Seminars in Oncology Nursing 41 (2025) 151799

Contents lists available at ScienceDirect

Seminars in Oncology Nursing

journal homepage: https://www.journals.elsevier.com/seminars-in-oncology-nursing

Discussion

Nutrition Care in Cancer: An Overlooked Part of Patient-Centered Care

Nicole Erickson[a,*], Virpi Sulosaari[b], Erin Stella Sullivan[c], Alessandro Laviano[d], Annemieke van Ginkel-Res[e], Wineke Remijnse[e], Joost Wesseling[f], Ute Koepcke[g], Nina Weber[h], Jutta Huebner[i], Viktoria Mathies[i], Sebastian Theurich[j], Theres Fey[k]

[a] Comprehensive Cancer Center (CCC Munich LMU), Ludwig Maximilian University (LMU) Hospital Munich, Germany
[b] Turku University of Applied Sciences, Finland; European Oncology Nursing Society, Brussels, Belgium
[c] Department of Nutritional Sciences, School of Life Course & Population Sciences, Faculty of Life Sciences & Medicine, King's College London, London, UK
[d] Department of Translational and Precision Medicine Sapienza University, Rome, Italy
[e] European Federation of the Associations of Dietitians EFAD, registered in The Netherlands
[f] European Nutrition for Health Alliance, Amsterdam, The Netherlands
[g] German Association of Dietitians, Essen, Germany
[h] CCC Munich LMU, LMU Hospital Munich, Germany
[i] Department of Hematology and Medical Oncology, University Hospital Jena, Germany
[j] Department of Medicine III, LMU University Hospital; German Cancer Consortium, Partner Site Munich, a partnership between the DKFZ Heidelberg and the LMU University Hospital; Cancer- and Immunometabolism Research Group, LMU Gene Center, Munich, Germany
[k] Bavarian Cancer Research Center and CCC Munich LMU, LMU Hospital Munich, Germany

ARTICLE INFO

Key Words:
Oncology nursing
Evidence-based nutrition care
Patient-centered care
Multidisciplinary team
Dietitians
Equal access/equity in care

ABSTRACT

Objectives: Robust evidence highlights the crucial role of nutrition for people with cancer, and international organizations recognize it as a basic human right linked to health and food. Within this context, we aim to emphasize the critical role of nutrition care for cancer patients and to highlight the essential contributions of nurses in providing patient-centered nutrition care.

Methods: This opinion paper synthesizes evidence and perspectives from peer-reviewed articles and position papers. Furthermore, insights were drawn from the European Commission's Health Policy Platform thematic network "Integrated Nutrition Cancer Care".

Results: Implementation of nutrition care is inconsistent, which can lead to inequalities in care. In oncology, nutrition care is vital as nutrition-related issues significantly impact clinical and patient outcomes. Studies show that cancer nurses can effectively integrate and manage nutrition care. Failure to address nutrition issues negatively impacts an array of patient outcomes and reduces quality of life. Thus, integrating nutrition care throughout routine cancer care is essential.

Conclusions: Cancer nurses, as core multidisciplinary team members, are often the initial and consistent contact for cancer patients. They are ideally positioned to play a key role in securing nutrition care throughout the trajectory of cancer care.

Implications for Nursing Practice: Cancer nurses should be empowered and enabled to manage all aspects of nutrition care in tandem with dietitians. This approach can improve patient outcomes, enhance quality of life, and ensure equitable access to essential nutrition care for all cancer patients.

Cancer treatments are progressing rapidly, and survival time is constantly improving.[1] In fact, developments such as precision medicine, technology, the importance of cultural humility, and shared decision-making in medicine are driving a shift in medical care to a more patient-centered care model.[2-6] Yet, as the landscape of cancer care becomes increasingly complex, nutrition care, a simple, supportive measure that affects outcomes on a meaningful level, remains largely overlooked. In contrast, consistent evidence shows that nutrition status has a significant impact on clinical outcomes, quality of life, functional status, and socioeconomic consequences.[7-10] The lack of consistent nutrition care in oncology treatment protocols is particularly concerning when considering evidence documenting the dose-limiting effects of weight loss, malnutrition, and sarcopenia among people with cancer treatments.[11-14] In fact, chemotherapeutic, radiotherapeutic, immunotherapeutic, and surgical regimens, as well as the disease itself, can severely impair a patient's

* Address correspondence to: Nicole Erickson, Comprehensive Cancer Center, Ludwig Maximilian University Hospital Munich, München, Deutschland.
E-mail address: nicole.erickson@med.uni-muenchen.de (N. Erickson).

https://doi.org/10.1016/j.soncn.2024.151799

Layperson Summary

What we investigated and why

This opinion paper is about why good nutrition is so important for people with cancer and how nurses play a key role in helping patients get the nutrition they need.

