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BARRIERS AND FACILITATORS TO SCREENING FOR MALNUTRITION BY COMMUNITY NURSES: A QUALITATIVE STUDY

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Abstract

Introduction: Hospital-acquired malnutrition significantly impacts patient outcomes, healthcare costs, and morbidity and mortality rates. Despite its prevalence, it often remains underdiagnosed and undertreated in hospitalized patients. This systematic review aims to evaluate the effectiveness of nutritional interventions in preventing and treating hospital-acquired malnutrition among hospitalized adult patients, focusing on recent interventional studies and clinical trials to inform clinical practice and healthcare policy.

Methods: The review included interventional studies and clinical trials published in the last five years up to 2022, sourced from PubMed, Cochrane Library, CINAHL, and EMBASE. Inclusion criteria targeted studies evaluating nutritional interventions for adult hospitalized patients with hospital-acquired malnutrition, with outcomes such as nutritional status, length of hospital stay, readmission rates, and mortality. The study selection process involved screening, full-text review, and quality assessment using standardized tools, with data synthesis conducted qualitatively due to the expected heterogeneity .

Results: Six studies were included, with interventions ranging from oral nutritional supplements and individualized diet planning to enteral and parenteral nutrition. Key findings include a 20% to 50% greater likelihood of nutritional improvement or reduction in complications across the interventions. Notably, personalized nutritional support was associated with a risk ratio of 1.5 (95% CI: 1.2-1.9) for improved nutritional status, and oral nutritional supplements reduced complications with a risk ratio of 0.8 (95% CI: 0.65-0.98). Early initiation of enteral nutrition showed a 25% reduction in the risk of mortality with a risk ratio of 0.75 (95% CI: 0.59-0.95).

Conclusions: This review demonstrates the effectiveness of diverse nutritional interventions in mitigating the effects of hospital-acquired malnutrition. The findings support the integration of tailored nutritional strategies into patient care protocols to improve clinical outcomes in hospitalized patients. Implementing evidence-based nutritional interventions can significantly impact patient recovery, healthcare costs, and overall hospital efficiency.

Keywords: Hospital-Acquired Malnutrition, Nutritional Interventions, Clinical Trials, Enteral Nutrition.

Introduction

Hospital-acquired malnutrition is a critical issue affecting hospitalized patients worldwide, leading to extended hospital stays, increased healthcare costs, and elevated morbidity and mortality rates. Studies indicate that up to 50% of patients may become malnourished during their hospital stay, with the prevalence of malnutrition upon admission ranging from 20% to 50% in various populations [1][2]. This wide-ranging impact underscores the importance of effective nutritional interventions to mitigate the adverse outcomes associated with hospital-acquired malnutrition. Moreover, malnutrition in hospitalized patients is often underdiagnosed and undertreated, suggesting a gap in current healthcare practices [3].

The consequences of hospital-acquired malnutrition are far-reaching, affecting not only patient recovery times but also their overall quality of life. Malnourished patients are three times more likely to develop complications during their hospital stay, with surgical patients experiencing a 300% increase in postoperative complications [4]. Additionally, the length of hospital stay for malnourished patients is on average 4.4 days longer compared to well-nourished patients, leading to a 50% increase in hospital costs [5][6]. These statistics highlight the critical need for effective interventions aimed at preventing and treating malnutrition in hospital settings.

Nutritional interventions, ranging from oral nutritional supplements to parenteral nutrition, have been shown to improve patient outcomes significantly. For instance, the implementation of individualized nutrition care plans has been associated with a 25% reduction in the incidence of hospital-acquired malnutrition [7]. Furthermore, early nutritional intervention within 48 hours of hospital admission has been linked to a 20% decrease in the risk of mortality among malnourished patients [8]. These findings support the integration of nutritional assessments and interventions as a standard component of hospital care. Despite the proven benefits of nutritional interventions, there remains a lack of uniformity into their application across healthcare settings. A survey of hospital practices revealed that only 60% of institutions have a protocol for nutritional screening at admission, and less than 40% adhere to guidelines for the management of malnutrition [9][10]. This inconsistency in practice underscores the necessity for evidence-based guidelines and standardized care pathways to address hospital-acquired malnutrition effectively. The aim of this systematic review was to evaluate the effectiveness of interventions for hospital-acquired malnutrition in hospitalized patients. Through a comprehensive analysis of the medical literature, we sought to identify which interventions are most effective in preventing and treating malnutrition among this vulnerable population. The justification for this review lies in the significant health burden posed by hospital-acquired malnutrition and the potential for nutritional interventions to improve patient outcomes and reduce healthcare costs. By synthesizing existing evidence, this review aims to inform clinical practice and policy-making in the management of hospital-acquired malnutrition [11].

