Evaluation of Nutrition-Focused Physical Exams by Nurses: Enhancing Nutritional Assessment with Laboratory and Dietary Insights

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Abstract

The assessment of nutritional status is a critical component of patient care, particularly in hospitalized patients at risk of malnutrition. This study evaluates the impact of integrating Nutrition-Focused Physical Exams (NFPE) into nursing practice in a tertiary hospital setting. A mixed-methods approach was employed, involving 120 patients at risk of malnutrition. Quantitative findings showed significant improvements in nutritional markers, including serum albumin and prealbumin levels, reduced C-reactive protein levels, shorter hospital stays, and improved wound healing. Qualitative findings highlighted increased confidence among nurses, enhanced multidisciplinary collaboration, and challenges such as time constraints. The results indicate that NFPE can enhance the quality of nutritional care through early detection and intervention, ultimately improving patient outcomes.

Keywords: **Nutrition-Focused Physical Exam, NFPE, Malnutrition, Nursing Practice, Nutritional Assessment, Multidisciplinary Collaboration, Hospital Care.**

Introduction

The assessment of nutritional status is a critical aspect of patient care in healthcare settings, particularly for patients at risk of malnutrition (Barker et al., 2011). Nutrition-focused physical exams (NFPE) have emerged as an essential tool for healthcare professionals, including nurses, to evaluate patients' nutritional health by identifying physical signs of nutrient deficiencies (Mehta et al., 2017). Integrating NFPE into nursing practice allows for early detection and intervention, which can significantly improve patient outcomes, particularly among those with chronic illnesses or complex nutritional needs (Pittas et al., 2010).

Traditionally, nutritional assessments have relied heavily on laboratory biomarkers, dietary records, and anthropometric measurements (Kondrup et al., 2003). However, these methods alone may not fully capture the clinical signs of malnutrition, especially in hospitalized patients whose nutritional status can change rapidly due to various factors, including the severity of illness and reduced dietary intake (Elia et al., 2005). The NFPE is a hands-on assessment that involves evaluating signs such as muscle wasting, loss of subcutaneous fat, and physical symptoms like edema, which can indicate nutritional deficiencies (White et al., 2012). This approach provides a comprehensive understanding of a patient's nutritional state, complementing data from laboratory and dietary analyses (Dent et al., 2019).

The role of nurses in conducting NFPEs is crucial, as they are in direct contact with patients and are well-positioned to identify early signs of malnutrition (Marshall et al., 2016). When coupled with laboratory data and insights from clinical nutritionists, NFPE can help create a more robust nutritional care plan. Studies have shown that involving nurses in nutrition assessment enhances the multidisciplinary care approach and leads to better patient outcomes (van der Pols-Vijlbrief et al., 2014). Therefore, exploring how NFPEs conducted by nurses, with support from laboratory specialists and clinical nutritionists, can optimize the nutritional care process is of significant importance to improve the quality of care in tertiary hospital settings.

Literature Review

The prevalence of malnutrition in hospitalized patients remains a significant concern, with studies indicating that up to 50% of hospitalized adults are malnourished or at risk of malnutrition upon admission (Barker et al., 2011). Malnutrition not only impacts patient outcomes, such as increased length of hospital stay, delayed wound healing, and higher readmission rates, but also places a substantial burden on healthcare resources (Elia et al., 2005; Marshall et al., 2016). Effective nutritional assessment and intervention are therefore critical components of comprehensive patient care in hospital settings.

Nutrition-focused physical exams (NFPE) have gained recognition as a valuable tool in the assessment of malnutrition, particularly when used alongside traditional methods such as laboratory biomarker analysis, dietary assessments, and anthropometric measurements (Kondrup et al., 2003; Dent et al., 2019). NFPE allows healthcare providers to detect physical signs of nutrient deficiencies that might otherwise be missed through laboratory testing alone, such as muscle wasting, loss of subcutaneous fat, and the presence of edema (White et al., 2012). The ability to identify these physical symptoms early in the course of a patient's hospital stay can facilitate timely interventions and reduce the adverse effects associated with prolonged malnutrition (Mehta et al., 2017).

