IJRAR.ORG E-ISSN: 2348-1269, P-ISSN: 2349-5138

INTERNATIONAL JOURNAL OF RESEARCH AND ANALYTICAL REVIEWS (IJRAR) | IJRAR.ORG

An International Open Access, Peer-reviewed, Refereed Journal

NUTRITION CARE PROCESS: CONTINUITY OF CARE

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Hospital malnutrition is frequently observed upon patient admission but often goes unrecognized and undiagnosed, despite its high prevalence. Malnutrition is linked to several negative outcomes, including increased hospital mortality and morbidity rates, longer hospital stays, adverse health consequences, and a diminished overall quality of life. The Nutrition Care Process (NCP) and the NCP Model (NCPM) serve as foundational guidelines for clinicians and dietitians worldwide. However, implementing the NCP in various settings poses challenges. It is crucial to highlight dietitians' experiences and perceptions regarding NCP implementation. The NCP is seen as a roadmap comprising four key steps: nutritional screening and assessment, nutritional diagnosis, nutritional monitoring, and evaluation. These steps aim to provide high-quality nutrition care. Effective nutritional screening and assessment, coupled with appropriate interventions, can enhance the nutritional, metabolic, and functional status of postoperative patients. The quality of NCP documentation plays a vital role in accurately resolving diagnoses. Implementing the NCP is an essential first step in delivering proper nutrition care, but a follow-up plan is equally important for ensuring continuity of care. This study offers a brief overview of the NCP and illustrates its implementation and follow-up processes to maintain continuity in patient care.

Keywords: Nutrition care process, nutritional screening, nutritional assessment, nutritional diagnosis, nutritional monitoring, nutritional evaluation, hospital malnutrition

1. Introduction

Hospital malnutrition, particularly disease-specific malnutrition, is on the rise, leading to increased adverse health outcomes, higher mortality and morbidity rates, and a significant decline in overall quality of life. Research should prioritize the development of an effective Nutrition Care Process (NCP) that includes the early identification of at-risk individuals and the provision of timely nutritional interventions (Schuetz et al., 2021). Thorough documentation from the outset, starting with nutritional screening and assessment, is crucial for achieving the objectives of the nutrition care plan (Lewis et al., 2022).

The NCP is a comprehensive framework developed by a healthcare team comprising health professionals, managers, and executives to identify and address nutritional problems. It is viewed as a roadmap consisting of four key steps: nutritional screening and assessment, nutritional diagnosis, nutritional intervention, and nutritional monitoring and evaluation. The planning and documentation of the NCP can vary based on the specific hospital setting and healthcare practitioners involved. A quality-based study in the United States found a high level of agreement between physicians and dietitians in assessing malnutrition. This study also indicated the need for better documentation of the various nutritional interventions and approaches, highlighting an area for future research (Anghel et al., 2021). Various strategies exist for providing nutritional care. One study demonstrated the benefits of using consensus-based nutrition care pathways for transitions from hospital to community settings (Keller et al., 2022). This study aims to provide a brief overview of the NCP and to illustrate its step-by-step application.

2. Steps of NCP

2.1 Nutritional screening and assessment

In the assessment of malnutrition, nutritional screening and assessment are critical initial steps. Although these are two distinct processes, they should be performed consecutively to achieve the goals of the Nutrition Care Process (NCP) (Serón-Arbeloa et al., 2022). Nutritional screening identifies risk factors associated with malnutrition and typically requires quick and straightforward tools. This screening can often be conducted by medical professionals, patients, or their families.

In contrast, nutritional assessment involves a more complex and detailed evaluation of the patient's profile, ultimately leading to the formulation of a nutritional diagnosis statement. This assessment is time-consuming and is typically carried out by dietitians, nutritionists, or registered dietitians (Reber et al., 2019). Various validated nutritional screening and assessment tools exist, such as the Malnutrition Universal Screening Tool (MUST), Nutrition Risk Status 2002 (NRS 2002), and the Subjective Global Assessment (SGA) (Serón-Arbeloa et al., 2022).

According to the American Society for Parenteral and Enteral Nutrition (A.S.P.E.N., 2012), nutritional screening is defined as "a process to identify an individual who may be malnourished or at risk for malnutrition to determine if a detailed nutrition assessment is indicated." A.S.P.E.N. defines nutritional assessment as "a comprehensive approach to diagnosing nutrition problems that uses a combination of medical, nutrition, and medication histories; physical examinations; anthropometric measurements; and laboratory data." Each hospital setting employs different strategies for assessing inpatients. For instance, a recent study modified the PG-SGA tool for assessing the nutritional status of cancer patients. The Modified SGA (mPG-SGA) is noted as the first tool specifically designed and validated for this purpose, demonstrating effectiveness in evaluating the nutritional status of cancer patients (Fu et al., 2022).

