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Review Article

Barriers to comprehensive nutrition care for cancer patients: a review

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ABSTRACT

This comprehensive review studies the multifaceted barriers that delay cancer patients from accessing adequate nutrition throughout their cancer journey. Addressing these barriers is paramount, considering their profound implications on treatment efficacy, patient well-being, and overall outcomes. The analysis encompasses a range of obstacles comprises physiological, psychological, economic, social, and healthcare system factors, highlighting their intricate impact on nutritional intake and patient care. The exploration of nutritional barriers reveals a landscape encompassing challenges such as malnutrition, treatment-related side effects, psychological distress, physical limitations, lack of knowledge, cultural influences, financial constraints, and limited access to specialised nutritional support. These hurdles, if left unaddressed, can lead to adverse consequences including malnutrition, weakened immunity, impaired treatment response, decreased quality of life, and ultimately, poorer prognosis. The intricate interplay between inadequate nutrition and cancer outcomes is underscored, emphasising the pivotal role of proper nutrition in boosting the immune system, supporting treatment effectiveness, and hastening recovery. Strategies to overcome these barriers emerge through multidisciplinary approaches integrating medical and nutritional needs, personalised dietary plans, psychosocial support, and the integration of yoga and wellness practices to foster mindful eating and holistic well-being. This review provides valuable insights into the complexities of nutritional barriers in cancer care and emphasizes the critical need for comprehensive strategies to ensure cancer patients receive the vital nutritional support necessary for optimizing their journey through treatment and recovery.

Keywords: Barriers, Cancer, Nutrition, Malnutrition, Multidisciplinary

INTRODUCTION

Cancer is a complex disease that results from multiple interactions between genes and the environment and is regarded as one of the current leading causes of mortality worldwide.[1] Malnutrition, muscle depletion, and cachexia are prevalent conditions in cancer patients and are linked to unfavourable outcomes, irrespective of body weight. Around 70% of individuals diagnosed with cancer experience malnutrition, with roughly 40% affected by reduced muscle mass, often caused by factors like diminished intake, decreased physical activity and the impact of cancer, or its treatments. Reduced muscle mass is also observed in cachexia, a complex wasting syndrome affecting 50 to 80% of patients.[2] Malnutrition negatively impacts quality of life and treatment toxicities, and it has been estimated that up to 10-20% of cancer patients die due to the consequences of malnutrition rather than from the tumour itself.[3] These conditions may manifest before, during, or after treatment, leading to diminished physical capabilities, reduced quality of life, treatment complications, and lowered survival rates if left unaddressed. Moreover, they strain healthcare systems, prolong hospital stays, and increase the risks of unplanned hospital admissions and readmissions.[4]

Access to nutrition resources is important in providing high-quality care for cancer patients. Early and proactive nutrition interventions involving screening, assessment, and timely support have been shown to significantly improve patient outcomes during the various stages of the cancer journey, whether aimed at curative or palliative care.[5] A multidisciplinary team approach to nutrition care has demonstrated effectiveness in alleviating the consequences of malnutrition, muscle loss, and cachexia, ultimately enhancing overall patient outcomes.[6] For cancer patients, maintaining optimal nutritional status is essential to support the body's ability to withstand the physiological and psychological stress of the disease and its treatment

Despite the acknowledged importance of nutrition in cancer care, there exists a range of complex barriers that hinder patients from accessing and benefiting from adequate nutrition. These barriers are multifaceted, encompassing physiological, psychological, economic, social, and healthcare system factors.[7] Understanding and addressing these barriers is of paramount importance because they can have profound and far-reaching consequences for the health and well-being of cancer patients.

Ensuring sufficient nutrition is of paramount importance for the successful outcome of cancer treatments. The presence of food insecurity during and post-cancer therapy not only jeopardizes treatment objectives and effectiveness but also introduces an additional challenge in managing the adverse effects associated with various cancer treatments.[8]

Failing to address these barriers can lead to adverse outcomes such as malnutrition, weight loss, weakened immunity, impaired treatment response, increased treatment-related side effects, decreased quality of life, and ultimately, poorer prognosis.[8] Therefore, it is essential to recognise and analyse these barriers comprehensively to develop strategies that will enable cancer patients to receive the nutrition they need to navigate their cancer journey effectively.

The primary objective of this review is to identify and analyse the significant barriers that obstruct cancer patients from receiving adequate nutrition during their cancer journey. By incorporating the current literature and evidence, the aim is to shed light on the various obstacles faced by cancer patients in maintaining their nutritional status. The review will explore various barriers that impact patients' access to proper nutrition.

