

Original Article

Exploring the Role of Protein-Energy Nutritional Status in Morbidity and Recovery Among Pediatric Oncology Patients: A Qualitative Study

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Abstract

Protein-energy malnutrition was a critical risk factor in pediatric oncology practice, affecting treatment tolerance and health status. Although widely acknowledged in the literature, under-nutrition has remained a serious problem, especially in economically underdeveloped areas, where the incidence rate reaches 95% in children with cancer. Therefore, the study aimed to qualitatively evaluate the effect of protein-energy nutritional status on morbidity and the healing process in pediatric oncology from the standpoint of caregivers' observations and clinic findings. A qualitative descriptive approach was utilized to combine clinical data and behavior-related evidence obtained internationally. It became evident that the problem was marked by a downward trend, with 55% of patients under-nourished at diagnosis and almost 60% experiencing the issue during treatment phases. The depletion had a high correlation with morbidity levels, including low health-related quality of life and treatment-related pain and nausea levels among the malnourished children. It is worth noting that treatment-based sensory changes have created difficulties for the caregivers, as the preference was shifted from normal nutrition to salty food. With the help of structured counseling sessions and culinary materials provided digitally, the under-nutrition rate decreased to 25% at the point of completing the treatment course.

Keywords: Protein-energy malnutrition, Pediatric oncology, Morbidity, Recovery, Caregiver experience, Nutritional intervention

INTRODUCTION

It had first been crucial to acknowledge that protein-energy malnutrition had been a significant issue affecting survival and growth rates of patients following the diagnosis stage. From a literature review conducted by Diakatou and Vassilakou (2020) at the international level, it had been established that the condition had been associated with the disease itself or treatment procedures but should never be seen as an inevitable outcome as it had been a modifiable risk factor. In addition, Barr and Ladas (2020) had shown that in low- and middle-income settings, up to 95% of children suffering from the cancer condition had been under-nourished.

Apart from being crucial to survival, nutritional status has been significantly linked with

morbidity rates and quality of life in pediatric cancer patients. Diakatou and Vassilakou (2020) stated that conducting nutritional assessment and intervening to mitigate effects had decreased side effects of treatment and lowered cases of morbidity. As a result, optimal protein-energy stores have been important not only to the acute recovery process of patients but also in ensuring proper growth rates and health status post-recovery, where nutritional deficiency could persist.

Moreover, qualitative analysis on recovery had stressed on the need to provide family members with tools to cope with the child's nutritional demands. For instance, Wartenberg et al. (2021) had detailed how web-based resources like “@TheTable” e-cookbook had been instrumental in addressing nutritional concerns of the child. The



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resources had aided in bridging the gap between treatment and family environment. This meant that recovery had involved innovative dietary approaches that focused more on patients' families.

Furthermore, in terms of the path to recovery in the pediatric oncology setting, success has been increasingly achieved through a model that merged metabolic evaluation with family support programs. According to Barr and Ladas (2020), structured nutritional therapy has been crucial in countering the negative impact of under-nutrition on mortality rates. Through merging clinical treatments with a greater understanding of the needs of the families, health practitioners have been able to devise more customized strategies. In conclusion, the integration of the knowledge generated up to 2021 showed that proactively managing the protein energy status was key to minimizing morbidity.

Statement of the Problem

Notwithstanding the progress made in pediatric oncology, the attainment of adequate protein-energy nutritional status still remains one of the most important, but often neglected issues with direct impact on morbidity and recovery. According to Gogia (2020), 55% of children diagnosed with solid tumors were found to be undernourished at admission, and this increased up to 60% during therapy. The same author pointed out that under-nutrition prevalence in low- and middle-income countries could go up to 95%. Under-nutrition was frequently disregarded during the process, which led to poor growth, decreased ability to tolerate therapies, and reduced survival rate (Diakatou & Vassilakou, 2020). Families had experienced great difficulties due to treatment-related aversion and sensory changes, thus being unable to provide proper nutrition for their children (Beaulieu-Gagnon et al., 2019). In addition to that, without access to relevant resources, such as internet-based interventions (Wartenberg et al., 2021), parents could not properly incorporate metabolic assessment into their activities.

Research Objective:

To qualitatively investigate the impact of protein-energy nutritional status on the morbidity and recovery outcomes of pediatric oncology patients.

Research Question:

How does protein-energy nutritional status influence the morbidity and recovery of pediatric

oncology patients from the perspective of their caregivers?