2.2 Nutritional diagnosis

Based on nutritional screening and assessment, a nutritional diagnosis statement is formulated. This step focuses on identifying the necessary nutritional interventions (Lee, 2012). According to several studies, the most commonly used format for nutritional diagnosis is the PES (Problem, Etiology, and Signs and Symptoms) statement (Murphy et al., 2015).

2.3 Nutritional intervention

Nutritional intervention is a strategic action plan designed to address specific nutritional issues. Goals are established and implemented to improve patients' nutritional status. Various intervention strategies are employed based on the identified nutritional problems. The ultimate aim of nutritional intervention is to correct the nutritional diagnosis, address the underlying causes, and alleviate signs and symptoms (Skipper, 2007).

Research has shown that targeted nutritional intervention plans can enhance overall health and reduce adverse health outcomes in cancer patients (Prado et al., 2020). Additionally, early administration of nutritional interventions, particularly micronutrients, has been linked to improved protection against COVID-19 (Alexander et al., 2020). Nutrition screening is recommended upon admission to identify individuals at risk of malnutrition and to prevent postoperative complications (Pathirana et al., 2014). Thus, timely nutritional interventions should be planned and executed effectively (Allard et al., 2016).

2.4 Nutritional monitoring and evaluation

Nutritional monitoring involves reviewing a patient's nutritional status and includes a comprehensive follow-up starting from the nutritional screening and assessment phase. It assesses whether the planned nutritional interventions are appropriate. In contrast, nutritional evaluation compares current results with previous outcomes and established standards (Skipper, 2007).

3. Application of NCP using ASPEN nutrition care algorithm

The NCP and NCP-Model (NCPM) serves as a baseline for many clinicians and dietitians all over the world. NCPM is defined by American Dietetic Association (ADA) in 2008.But the implementation of NCP in various setting is challenging. Dietitians' experiences and perception on NCP implementation is very crucial and need to highlighted(Lövestam et al., 2017).

3.1 Implementation of NCP

CASE: The data presented in the table below can be obtained through direct interviews, ward rounds, medical files, electronic medical records, as well as input from nurses and doctors.

Table1: Data of an inpatient

Age/sex	**53/M**
Height(cm): weight(kg)	158:40
BMI	16kg/m^2
Unintentional weight loss in last three months	Yes
Personal habits	Chronic smoker
Cardiac family history	Yes(father)
Dietary history consuming high fat foods and non-vegetarians	Yes
Clinical symptoms	Chest pain, palpitation
Abnormal vital signs	High BP (130/90)
Any other co-morbidity present	Diabetic and hypertensive
Significant changes in lab values	HbA1C- 7.8%
Any procedure performed	Surgery CABG (coronary artery bypass graft

The Malnutrition Universal Screening Tool (MUST) has been found to be the most accurate, simple, and valid screening method (Cortes et al., 2024; Krznarić et al., 2020). Various nutritional screening tools can be used to assess nutritional status, and in this study, the MUST was utilized. The patient's BMI was recorded at 16 kg/m², indicating unintentional weight loss and the presence of an acute disease. As a result, the patient was classified as high risk, with a screening score of 2. According to MUST guidelines, this necessitated a referral to dietitians and the implementation of a Nutrition Care Process (NCP). The screening scores indicated the need for a detailed nutritional assessment.

Research shows that when the NCP is implemented, the presence of an etiology-intervention link significantly increases the likelihood of resolving nutritional diagnoses within the Veterans Health Administration population. Thus, the quality of NCP documentation is crucial for accurate diagnosis resolution (Lewis et al., 2021).

Using information from ward rounds, electronic health records, medical files, and insights from nurses and doctors, a nutritional assessment was conducted. The patient was diagnosed with coronary artery disease (CAD), along with diabetes mellitus (DM) and hypertension (HTN). The patient was found to be underweight, having lost 4 kg in the past two months. Additionally, they were identified as a heavy smoker, a non-vegetarian, and had a family history of cardiac issues. Chief complaints included chest pain and palpitations, and the HbA1c level was measured at 7.8%, which is considered high. A 24-hour dietary recall was conducted repeatedly over three days to analyze the patient's eating patterns.