NUTRITIONAL BARRIERS HINDERING OPTIMAL NUTRITIONAL SUPPORT IN CANCER PATIENTS

The nutritional objectives during cancer therapy depend on the specific type of cancer, its stage, and any accompanying medical conditions. Ensuring an adequate intake of nutrients is crucial for supporting healing, improving the immune system to combat infections, and maintaining sufficient energy levels. Nutritional barriers are widespread and are correlated with reduced food intake and increased weight loss. Predominant among these barriers are factors like anorexia, nausea, early satiety, fatigue, pain, psychological challenges, inadequate nutritional knowledge, and financial constraints. Recognizing and addressing these barriers is essential for improving the nutritional well-being of cancer patients and, subsequently, their overall health outcomes.[10] Figure 1 illustrates the array of possible nutritional obstacles that cancer patients may encounter throughout their cancer journey.

Malnutrition and undernutrition

Malnutrition is prevalent in cancer patients, yet it often goes undetected. The challenge lies in the diverse diagnostic criteria for malnutrition and its overlap with conditions like cancer cachexia, making the definition complex. An estimated one-third of cancer outpatients face nutritional risks, and 56% of hospitalised cancer patients are identified as malnourished. This risk is substantial even in cases of localised disease, becoming apparent even before the commencement of cancer treatment. Malnutrition is linked to shortened survival, increased hospital stays, heightened antibiotic usage, elevated healthcare costs, and diminished quality of life.[11]

Treatment-related side effects

Numerous individuals undergoing cancer treatment report alterations in their taste and smell perceptions. The prevalence of self-reported taste issues among cancer patients varies widely, ranging from 12% to 84%. Given the integral role of taste and smell in influencing food behaviour, disruptions in these sensory functions may adversely affect eating patterns. In studies demonstrating statistically significant correlations between chemosensory function and food behaviour, five out of eleven investigations revealed that diminished taste function, particularly concerning sweet stimuli, was linked to a decreased appetite, avoidance of specific foods such as meat, and an overall reduction in food consumption.[12]

Psychological and emotional barriers

The emotional and psychological strain endured by cancer patients significantly influences their dietary habits and nutritional intake during treatment. A cancer diagnosis often triggers profound psychological distress, prompting a cascade of physiological responses, notably the release of stress hormones like cortisol. These hormonal shifts disrupt digestion, leading to reduced appetite, and often manifest in symptoms such as nausea or early satiety despite minimal food intake.[13] Consequently, patients grappling with this emotional turmoil frequently encounter a marked loss of appetite,

severely impacting their ability to access essential nutrients crucial for sustaining strength and resilience during treatment.[14]

Furthermore, this distress commonly results in irregular eating patterns, encompassing behaviours like emotional eating or sporadic meal skipping, contributing to inconsistent nutrient intake in both quantity and quality. Robust research consistently demonstrates a negative link between heightened distress and reduced food consumption, often resulting in substantial weight loss among cancer patients undergoing treatment.[15,16]

Apart from psychological distress, depression and anxiety are prevalent among cancer patients, significantly influencing their dietary behaviours and nutritional status. Patients experiencing these mental health conditions may exhibit altered food preferences, gravitating toward comfort foods or, in severe cases, losing interest in eating altogether.[17] This fluctuation between overeating and undereating can detrimentally affect their nutritional intake, leading to deficiencies that hinder the body's healing capacity and resilience during treatment.[18]

Physical barriers

Cancer and its treatments often introduce a multitude of physical barriers that significantly impact the digestive system and result in various treatment-related side effects. These challenges encompass gastrointestinal disturbances, altering patients' ability to consume and absorption of nutrients.[19] Cancer treatments, such as chemotherapy and radiation therapy, commonly lead to gastrointestinal issues like nausea, vomiting, diarrhoea, and mucositis. These symptoms not only hinder the intake of adequate nutrition but also aggravate malabsorption, leading to nutrient deficiencies and subsequent complications.[20] Surgical interventions for cancer, particularly those involving the digestive tract, often result in altered bowel function. Patients might experience changes in bowel habits, constipation, or diarrhoea, impacting their nutritional status and overall comfort.[21] Cancer and its treatments frequently lead to alterations in appetite and swallowing difficulties making it challenging for patients to consume adequate nutrients. Reduced appetite and difficulties in swallowing can also result in inadequate nutritional intake and weight loss.[22] Cancer treatments can trigger metabolic and hormonal changes that impact the body's ability to regulate weight, leading to fluctuations and challenges in maintaining a healthy nutritional status.

