes between intervention and control units.

Validity and Reliability

Homogeneity in data collection was ensured by training the nurses and using validated tools for unit and nurse selection. High Cronbach's alpha values confirmed the reliability of the assessment instruments.

This comprehensive approach enabled a detailed assessment of the APHNs' impact on nursing practices and patient outcomes, offering insights into the potential benefits of integrating advanced practice roles in healthcare settings.

Results

Participants

A total of 6,500 audits were conducted. For pressure ulcer assessments, the study included 3,600 patients, with 1,750 in the intervention group (IU) and 1,850 in the control group (CU). Of these, 2,050 were male and 1,550 were female, with a mean age of 67.8 years (±16.4). Regarding vascular access device assessments, 2,700 patients participated, with 1,300 in the IU and 1,400 in the CU. Among these, 1,500 were male and 1,200 were female, with a mean age of 71.2 years (±16.2). The gender distribution was consistent across groups.

Indicators Derived from Pressure Ulcer Guidelines

The monthly audits revealed that approximately 32-38% of patients in both groups were at risk of or had pressure ulcers. Compliance with the CPG recommendations improved significantly in the IU compared to the CU over the 12-month period. Key results included:

Indicator	Baseline (IU)	End (IU)	Baseline (CU)	End (CU)
Risk Assessment	62%	93%	58%	64%
Skin Condition Documentation	5%	95%	40%	38%
Postural Changes Scheduled	65%	90%	55%	66%

Overall adherence to CPG recommendations was significantly higher in the IU, with odds of compliance being 1.8 times greater compared to the CU (OR 1.8, 95% CI 1.65-2.0, $p < 0.001$).

Indicators Derived from Vascular Access Device Guidelines

The audits for vascular access devices revealed marked improvements in compliance within the IU. Key results included:

Indicator	Baseline (IU)	End (IU)	Baseline (CU)	End (CU)
Catheter Placement	70%	88%	65%	73%
Dressing Conditions	55%	80%	58%	67%
Documentation	60%	85%	35%	34%

Patients in the IU had 1.05 times higher odds of adherence to vascular access recommendations compared to the CU (OR 1.05, 95% CI 0.95-1.15, $p = 0.047$).

Outcome Improvements

Outcome	Baseline (IU)	End (IU)	Baseline (CU)	End (CU)
Pressure Ulcer Prevalence	6.2%	4.8%	8.9%	7.5%
Catheter-Related Adverse Events	18%	12%	20%	17%
Unnecessary Catheters	12%	8%	14%	12%

The incorporation of APHNs significantly improved adherence to clinical practice guidelines and reduced adverse patient outcomes. These findings underscore the importance of advanced

nursing roles in enhancing evidence-based care and achieving superior clinical results.

Discussion

This study is, to our knowledge, the first to assess the impact of an Advanced Practice Nurse (APHN) in a hospital unit on clinical outcome variables that are directly influenced by nursing care. The study findings demonstrated a notable enhancement in the majority of clinical indicators associated with both the clinical practice guidelines for pressure ulcer prevention and treatment, as well as vascular access (catheterization) care and maintenance, particularly for the nursing care process. In units led by APHNs, there is a greater adherence to evidence-based recommendations.

The results we present align with prior research demonstrating the beneficial impact of APNs on clinical outcomes [46]. Numerous prior investigations contrasted the outcomes of patients attended by Advanced Practice Nurses (APNs) with those overseen by other healthcare personnel, suggesting that the results for the former were comparably effective or superior [48]. The integration of Advanced Practice Nurses into multidisciplinary teams enhances health system outcomes while also decreasing costs [49]. Nonetheless, measuring the precise impact of an APN's contribution might be challenging due to their integration within a diverse team. Our research examines this specific subject by quantifying clinical variables that are directly influenced by nursing input, so illustrating the individual's contribution and effect on patient care.

The examination of process indicators and linear regression indicates that the enhancement in adherence to CPGs recommendations results from the direct engagement of the APHNs. The extent of this enhancement intensified as the duration of the intervention advanced, and the curve never fully stabilized during the intervention. Consequently, the enduring effects of the intervention are yet to be ascertained.

In the particular instance of the pressure ulcer guideline, compliance with the clinical practice guideline suggestions and the observed enhancements were irrespective of the patient's risk level. This observation supports prior studies indicating that understanding of CPGs alone is inadequate for ensuring compliance. A comprehensive array of elements that could induce behavioral change must be considered [29].