The role of nurses in conducting NFPE is particularly advantageous due to their constant contact with patients and ability to incorporate nutritional assessment into routine care practices (Marshall et al., 2016). Nurses are in a unique position to recognize changes in a patient's physical condition that may indicate nutritional decline, and their involvement in NFPE has been linked to improved nutritional status and clinical outcomes (van der Pols-Vijlbrief et al., 2014). Moreover, integrating NFPE into nursing practice has been found to strengthen multidisciplinary collaboration, as nurses can effectively communicate their findings to clinical nutritionists and other healthcare professionals to develop a comprehensive care plan (Pittas et al., 2010).

Laboratory specialists also play a crucial role in nutritional assessment by providing objective data that complement the physical findings of NFPE. Laboratory biomarkers, such as serum albumin, prealbumin, and C-reactive protein, are commonly used to assess nutritional status and inflammation, providing valuable insights into a patient's metabolic state (Elia et al., 2005). However, these biomarkers can be influenced by various factors, such as hydration status and inflammation, which may limit their reliability as standalone indicators of malnutrition (Kondrup et al., 2003). Therefore, combining laboratory data with NFPE findings allows for a more holistic assessment of a patient's nutritional status, improving the accuracy of malnutrition diagnosis and the effectiveness of subsequent interventions (White et al., 2012).

Clinical nutritionists, on the other hand, are instrumental in developing and implementing individualized nutrition care plans based on the assessment findings provided by nurses and laboratory specialists. The collaboration between these professionals ensures that nutritional interventions are tailored to meet the specific needs of each patient, thereby optimizing outcomes (Dent et al., 2019). Studies have shown that a multidisciplinary approach to nutrition care, which includes the use of NFPE by nurses, laboratory assessments by specialists, and dietary planning by nutritionists, leads to significant improvements in patient outcomes, including enhanced nutritional status, reduced complications, and shorter hospital stays (Marshall et al., 2016; van der Pols-Vijlbrief et al., 2014).

In conclusion, the literature highlights the importance of a multidisciplinary approach to nutritional assessment and intervention in hospital settings, with NFPE playing a central role in the early detection of malnutrition. Nurses, laboratory specialists, and clinical nutritionists each contribute unique expertise that, when integrated, enhances the quality of nutritional care and ultimately improves patient outcomes. Further research is needed to explore the barriers and facilitators to the implementation of NFPE in nursing practice, as well as the impact of this approach on patient outcomes in various clinical settings.

Methodology

This study was conducted in a tertiary hospital to evaluate the impact of integrating Nutrition-Focused Physical Exams (NFPE) into nursing practice on the nutritional status and overall outcomes of hospitalized patients. The study employed a mixed-methods approach, combining quantitative and qualitative data to provide a comprehensive assessment of the intervention's effectiveness.

Study Design and Participants

The study used a quasi-experimental design with a pretest-posttest approach. Patients at risk of malnutrition were identified using the Malnutrition Screening Tool (MST) upon admission. A total of 120 patients were enrolled in the study, all of whom were hospitalized in medical and surgical wards. Participants included adult patients aged 18 years and older who were at risk of malnutrition, as identified by an MST score of 2 or higher.

Intervention

The intervention consisted of NFPE conducted by nurses who had undergone specialized training in performing these assessments. The training included a 2-day workshop led by clinical nutritionists and laboratory specialists, focusing on identifying physical signs of malnutrition, interpreting laboratory results, and integrating NFPE findings into patient care plans. Each patient received an NFPE within 48 hours of admission, and follow-up assessments were conducted every 3 days during their hospital stay.

Data Collection

Quantitative data were collected at baseline and at discharge, including anthropometric measurements (weight, mid-upper arm circumference), laboratory biomarkers (serum albumin, prealbumin, C-reactive protein), and patient outcomes such as length of hospital stay, wound healing status, and readmission rates. In addition, qualitative data were collected through semi-structured interviews with participating nurses,

clinical nutritionists, and laboratory specialists to explore their experiences and perceptions of the NFPE implementation process.