Lack of knowledge and awareness

Many cancer patients lack sufficient knowledge about their specific nutritional requirements during treatment. This lack of understanding might lead to inadequate intake of essential nutrients, impacting their overall health and recovery. Individuals often encounter conflicting information about dietary choices and their impact on cancer. Misconceptions and myths regarding certain foods or diets might prevail, leading to confusion and making it challenging for patients to spot reliable nutritional advice.[23]

Cancer treatments and side effects often require dietary modifications. However, without proper guidance from healthcare professionals, patients might struggle to adapt their diets to manage symptoms like nausea, taste changes, or difficulty swallowing. Lack of access to specialised nutritional support services, including counselling, educational materials, or support groups focused on dietary management during cancer treatment is also a huge barrier interfering with the care process.[24]

Cultural and dietary preferences

Cultural, religious, and regional dietary practices exert a considerable influence and can indeed act as barriers during the cancer journey due to their impact on food choices, meal preparation, and adherence to recommended nutritional guidelines.[25] Cultural and religious beliefs often dictate specific dietary restrictions or taboos, affecting the types of foods considered acceptable or forbidden. For instance, certain cultures may have prohibitions on consuming specific animal products, while religious practices might restrict certain foods during fasting periods.[26] These restrictions can complicate adherence to prescribed diets for managing side effects or ensuring adequate nutrition during cancer treatment. It also often governs the mealtime routines, portion sizes, and the types of meals consumed. This can clash with dietary recommendations provided by healthcare professionals. For example, a culture that emphasizes communal eating or specific meal timings might conflict with the advised frequency or portion sizes recommended during cancer therapy. Also, as taste changes or food aversions are common, patients may struggle to adhere to prescribed diets or nutritional guidelines due to preferences deeply rooted in their cultural or regional backgrounds.[27]

Financial barriers

The financial burden during cancer treatment can present a substantial barrier, impacting various aspects of a patient's journey. Cancer therapies, including chemotherapy, radiation, surgery, and newer targeted therapies or immunotherapies, can be extremely expensive.[28] High treatment costs, even with insurance coverage, can lead to financial strain for patients and their families. Beyond treatment costs, there are additional out-of-pocket expenses such as medications, medical equipment, transportation to and from medical appointments, accommodation during treatment, and supportive care services. These expenses can accumulate significantly and may not be fully covered by insurance. Cancer treatment often requires patients to take time off work for appointments, recovery periods, or due to physical limitations (29). This can result in a loss of

income, reduced work hours, or job loss, further increasing financial difficulties. Financial stress can significantly impact a patient's emotional well-being and quality of life.[30] Concerns about the affordability of treatment, fear of bankruptcy, or the inability to afford basic necessities may add to the emotional burden of coping with cancer. Financial constraints can limit access to optimal care, potentially leading to delays in treatment initiation, non-adherence to prescribed medications or treatments, or compromising on recommended supportive care due to cost concerns.[31]

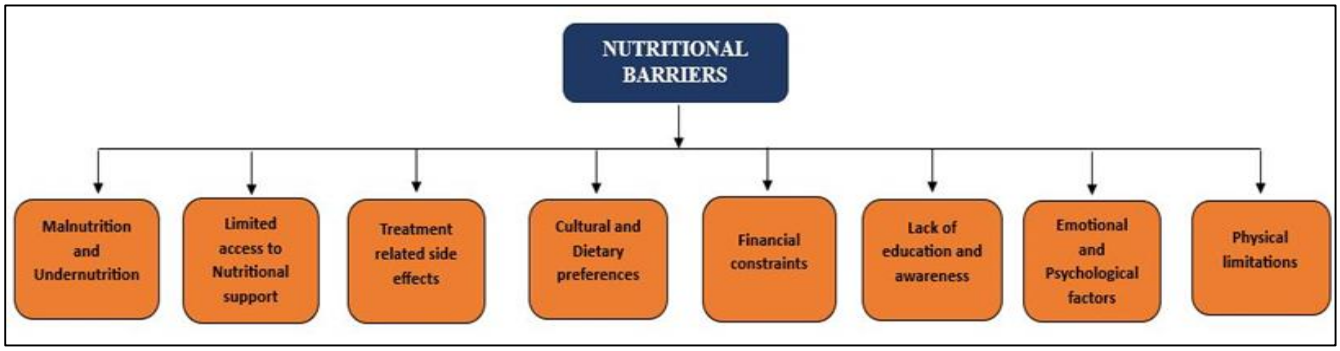

Figure 1: Most prevalent nutritional barriers interfering with the nutritional care process in cancer patients.