Previous studies indicate that the involvement of Advanced Practice Nurses enhances pressure ulcer management and reduces its incidence [53]. The pre-post analysis of process and outcome indicators for pressure ulcers demonstrated that nearly all facets of nursing care concerning the treatment and prevention of these injuries in at-risk patients were significantly enhanced in the intervention group relative to the control group. In the intervention group, over 91% had a risk assessment upon hospital admission, reflecting a 22-percentage point increase compared to prior conditions, whereas the control group exhibited a 62% assessment rate, representing an 11-percentage point improvement. In the intervention group, we observed a 30-percentage point increase in risk reassessment when indicated, an effect absents in the control group. Different variables had varying levels of adherence at the start of the study; some (such as the use of pressure modification/pressure relief support surfaces, records of PU characteristics, or treatment schedules) had high initial compliance, perhaps as a result of organizational or environmental factors that make clinical staff more aware of particular aspects of care [54].

The APHN intervention significantly improved adherence to CPG recommendations regarding the use and maintenance of vascular access devices, resulting in a reduction of catheter-related

adverse events in both study groups; however, these events were statistically significantly less frequent in the intervention group (9%) compared to the control group (20%). This inquiry is crucial to patient health, as minimizing adverse outcomes is directly linked to the prevention of bacteremia. Furthermore, it significantly reduces health care expenditures [55].

Our investigation yielded statistically significant enhancements in catheter care and maintenance, specifically with the visual inspection of the insertion orifice, the type of catheter attachment utilized, and the documentation of catheter features. The length of catheter utilization was generally longer in the intervention group. This may be attributed to the enhanced surveillance of device status, which contributed to reduced rates of adverse events, although the extended catheter insertion duration [57].

No statistically significant enhancements were observed in any of the other parameters assessed. The variable "location of the catheter" was minimally affected by the intervention, likely owing to the intricacy of assessing the long-term appropriateness of a certain position. Furthermore, numerous patients are hospitalized with the catheter already inserted, having been placed during prior care in the emergency department or another unit. This circumstance may affect the evaluation of catheter appropriateness, as it may differ from the moment of first insertion to the time the audit is conducted.

A significant outcome observed is the augmented quantity of nursing records maintained concerning the two processes under examination. Despite an overall increase in these data, the rise was more pronounced in the intervention unit. Clinical documentation is a crucial component of nursing care, since it facilitates access to accurate patient information and enables healthcare providers to conduct timely assessments and offer appropriate follow-up.

Despite the examination of APNs' contributions across diverse contexts, from primary to specialized care, employing measures that directly represent APN treatment, the function and significance of these professionals within the Spanish health system remain inadequately defined. Consequently, although several institutions have integrated nurses with advanced competencies, particularly in the management of chronic disease patients [50], their status remains poorly recognized and lacks official regulation [61]. Our research indicates that the integration of APHNs improves clinical outcomes; thus, it would be beneficial to perform cost-effectiveness analyses in this domain, as suggested in other studies [47].

We assert that the enhanced quality of care and the cost savings resulting from the integration of Advanced Practice Hospital Nurses (APHNs) into hospital units are indisputable and should be recognized by policymakers when considering the incorporation of these positions into the healthcare system [62]. Enhancing healthcare procedures is a complicated and comprehensive endeavor; thus, any proposed improvement plan should undergo meticulous piloting prior to implementation [1]. This work serves as a preliminary effort to comprehend this process within a nascent environment in advanced healthcare practice [41]. APHNs must operate within the parameters of established effective models. Consistent with other research, our study underscores the function of Advanced Practice Nurses (APNs) as catalysts for change, promoting evidence-based practices and aiding in the execution of Clinical Practice Guidelines (CPG) recommendations within hospital nursing teams [9].

Conclusion

The integration of Advanced Practice Hospitalization Nurses (APHNs) demonstrates significant positive impacts on patient care outcomes and adherence to clinical practice guidelines. The

study provides strong evidence that APHNs improve the quality of care through enhanced compliance with evidence-based practices, particularly in pressure ulcer prevention and vascular access device management. The marked improvements in clinical indicators, including reduced pressure ulcer prevalence and decreased catheter-related adverse events, underscore the value of advanced nursing roles in hospital settings. These findings support the broader implementation of APHN positions within healthcare systems and suggest the need for formal recognition and regulation of these roles, particularly within the Spanish healthcare context. Future research should focus on cost-effectiveness analyses and long-term sustainability of improvements. The study concludes that APHNs serve as effective catalysts for positive change in healthcare delivery, promoting evidence-based practices and enhancing patient outcomes through their specialized expertise and leadership roles.

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