Methods

The methodology for this systematic review was meticulously designed to capture the most relevant and recent evidence on interventions for hospital-acquired malnutrition among hospitalized patients. The search strategy was comprehensive, aimed at identifying studies that evaluated the effectiveness of nutritional interventions. Search terms included combinations of "hospital-acquired malnutrition," "nutritional interventions," "hospitalized patients," and related terms. These were tailored to the syntax and subject headings of each database to ensure the capture of all pertinent studies. The

databases searched included PubMed, Cochrane Library, CINAHL, and EMBASE.These databases were chosen for their extensive coverage of medicaland health sciences literature. The search was limited to studies published in the last fiveyears up to 2022, to ensure that the review reflected the most current evidence. This time frame was selected to focus on the latest interventions and practices in the context of evolving healthcare settingsand nutritional management strategies.

Inclusion criteria were specifically defined to select studies that directly addressed the review question. Only interventional studies that assessed the outcomesof nutritional interventions in adult hospitalized patients with hospital-acquired malnutrition were included. Studies needed to report on at least one outcome related to malnutrition, such as changes in nutritional status, length of hospital stay, readmission rates, or mortality. Exclusion criteria were applied to omit studies that were not in English, case reports, reviews, commentaries, and studies focusing on pediatric populations, given the distinct physiologicaland clinical considerations in treating children. The study selection process followed a structured approach. Initially, two reviewers independently screened titles and abstracts for potential relevance based on the inclusion and exclusion criteria. Discrepancies between reviewers at this stage were resolved through discussion or, if necessary, consultation with a third reviewer. Following this preliminary screening, full texts of potentially relevant studies were obtained and independently assessed for eligibility by the same reviewers. Studies that did not meet all of the inclusion criteria upon full-text reviewwere excluded.

Data extraction was conducted using a standardized form designed to capture key information relevant to the review question, including study design, participant characteristics, details of the nutritional intervention, outcomes measured, and study findings. This process was carried out independently by two reviewers, with discrepancies resolved through discussion or third-party adjudication. This rigorous approach ensured the accuracy and completeness of the data extracted for analysis. The quality of the included studies was assessedusingthe Cochrane Riskof Bias tool for randomized controlled trials and the ROBINS-I tool for non-randomized studies of interventions. This assessment was critical for understanding the strength of the evidence and the potential impact of bias on the study findings. The overall evidence was synthesized qualitatively, given the expected heterogeneity in study designs, populations, interventions, and outcomes. This synthesis aimed to identify effective nutritional interventions for hospital-acquired malnutrition, considering the variability in clinical practices and patient needs.

Results and discussion

The results of this systematic review encompass the findings from six interventional studies and clinical trials focused on nutritional interventions for hospital- acquired malnutrition among hospitalized patients. The included studies, published between the last years up to 2022, varied significantly in design, sample size, and types of interventions, reflectinga broad spectrumof strategies to combat malnutrition in the hospital setting. Sample sizes across thestudies ranged from 60 to over 300 participants, indicating a wide variation inthe scale of research efforts.The types of interventions implemented across these studies were diverse, including oral nutritional supplements, individualized diet planning, nutritional counseling, and the use of enteral and parenteral nutrition. One study [11] focused on the impact of personalized nutritional support by a dietitian, showing a significant improvement in nutritional status and a reduction in the length of hospital stay. The risk ratio for improvement in nutritional status was 1.5 (95% CI: 1.2-1.9), indicating a 50% greater likelihood of nutritional improvement compared to the control group.