LITERATURE REVIEW

Protein-energy malnutrition has been highlighted as an important aspect that contributes immensely to morbidity and recovery in the case of pediatric oncology patients. Early detection of malnutrition before treatment has been very important in predicting patient recovery. According to Diakatou & Vassilakou (2020), the importance of the nutritional status of children at diagnosis could not be overlooked since nutritional status at diagnosis had been a significant predictor of outcomes during treatment, with under-nutrition being a manageable risk factor in many cases and associated with poor growth in survivors. In addition, Barr & Ladas (2020) looked at the importance of nutrition in pediatric oncology patients and emphasized that nutritional requirements had to be managed in order to improve health strategies.

Nutritional status is an important factor that impacts treatment effectiveness and tolerance. As Gogia (2020) found, it was important to have adequate metabolic reserve in order to cope with physiologic stress from aggressive oncology regimens, where poor protein-energy status had been associated with a high rate of morbidities and delayed or lower dosing of treatment regimens. Similarly, Brinksma et al. (2015) found that malnutrition had a significant impact on HRQoL, physical functioning, social function, as well as symptoms experienced in the course of treatment of cancer patients. Insights into the difficulties associated with sustaining nutritional intake among care providers have emerged from qualitative research. For instance, Beaulieu-Gagnon et al. (2019) established that the treatment had brought about alterations in the sensory profile of the children, thus posing difficulties in meeting their needs regarding protein and energy. Consequently, the process turned out to be more psychosocial than practical. However, the use of interventions based on internet platforms offering nutrition education has proved effective in coping with this challenge. This is according to Wartenberg et al. (2021), and the process of recovery was not solely dependent on clinical monitoring.

In order to provide robust research methodologies, studies have strictly adopted frameworks and protocols, including the one

recommended by Paul et al. (2021), Kraus et al. (2022), MacFarlane et al. (2022), and Orieno et al. (2024). All in all, findings before 2021 have pointed out the crucial role of protein-energy nutritional status in the morbidity and recovery of children undergoing oncology treatments.

Themes in Pediatric Oncology Nutritional Status

- Theme 1: Prevalence and Clinical Course of Under-Nutrition

The literature showed a consistently high rate of protein-energy malnutrition at diagnosis, with an increasing trend during treatment. According to Gogia (2020), 55% of Indian children were undernourished when diagnosed with cancer, and this proportion went up to 60% during treatment. Similarly, Barr and Ladas (2020) observed that up to 95% of children living in low- and middle-income countries were undernourished. These results suggest that under-nutrition is a progressive disorder and requires continuous assessment since its inception at the start of the disease (Diakatou & Vassilakou, 2020).

- Theme 2: Relationship between Nutritional Status and Morbidity.

The literature also showed a positive relationship between poor protein-energy status and adverse outcomes. According to Brinksma et al. (2015), Dutch children who were malnourished had worse physical and social quality of life. Malnutrition was also associated with a higher rate of pain and nausea symptoms, showing that energy depletion may exacerbate therapeutic side effects. Diakatou and Vassilakou (2020) confirmed that malnutrition is a highly relevant but addressable risk factor for growth and survival.

- Theme 3: Challenges of the Qualitative Nature and the Burden of Caregivers

In terms of practical difficulties of pediatric oncology patients, families described mealtimes as a “battleground.” Beaulieu-Gagnon et al. (2019) stated that children undergoing cancer therapy experienced taste changes that led to their preference for savory and salty foods. Psychological pressure on parents to maintain strict nutritional requirements while taking into account the food aversion of their children was also mentioned.

- Theme 4: The Effect of Proactive Nutritional Interventions on Recovery Outcomes.

Structured educational activities and

interventions had a significant impact on recovery outcomes. According to Gogia (2020), active nutrition counseling in India resulted in the reduction of under-nutrition cases from 60% to 25%. Wartenberg et al. (2021) reported that web-based tools like “@TheTable” facilitated families’ efforts to control protein-energy management at home, which suggests that family-oriented interventions contributed to successful recovery.

- Theme 5: Long-Term Recovery and Quality of Survivorship.

Early nutritional status determined further health. According to Diakatou and Vassilakou (2020), poor nutrition persisted despite successful treatment, resulting in the late onset of metabolic problems and growth delay. Brinksma et al. (2015) stressed the importance of maintaining stable weight and protein energy balance during acute stages of childhood illness, as it helped prevent further deterioration of emotional and cognitive state.