The medical diagnosis was established as CAD with DM and HTN. Based on the nutritional screening scores and assessment, the nutritional diagnosis identified was inconsistent carbohydrate, fat, and salt intake. A nutritional intervention was then implemented according to this diagnosis, prescribing a low-carbohydrate, high-protein, diabetic, and low-salt diet. The patient's preferences and choices were taken into consideration, and the diet was planned according to the recommended dietary allowances.

Nutritional monitoring and evaluation included daily nutritional re-screening during ward rounds, with nutritional assessments recommended to be performed every other day.

3.2 Follow-up plan – Continuity of care

Pre-operative nutrition

Upon admission, nutritional screening was conducted within the first 24 to 48 hours, and the patient was identified as being at high risk for malnutrition (Taipa-Mendes et al., 2021). Given this risk, a comprehensive nutritional assessment was performed, and the patient was prescribed a low-carbohydrate, low-fat, high-fiber, diabetic, and low-salt diet. Before finalizing the diet plan, the patient's food choices and preferences were considered to enhance nutritional intake (Naughton et al., 2021).

On the first day, based on the screening and assessment scores, the patient received the prescribed low-carbohydrate, diabetic, and low-salt diet. However, the patient initially struggled to accept the hospital food. Dietary counseling was then provided to emphasize the importance of nutrient intake and the medical diagnosis (Rinninella et al., 2023). By the second day, the patient expressed satisfaction and requested larger portions. Due to laboratory values indicating low hemoglobin (8.0 g/dl) and albumin (3 g/dl), the patient was given an oral nutritional supplement and transitioned to a high-protein version of the low-carbohydrate, diabetic, and low-salt diet. The portion sizes were adjusted based on the patient's requests.

On the third day, the patient was placed on a "nil per mouth" status in preparation for surgery.

Post operative nutrition

Nutritional assessment combined with appropriate interventions leads to improved nutritional, metabolic, and functional outcomes for surgical patients (Lobo et al., 2020). On the fourth day post-surgery, the patient was on IV fluids. Once the patient regained consciousness, water was introduced, and they were gradually transitioned to a liquid diet. By the fifth day, due to improvements in their condition and tolerance, a semi-solid diet was initiated. On the sixth day, a soft diet was prescribed while the patient remained in the intensive care unit. After being transferred to the ward, a regular diet was encouraged on the tenth day, supplemented with oral nutritional support for additional nourishment. As the patient continued to improve, they were placed on a low-carbohydrate, low-fat, high-fiber diet, along with oral nutritional supplements. The patient was discharged on the twentieth day.

On discharge – Continuity of care

The patient was discharged in good health, following the doctor's orders. Upon discharge, they received nutritional education and counseling, along with educational materials such as diet charts. Additionally, the patient was given a helpline number for any further queries. Research indicates a strong connection between effective continuity of care and improved outcomes, including lower mortality rates, fewer complications, and reduced healthcare utilization among patients with diabetes and/or hypertension(Chan et al., 2021).

4. Conclusions

In conclusion, this study underscores the critical importance of addressing hospital malnutrition through the implementation of the Nutrition Care Process (NCP). Despite its high prevalence and association with adverse health outcomes, malnutrition often goes unrecognized and undiagnosed in hospital settings. The NCP, which encompasses nutritional screening, diagnosis, intervention, and monitoring, serves as a structured approach to enhance nutritional care. By highlighting the experiences of dietitians and the challenges of implementing the NCP, this paper emphasizes the need for effective documentation and a follow-up plan to ensure continuity of care. Through timely interventions and tailored dietary strategies, healthcare providers can significantly improve patient outcomes, reduce hospital stays, and enhance overall quality of life, for individuals at risk of malnutrition. This approach not only benefits patients during their hospital stay but also sets the foundation for ongoing nutritional support post-discharge, ultimately contributing to better long-term health outcomes.

5. Acknowledgement

I would like to express my sincere gratitude to Sri Sathya Sai Institute of Higher Learning for providing me with the invaluable opportunity to conduct research. I am deeply thankful to the Department of Food and Nutritional Sciences for their unwavering support, which has enabled me to work effectively and make meaningful progress. I am also immensely grateful to the Sri Sathya Sai Institute of Higher Medical Sciences for the hands-on experience it provided, allowing me to gain a deeper understanding of patient care. This experience has enriched my knowledge and strengthened my commitment to advancing in the field of health and nutrition.

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