Another study [12] evaluated the effectiveness of oral nutritional supplements in addition to the standard hospital diet. This intervention was associated with a 20% increase in calorie and protein intake among participants, with a risk ratio for reducing complications of 0.8 (95% CI: 0.65-0.98), suggesting a 20% lower risk of developing complications during the hospital stay compared to patients who received the standard diet alone. A clinical trial [13] focused onthe implementation of an integrated care pathway for malnutrition that included screening, assessment, and tailored nutritional interventions. This study reporteda significant decrease in the prevalence of hospital-acquired malnutrition, with a risk ratio of 0.6 (95% CI: 0.45-0.80) for malnutrition prevalence at

discharge, highlighting the effectiveness of a comprehensive, standardized approach to nutritional care. The use of enteral nutrition in critically ill patients was the focus of another study [14], which found that early initiation of enteral nutrition within 48 hours of admission led to a shorter length of ICU stay and lower ICU mortality rates. The risk ratio for mortality was 0.75 (95% CI: 0.59-0.95), indicating a 25% reduction in the risk of death. A study [15] exploring the effects of nutritional counseling by registered dietitians reported significant improvements in patients' nutritional knowledge and behaviors during the hospital stay. However, this study did not provide specific risk ratios or confidence intervals for clinical outcomes, focusing instead on patient-reported outcomes. Finally, a trial [16] assessing the impact of parenteral nutrition in patients unable to achieve adequate oral or enteral intake demonstrated a reduction in the risk of nosocomial infections, with a risk ratio of 0.85 (95% CI: 0.74- 0.98), pointing to an important role for parenteral nutrition in specific patient populations.

Comparatively, these studies underscore the variability in the effectiveness of nutritional interventions, with personalized nutritional support, early initiation of enteral nutrition, and the use of oral nutritional supplements showing particularly promising results. The diversity in intervention designs reflects the complexity of addressing hospital-acquired malnutrition and highlights the need for tailored approaches based on individual patient needs and clinical scenarios. The discussion of this systematic review centers on the comparative analysis of the risk differences observed in the included interventional studies and clinical trials against those reported in the broader medical literature concerning hospital-acquired malnutrition interventions. The studies included in this review demonstrated a range of effectiveness, with risk ratios varying from 0.6 to
1.5 across different nutritional interventions. These findings offer a nuanced understanding of how different strategies may influence patient outcomes in a hospital setting. Comparatively, literature outside of this review provides additional context to these findings. For instance, a study reported in [19] on the use of high-protein oral nutritional supplements in a similar patient population found a risk ratio of 0.7 (95% CI: 0.55-0.90) for reducing complications, slightly more favorable than the 0.8 (95% CI: 0.65- 0.98) observed in our review [12]. This suggests that protein-focused interventions may have a slightly greater impact on reducing hospital complications. Another study [20] evaluated the effects of implementing a hospital-wide nutrition protocol, including early screening and intervention, similar to the integrated care pathway discussed in this review [13]. They reported a risk ratio of 0.5 (95% CI: 0.4- 0.7) for the prevalence of malnutrition at discharge, indicating a more substantial reduction compared to the 0.6 (95% CI: 0.45-0.80) found in our reviewed study. This could imply that broader, institution-wide nutritional protocols may offer enhanced benefits over isolated interventions. Further, the literature reveals a study [21] that examined the impact of personalized dietary counseling by dietitians, which showed a risk ratio for improvement in nutritional status of 1.6 (95% CI: 1.3-2.0), closely aligning with the 1.5 (95% CI: 1.2-1.9) observed in our review [11]. This consistency underscores the value of personalized nutritional care in improving patient outcomes.

In contrast, the effectiveness of enteral nutrition initiated within 48 hours of admission was reported in the literature with a risk ratio for mortality of 0.65 (95% CI: 0.50-0.85) [22], which is somewhat more favorable than the 0.75 (95% CI: 0.59-0.95) reported in our review [14]. This variation might reflect differences in patient populations, the severity of illness, or implementation practices of enteral nutrition protocols. Studies focused on parenteral nutrition, such as one cited in [23], reported a risk ratio of 0.8 (95% CI: 0.68-0.94) for reducing nosocomial
infections, closely mirroring the 0.85 (95% CI: 0.74- 0.98) found in our review [16]. This similarity indicates a consistent benefit of parenteral nutrition in specific contexts where oral or enteral feeding is not feasible. Overall, the comparison of numerical results between the included studies and those in the existing literature illustrates a broad consensus on the effectiveness of various nutritional interventions. However, it also highlights the importance of context, patient-specific factors, and the implementation quality of interventions. The slight differences in risk ratios suggest that while certain interventions may be broadly effective, their optimal application may depend on individual hospital settings, patient characteristics, and the specifics of the nutritional intervention. These findings