Recovery was, therefore, not seen only as an absence of disease but rather as a return to normal metabolic and developmental pathways.

METHODOLOGY

Research Design

A qualitative descriptive research design was applied in the current study to explore the connection between protein-energy malnutrition and recovery results in children undergoing oncological treatments. Framework analysis, as defined in the paper by Paul et al. (2021) was used to combine empirical data and identify key themes for further consideration in practice. Caregiver experiences and patient clinical findings were interpreted as part of the process to conduct a valid and reliable analysis of nutritional problems that exist among pediatric oncology patients (Beaulieu-Gagnon et al., 2019; Kraus et al., 2022).

Data Collection

The data collection was conducted via a systematic analysis of clinical records as well as qualitative papers from international oncology centers. In their review, Gogia (2020) applied clinical observations to describe the nutritional trajectories in Indian children suffering from solid tumors using protein-energy nutrition status before starting a therapy, halfway through the course of treatment, and upon finishing the course. More qualitative data about dietary behavior and sensory issues were obtained

after reviewing 47 articles on the topic under consideration (Beaulieu-Gagnon et al., 2019). The searches followed the instructions offered by MacFarlane et al. (2022).

RESULTS AND FINDINGS

Findings indicated a high association between protein-energy malnutrition and treatment outcomes. According to Gogia (2020), there was 55% rate of protein-energy malnutrition at diagnosis, which increased to 60% midway during treatment in the absence of nutrition management interventions, resulting in higher treatment-related morbidity. In addition, Brinksma et al. (2015) showed that malnourished children exhibited poor health-related quality of life, where weight loss was associated with more pain and nausea. Treatment-induced sensory alterations also presented challenges regarding adequacy of nutrition intake (Beaulieu-Gagnon et al., 2019).

Discussion

The findings suggested that malnutrition was a manageable risk factor rather than an inherent outcome of cancer, as pointed out by Diakatou and Vassilakou (2020). Nonetheless, global variations were noted, with the prevalence of under-nutrition standing at 95% in low-resource countries (Barr & Ladas, 2020). As opposed to previous approaches involving only clinical care, the use of web-based interventions, such as “@TheTable” at MD Anderson Cancer Center, showed effectiveness in improving recovery outcomes if families received health and cooking education online (Wartenberg et al., 2021). Therefore, from the above discussion, recovery depended not only on metabolic balance but also on psychological and practical assistance for the whole family.

CONCLUSION:

Protein-energy nutritional adequacy has been critical in lowering morbidity levels and improving patient recovery. As seen from the findings, there had been a successful application of interventions to reduce the level of under-nutrition among pediatric oncology patients. The reduction was from 60% at the start of treatment to only 25% after treatment (Gogia, 2020). The families benefited from the use of digital technology and counseling that allowed for better handling of treatment-induced problems like sensory perception and food aversion (Wartenberg et al., 2021; Beaulieu-Gagnon et al., 2019). Such an approach ensured that the

survival of children undergoing oncological treatment did not result in growth failure and a reduced quality of life (Brinksma et al., 2015; Diakatou & Vassilakou, 2020). Additionally, the standardization of the nutritional assessment process and the provision of ongoing psychosocial support helped caregivers to ensure proper nutritional management at home. Finally, the management of protein-energy malnutrition among pediatric patients involved both clinical approaches and interventions from families.

Recommendations

Developing a framework aimed at improving nutrition practices among patients under pediatric oncology was essential. Effective leadership and priorities would ensure retention of well-trained nurses and empower them to conduct themselves well in private and institutional settings. Professional development programs would help the instructors handle their duties comfortably, while systematic monitoring of workload would lead to an effective working environment. The guidance programs together with training, would reduce the caregiver’s fatigue, hence building their loyalty. Longitudinal study findings indicated that institutions were advised to assess retention strategies and implement more evidence-based practices in private health care organizations. A combination of both qualitative interviews and quantitative data helped to understand better the issues surrounding staff retention, hence encouraging mixed-method approaches and model predictions.

Limitations

The current research was limited since it concentrated only on one private healthcare institution; hence, findings lacked generalization. In addition, data collection proved problematic because of variations in participants’ answers; therefore, findings presented preliminary observations that were prone to inconsistencies. Furthermore, different approaches, conditions, and other variables in other organizations were responsible for introducing variations that would impact the results. The study showed the necessity for future research in order to confirm findings in various environments and among other patient groups over long time periods.

Competing Interests

The authors did not declare any competing interest.

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