Data Analysis

Quantitative data were analyzed using descriptive and inferential statistics. Paired t-tests were used to compare changes in nutritional status markers and patient outcomes from baseline to discharge. Qualitative data were analyzed using thematic analysis to identify common themes related to the benefits, challenges, and facilitators of integrating NFPE into nursing practice.

Ethical Considerations

Ethical approval was obtained from the hospital's ethics committee. Written informed consent was obtained from all participants prior to enrollment. Participants were assured of their confidentiality and the right to withdraw from the study at any time without any consequences to their care.

Findings

The results showed significant improvements in nutritional status markers, including increased serum albumin and prealbumin levels, as well as reductions in C-reactive protein levels. Patients who received NFPE had a shorter length of hospital stay and improved wound healing compared to the control group. Thematic analysis of the interviews revealed that nurses felt more confident in identifying malnutrition and collaborating with nutritionists and laboratory specialists, which improved the overall quality of patient care.

Quantitative Findings

Table 1 presents the changes in nutritional status markers from baseline to discharge. The mean serum albumin level increased from 2.8 g/dL at baseline to 3.4 g/dL at discharge ($p < 0.001$). Similarly, prealbumin levels improved from 15 mg/dL to 21 mg/dL ($p < 0.001$), while C-reactive protein levels decreased from 6.2 mg/L to 3.8 mg/L ($p < 0.001$).

Marker	**Baseline (Mean ± SD)**	**Discharge (Mean ± SD)**	**p-value**
Serum Albumin (g/dL)	2.8 ± 0.5	3.4 ± 0.4	< 0.001
Prealbumin (mg/dL)	15 ± 3.2	21 ± 3.8	< 0.001
C-Reactive Protein (mg/L)	6.2 ± 2.1	3.8 ± 1.7	< 0.001

Table 2 summarizes patient outcomes, including length of hospital stay, wound healing status, and readmission rates. Patients in the intervention group had a significantly shorter length of hospital stay (8.4 ± 2.1 days) compared to the control group (10.6 ± 2.5 days, $p < 0.01$). Additionally, 85% of patients in the intervention group experienced improved wound healing, compared to 65% in the control group ($p < 0.05$).

Outcome	Intervention Group (Mean ± SD)	Control Group (Mean ± SD)	p-value
Length of Hospital Stay (days)	8.4 ± 2.1	10.6 ± 2.5	< 0.01
Improved Wound Healing	85%	65%	< 0.05
Readmission Rate	12%	20%	< 0.05

Qualitative Findings

Thematic analysis of the qualitative data identified three major themes: (1) Enhanced Confidence and Skill Development, (2) Multidisciplinary Collaboration, and (3) Challenges in Implementation.

- Theme 1: Enhanced Confidence and Skill Development
  - Sub-theme 1.1: Increased Knowledge
  - Participants reported that the NFPE training significantly increased their knowledge of identifying malnutrition. One nurse stated, "I feel more equipped to identify signs of malnutrition, something I wasn't confident in before."
  - Sub-theme 1.2: Improved Patient Care
  - Nurses felt that conducting NFPE allowed them to provide better care. "With the skills I gained, I can directly contribute to improving my patients' nutritional status," shared another nurse.

- Theme 2: Multidisciplinary Collaboration
  - Sub-theme 2.1: Improved Communication
  - Nurses highlighted the positive impact on communication with clinical nutritionists and laboratory specialists. "We now have a better understanding of each other's roles, and that helps us work more efficiently as a team," remarked a clinical nutritionist.
  - Sub-theme 2.2: Comprehensive Patient Care
  - The integration of NFPE facilitated comprehensive patient care, as expressed by one participant: "The collaboration has made the nutritional care plans more tailored and effective for each patient."

- Theme 3: Challenges in Implementation
  - Sub-theme 3.1: Time Constraints
  - A recurring challenge was the time required to conduct NFPE in addition to other nursing duties. "Finding time to conduct a thorough NFPE is difficult with our already packed schedule," a nurse commented.
  - Sub-theme 3.2: Need for Ongoing Training
  - Participants indicated that ongoing training and support would be beneficial. One laboratory specialist noted, "To maintain high-quality assessments, continuous education is key."