IMPACT OF NUTRITIONAL BARRIERS ON CANCER OUTCOMES

The association between inadequate nutrition and cancer treatment effectiveness is complex and can significantly impact treatment outcomes.[1] Inadequate nutrition can weaken the immune system, making the body less resilient to the effects of cancer and less responsive to treatment. A compromised immune system may hinder the body's ability to fight off cancer cells or respond optimally to therapies like chemotherapy or immunotherapy.[32] Malnourished individuals might experience higher treatment-related toxicities and adverse effects. This can lead to dose reductions or interruptions in treatment, compromising its effectiveness. Additionally, patients dealing with nutritional challenges might find it more challenging to adhere to treatment regimens, affecting treatment completion.[33]

Proper nutrition plays a critical role in the body's ability to heal and recover from the side effects of cancer treatments, such as surgical interventions or chemo and radiation therapy. Inadequate nutrition can prolong recovery times and delay the body's ability to bounce back after treatment, potentially affecting overall treatment effectiveness.[1] Studies have suggested that malnourished or undernourished cancer patients may have lower response rates to cancer treatments. Additionally, inadequate nutrition has been associated with reduced overall survival rates in cancer patients due to the impact on treatment efficacy and the body's ability to withstand the disease which can increase the risk of treatment-related complications, leading to extended hospital stays or unplanned hospital admissions.[33]

Barriers in cancer care, including those related to nutrition, financial constraints, treatment side effects, and cultural factors, can significantly impact various aspects of a patient's experience, including cancer-related fatigue, quality of life, and survival rates. Barriers such as inadequate nutrition, treatment side effects, and emotional distress can contribute to cancer-related fatigue. Malnutrition or inadequate dietary intake may aggravate fatigue, while treatment-related side effects like pain, nausea, or insomnia can further contribute to exhaustion.[34] Certain barriers can indirectly impact survival rates in cancer patients. For instance, inadequate nutrition leading to malnutrition may weaken the immune system, potentially affecting a patient's ability to tolerate treatment or fight off the disease.[35] Financial barriers might delay or limit access to essential treatments, impacting treatment effectiveness and overall prognosis.[36]

STRATEGIES TO OVERCOME NUTRITIONAL BARRIERS

Multidisciplinary approaches

Attending to nutritional barriers is integral to comprehensive cancer care. It plays a pivotal role in improving treatment outcomes, supporting patients' physical and emotional well-being, and positively impacting their overall journey through cancer treatment and recovery. Multidisciplinary approaches that involve collaboration among various healthcare professionals are crucial in developing holistic care plans for cancer patients.[37]

A multidisciplinary team comprising oncologists, dietitians, nurses, psychologists, and other specialists can conduct thorough assessments, considering both medical treatments and nutritional requirements. This comprehensive evaluation ensures a complete understanding of the patient's condition.[38] With inputs from different experts, care plans can be personalized to address individual medical and nutritional needs. This tailored approach enhances the effectiveness of treatments and supports the patient's overall well-being.[39] Integrating medical and nutritional aspects into a single care plan

provides holistic support to patients. This approach acknowledges that optimal health requires attention to both physical and nutritional aspects, promoting a more holistic healing process. Collaboration among healthcare professionals ensures that nutritional strategies are aligned with medical treatments. Proper nutrition can enhance treatment tolerance, reducing the severity of side effects and supporting the patient's ability to undergo treatments more effectively.[40]

Nutritional strategies

Dietitians and nutritionists are vital in assessing the nutritional requirements of cancer patients. They evaluate factors such as cancer type, treatment approaches, side effects, and overall health to craft personalized dietary plans.[41] Collaborating closely with oncologists and healthcare teams, these professionals align nutritional strategies with cancer treatments. They offer guidance on managing treatment-related side effects, ensuring the fulfilment of nutritional needs throughout therapy and recovery.[42]

Encouraging patients to eat frequent, smaller meals aids in managing reduced appetite and supports digestion, especially during treatment-related side effects. Emphasizing the inclusion of nutrient-dense foods like lean proteins, whole grains, fruits, and vegetables is crucial as they offer essential nutrients even in smaller portions. Recommending nutritional supplements proves valuable in addressing nutritional gaps, particularly when solid foods pose challenges. Strategies for managing nausea, such as consuming small amounts of bland foods, avoiding strong smells, and trying ginger-based products, can effectively alleviate symptoms.[43]