reinforce the need for a personalized approach to nutritional care in hospitalized patients to maximize the benefits and minimize the risks associated with hospital-acquired malnutrition [21-23].

This systematic review presents several strengths that enhance its relevance and applicability in clinical practice. Firstly, the inclusion of only recent interventional studies and clinical trials ensures that the findings reflect current practices and nutritional management strategies, making them directly applicable to contemporary hospital settings. The diversity of interventions examined—from oral supplements and individualized dietary plans to enteral and parenteral nutrition—provides a comprehensive overview of the spectrum of strategies available to combat hospital-acquired malnutrition. Furthermore, the methodological rigor of including studies with varyingdesigns and sample sizesenrichesthe review's findings by highlighting the effectivenessof different interventions across a range of clinical scenarios and patient populations.

However, the review also has limitations that must beconsidered when interpreting its findings. The variation in study designs, intervention types, and outcome measures introduces heterogeneity, making direct comparisons between studies challenging. Thisheterogeneity reflects the complexity of nutritional interventions but also complicates the synthesis of findings into clear, generalized conclusions. Additionally, the exclusion of non-English language studies may have omitted relevant research, potentially introducing language bias. The focus on adult hospitalized patients limits the applicability of the findings to pediatricpopulations, who have distinct nutritional needs and may respond differently to interventions.

Conclusions

this systematic review highlights the effectiveness of various nutritional interventions in reducing the prevalence and impact of hospital-acquired malnutrition among hospitalized patients. Key findings include significant improvements in nutritional status with risk ratios ranging from 0.6 to for different interventions, demonstratinga 20% to50% greater likelihood of nutritional improvement or reduction in complications compared to control or standard care. These results underscorethe importanceof implementing tailored nutritional strategies as part of comprehensive patient care in hospital settings to improve outcomes and reduce the burden of hospital- acquired malnutrition.

Conflict of interests

The authors declared no conflict of interests.

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Table (1): Summary of utritional interventions in preventing and treating hospital-acquired malnutrition among hospitalized adult patients

Study ID	Sample Size	Population Characteristics	Type of intervention	Effectiveness ofthe intervention	Study conclusion
11]	123	Adults hospitalized with risk of malnutrition	Personalized nutritional support by adietitian	50% greater likelihood of nutritional improveme nt, RR 1.5 (95% CI: 1.2-1.9)	Personalized support significantly improves nutritional status and reduces hospital stay.
[12]	257	Surgical patients requiring nutritional support	Oral nutritional supplements	20% lower risk of developing complications, RR 0.8 (95% CI:0.65-0.98)	Supplementation enhances calorie and protein intake, reducing surgical complications.
[13]	61	Hospitalized patients, diverse conditions	Integrated care pathway for malnutrition	40% reduction in malnutrition prevalence at discharge, RR 0.6 (95% CI:0.45-0.80)	Comprehensive care pathways effectively decrease malnutrition prevalence.
[14]	301	Critically ill patients in ICU	Early initiation of enteral nutrition	25% reduction inrisk of mortality,RR 0.75 (95% CI: 0.59-0.95)	Early enteral nutrition lowers mortality in critically ill patients.
[15]	159	Elderly patients with chronic diseases	Nutritional ounseling by registered dietitians	Significant improvements innutritional knowledge and behaviors, specific RR not provided	Dietitian counseling significantly impacts patient nutritional behaviors.
[16]	93	Patients unable to achieve oral or enteral intake	Parenteral nutrition	15% reduction inrisk of nosocomial infections, RR 0.85 (95% CI:0.74-0.98)	Parenteral nutrition is crucial for patients with specific intake issues, reducing infection rates.