Discussion

The findings of this study underscore the significant impact of integrating Nutrition-Focused Physical Exams (NFPE) into nursing practice on improving the nutritional status and overall outcomes of hospitalized patients. The quantitative results demonstrated notable improvements in key nutritional markers, including serum albumin and prealbumin levels, as well as reductions in C-reactive protein levels. These changes indicate enhanced nutritional status and reduced inflammation, which are crucial for recovery in hospitalized patients. The intervention group also experienced shorter hospital stays, improved

wound healing, and lower readmission rates compared to the control group, suggesting that early nutritional assessment and intervention can lead to better overall health outcomes.

The qualitative findings provide further insights into the positive impact of NFPE on nursing practice and multidisciplinary collaboration. Nurses reported increased confidence and knowledge in identifying malnutrition, which translated into improved patient care. This aligns with previous literature that highlights the importance of empowering nurses with the skills necessary to conduct thorough nutritional assessments (Marshall et al., 2016; van der Pols-Vijlbrief et al., 2014). The enhanced collaboration between nurses, clinical nutritionists, and laboratory specialists contributed to a more holistic approach to patient care, ensuring that nutritional interventions were timely and tailored to each patient's needs.

However, the study also identified several challenges in implementing NFPE, including time constraints and the need for ongoing training. These challenges are consistent with those reported in other studies that emphasize the barriers healthcare professionals face in integrating comprehensive assessments into routine practice (Elia et al., 2005). Time constraints, in particular, were noted as a significant barrier, as nurses are often required to balance multiple responsibilities, making it difficult to allocate sufficient time for detailed nutritional assessments. Addressing these challenges will require organizational support, including staffing adjustments and dedicated time for training and assessments, to ensure that NFPE can be effectively incorporated into nursing practice.

The findings of this study also highlight the importance of multidisciplinary collaboration in improving patient outcomes. The involvement of laboratory specialists in providing objective data and clinical nutritionists in developing individualized care plans was critical to the success of the intervention. This collaborative approach aligns with the growing recognition of the value of multidisciplinary teams in healthcare, particularly in managing complex conditions such as malnutrition (Dent et al., 2019). Future research should explore strategies to enhance collaboration further, such as the use of digital tools to facilitate communication and coordination among team members.

Overall, the integration of NFPE into nursing practice, supported by laboratory and clinical nutrition insights, has the potential to significantly improve the quality of care for hospitalized patients. The findings of this study provide a strong rationale for expanding the use of NFPE in hospital settings and underscore the need for continued education and support for healthcare professionals to overcome barriers to implementation. Future studies could focus on evaluating the long-term impact of NFPE on patient outcomes, as well as exploring the feasibility of scaling this approach across different healthcare settings.

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خلاصة

يعد تقييم الحالة التغذوية عنصرًا حاسمًا في رعاية المرضى، خاصة المرضى في المستشفيات المعرضين لخطر سوء التغذية. تقيم هذه الدراسة تأثير دمج الاختبارات البدنية التي تركز على التغذية في ممارسة التمريض في بيئة المستشفى الثالثي. تم استخدام نهج (NFPE) مختلط الأساليب، التي تشمل 120 مريضا معرضين لخطر سوء التغذية. أظهرت النتائج الكمية تحسينات كبيرة في العلامات الغذائية، بما في ذلك مستويات الألبومين في الدم ومستويات ما قبل الألبومين، وانخفاض مستويات البروتين التفاعلي سي، وإقامة أقصر في المستشفى، وتحسين التئام الجروح. أبرزت النتائج النوعية زيادة الثقة بين الممرضات، وتعزيز التعاون متعدد التخصصات، والتحديات مثل ضيق الوقت. تشير النتائج إلى أنه يمكن أن يعزز جودة الرعاية الغذائية من خلال الكشف المبكر والتدخل، مما يؤدي في النهاية إلى تحسين نتائج المرضى

الكلمات المفتاحية: الفحص البدني الذي يركز على التغذية، ، سوء التغذية، ممارسة التمريض، التقييم الغذائي، التعاون متعدد التخصصات، الرعاية في المستشفيات.