Promoting mindful eating practices encourages patients to focus on the sensory experience of eating. Providing educational materials, including guidelines, meal plans, and customised recipes tailored to address nutritional challenges during cancer treatment, enhances comprehension and facilitates the implementation of recommendations.[44] Tailoring these strategies to meet individual patient needs and treatment responses significantly aids in overcoming nutritional barriers and ensuring adequate nutrition throughout the demanding journey of cancer treatment. Personalised counselling sessions with dietitians to address specific concerns and queries that patients and caregivers might have about nutrition during cancer care prove more beneficial.[45]

Psychosocial support and counselling

Psychosocial support and counselling serve as indispensable strategies in alleviating nutritional barriers encountered by cancer patients. Counselling stands pivotal in addressing the emotional distress significantly impacting eating behaviours during cancer treatment. Tailored counselling sessions offer crucial coping mechanisms to manage stress, alleviate anxiety affecting food choices, and counteract the influence of depression on dietary habits.[46,47] Support groups provide a valuable platform for patients to share experiences, fostering empowerment and collective coping mechanisms to enhance nutritional intake. Furthermore, targeted counselling effectively addresses body image concerns and aids in managing eating disorders triggered by the cancer diagnosis.[48,49]

Integrating counselling within comprehensive treatment plans, through collaborative efforts among oncologists, psychologists, and dietitians, ensures a holistic approach to patient care.[50] Sustained counselling sessions, customized to evolving nutritional needs and emotional states, become integral in sustaining positive dietary changes.[51] Recognizing the critical role of these interventions necessitates their continuous integration and accessibility within cancer care to effectively navigate and address nutritional barriers throughout the treatment trajectory.

Integrating yoga and wellness to overcome nutritional barriers

Yoga encourages a mind-body connection, fostering a heightened sense of awareness. When applied to food choices, this awareness translates to more intentional and mindful eating. Cancer patients, who may face challenges such as changes in taste and appetite, can benefit from this mindful approach to nourishment, Pugnaloni et al.

Yoga's positive impact on dietary habits is multifaceted. Firstly, the stress-reducing effects of yoga mitigate emotional eating, a common response to stress and anxiety. Through yoga, individuals can develop healthier coping mechanisms, reducing their reliance on food for emotional comfort. The mind-body connection cultivated by yoga can lead to a more intuitive approach to eating. Cancer patients often grapple with taste changes and fluctuations in appetite due to treatment.[53] Mindful eating, influenced by yoga, encourages individuals to listen to their bodies, making food choices aligned with their nutritional needs and preferences.

Overall well-being is intricately linked to diet, especially for cancer patients undergoing treatment. Yoga's role in promoting physical activity, reducing stress, improving sleep, and fostering mindfulness creates an environment conducive to maintaining a balanced and nutritious diet. Integrating yoga and wellness strategies into the nutritional care of cancer patients offers a comprehensive approach to overcoming barriers. From promoting physical and emotional well-being to enhancing awareness of food choices through mindfulness practices, yoga emerges as a versatile and impactful intervention. Potential benefits extend beyond physical, influencing mental and emotional aspects, ultimately contributing to an improved overall quality of life for cancer patients. As field of integrative oncology advances, inclusion of yoga

in nutritional strategies signifies a holistic and patient-centric evolution in cancer care.

CONCLUSION

In conclusion, this comprehensive review illuminates the intricate web of challenges obstructing optimal nutrition for cancer patients throughout their treatment journey. By dissecting the multifaceted nature of these barriers ranging from physiological issues like malnutrition and treatment-related side effects to psychological, cultural, and financial hurdles, the study underscores the critical need for targeted interventions. The profound implications of unaddressed nutritional challenges on treatment effectiveness, survival rates, and overall quality of life emphasize the urgency of comprehensive strategies.

The review advocates for a multidisciplinary approach that integrates the expertise of oncologists, dietitians, psychologists, and other healthcare professionals to develop personalized care plans. It recognizes the pivotal role of nutritional strategies tailored to individual patient needs, emphasizing the importance of frequent, smaller meals, nutrient-dense foods, and, when necessary, supplements. It also underscores the significance of psychosocial support and counselling in addressing emotional distress and its impact on dietary habits. The integration of yoga and wellness practices is a valuable component of holistic care. Recognizing the mind-body connection fostered by yoga, the study highlights its potential to mitigate stress-related eating and promote mindful food choices, especially crucial for patients facing taste changes and appetite fluctuations.

Through these insights, the review aims to contribute to the ongoing evolution of cancer care, ensuring that patients receive the vital nutritional support needed for enhanced well-being and improved clinical outcomes.

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