How we did our research

We combined evidence and expert opinions to show how nurses support cancer patients by making sure they eat well to stay strong during treatment.

What we have found

Unfortunately, people with cancer do not always get the nutritional care they need. If a person with cancer has been getting too little nutrition for too long, cancer nurses are trained to notice this and help organize a nutrition expert, like a dietitian, to support them. Nurses also act as coordinators for the patient and make sure that the nutrition recommendations are carried out. Some nurses have even completed extra education to become cancer nurses and have learned how to provide people with cancer the right nutrition and cooperate effectively with nutrition experts.

What it means

Cancer nurses manage everything people with cancer need to get enough food before, during, and after their cancer treatment. Cancer nurses can really help cancer patients get enough nutrition, feel better quicker, and, most importantly, make sure that their right to enough food is respected.

nutritional status. Factors such as nausea, vomiting, dysgeusia, and mucositis often lead to insufficient food intake. Additionally, a cancer patient's energy needs often increase due to disease-related factors like inflammation.[15] This creates a vicious cycle where malnutrition and its consequences negatively not only affect progression-free survival but also overall survival.[16] Nutrition care is also an aspect of care that people with cancer are actively seeking. A large European survey reported that patients are often left with no access to evidence-based nutrition care as part of their treatment.[17] Further surveys among people with cancer in Germany presented evidence revealing that when access to evidence-based nutrition care is lacking, the patients often turn to harmful and counterproductive alternatives.[18,19] Early identification of nutrition issues and adequate nutrition care should, therefore, no longer be viewed as an optional supportive element in cancer care but be recognized as a fundamental component of comprehensive cancer care. Therefore, we aim to provide an overview of the significance of nutrition in cancer care within the context of patient-centered care and the effects of nutrition status on clinical outcomes. We then illustrate cancer nurses' pivotal role in initiating, managing, and providing comprehensive nutrition care to this patient population.

Role of Nutrition Within the Concept of Patient-Centered Care

Patient-centered medical care (PCC) is a model that emphasizes the importance of a respectful and equitable relationship between the patient and the members of their medical care team.[20] Although the exact definition of patient-centered care is inconsistent in the literature, the concept of PCC embraces the general idea that the medical and physical needs of patients and their caregivers can only be met when key concepts are also addressed. These key concepts include the idea that all medical care must be individualized to fit the patient's needs and current situation. Additionally, PCC addresses psychosocial perspectives unique to each patient and establishes a respectful relationship between patients, their caregivers, and all members of the medical care team. Furthermore, PCC means that patients are adequately informed and empowered to participate in shared decision-making.[21]

PCC is particularly important in cancer care where the complexity of a cancer diagnosis, the effects of treatment, and the uncertainty of the prognosis often may feel overwhelming to both patients and their caregivers.[22-24] Furthermore, cancer treatment regimens can often affect the individual's locus of control.[25] Evidence-based nutrition care, which is inherently patient-centered, plays a key role in ensuring the delivery of PCC within the oncology setting.[21,26] While the literature reports that PCC concepts contribute to improvements among factors such as overall patient satisfaction and patient empowerment, while also leading to a reduced symptom burden, nutrition interventions are not yet always a standard component of oncology care.[27,28] In fact, the act of eating itself is not merely a biological and medical necessity but a very significant social, cultural, and psychological aspect of a person's daily life.[29,30]

It cannot be overlooked that the majority of people with cancer experience one or more nutrition-related symptoms at some point along their trajectory of care.[31-33] For example. dysgeusia, dysphagia, altered digestive processes, and any type of gastrointestinal discomfort can turn the act of eating into an unpleasant experience. These issues then lead to reduced energy intake, which over time leads to unintentional weight loss and malnutrition. Furthermore, when the disease and treatment regimens affect the ingestion, absorption, and assimilation of nutrients, artificial nutrition approaches may be indicated. All the above-listed challenges may then lead to isolation and a decline in mental well-being and quality of life. This decline may, in turn, affect the individual's ability and desire to meet their energy requirements and project the patient into a downward spiral. This spiral then accelerates the onset of cancer-associated cachexia and sarcopenia.[34-36] In all such cases, a PCC approach to medical care acknowledges that treatments often impair the patient's ability to enjoy food and share meals with others. Evidence-based nutrition care is thus an essential component of PCC. It not only can provide patients with cancer a way to regain their locus of control but can also serve to educate and empower them to take an active role in their treatment. Evidence-based practice, by definition, takes into account the patient perspective.[37] Evidence also demonstrates that including evidence-based nutrition care not only enhances patient engagement but also increases patient satisfaction and adherence to treatment plans. In fact, nutrition counseling tailored to the patient's preferences can, at any stage of cancer treatment, enhance comfort and satisfaction, and improve general treatment adherence[37] Put simply, evidence-based nutrition care is an overlooked, yet critical element of PCC.[21]

Nutrition Status Affects Treatment Outcomes

Depending on the tumor location and stage, the literature reports weight losses prior to chemotherapy ranging from 31% (among non-solid tumors) to >87% (among gastrointestinal tumors). Furthermore, an unintentional weight loss of 5% or more before or during antineoplastic treatment has been correlated with a higher probability of toxicities and as little as 2.4% weight loss has been reported to be an independent prognostic factor for overall survival.[38-41] Furthermore, clinical outcomes, improved quality of life, and functional and emotional well-being have been correlated with improved nutrition status and the prevention of early weight loss.[17,42,43] However, most notably, robust evidence repeatedly demonstrates that reduced muscle mass resulting from unintentional weight loss among people with

cancer negatively impacts the pharmacological trajectory of antineoplastic treatments, with altered pharmacokinetics and pharmacodynamics observed in those experiencing malnutrition, leading to more frequent dose-limiting toxicities.[44-46] Moreover, even in the context of preserved body weight, muscle loss has been shown to be associated with reduced overall survival.[16,47]

In contrast, timely nutrition interventions, which span from simple dietary modifications or, if indicated, oral nutrition supplements and/or enteral or parenteral feeding, can delay and prevent cancer-associated weight loss. The mitigation of unintentional weight loss, in turn, reduces the occurrence, or severity, of cachexia and sarcopenia. Recent systematic reviews describe strong evidence supporting effective dietitian-led nutrition interventions among people living with cancer, improving energy and protein intake and enhancing quality of life, while also aiding with secondary prevention in the setting of survivorship.[48-53] The studies included reported that nutrition interventions led to marked improvements in energy and protein intake staving off unintentional weight loss. Furthermore, the data collated in these systematic reviews consistently supported a direct relationship between nutrition interventions and of improved quality of life throughout the antineoplastic treatment regimens when compared with usual care.[54-56] Similar results are available for other phases along the cancer care journey. For example, another systematic review on dietetic interventions among cancer survivors demonstrated improvements in overall diet quality among cancer survivors who had access to evidence-based nutrition therapy.[57] Furthermore, as cancer patients progress along to care trajectory to palliative care, the medical goals begin to shift from prolonged survival to improving functional status and overall quality of life. During the palliative phase of medical care, evidence-based and patient-centered nutrition interventions have also been reported to contribute significantly to improving the quality of life for palliative patients.

Role of Cancer Nurses in the Provision of Nutrition Care

Current guidelines in cancer, therefore, stress the importance of multidisciplinary teams (MDTs) working together to ensure timely identification of malnutrition and early initiation of nutrition interventions.[58-60] Oncology dietitians are essential for maintaining optimal nutrition for patients. However, MDTs throughout Europe often do not include a dietitian, and understaffing of oncology dietetic services is a global issue.[31,61,62] Therefore, one of the most effective ways to ensure that nutrition interventions are not neglected and that dietitians are actively involved is to assign a key person within the care team responsible for ensuring that the patient's nutrition needs are adequately met. As cancer nurses are often the first point of contact and considered to be a trusted caregiver, they are ideally positioned to perform nutrition screenings and initiate early nutrition interventions in response to nutrition screening, while coordinating further MDT involvement, such as a dietitian, where required.[63] Through all stages of cancer care, cancer nurses can work in tandem with dietitians to ensure adherence to the nutrition prescription and identify when the nutrition plan needs adjusting. Moreover, in many countries, oncology nurses are decisive in supportive care as they often are the first contact person for patients to report side effects. As many side effects may lead to problems with eating and drinking, nurses might even foresee dietary problems before they arise and thus may help to prevent them.[64] In this manner, cancer nurses play a key role in ensuring that the team remains focused on this often-overlooked aspect of care.

Because cancer nurses' education also includes competencies in nutrition support, once the patients at risk of, or suffering from malnutrition, are identified, cancer nurses can support the implementation of nutrition care. If indicated, cancer nurses then manage and provide oral nutrition care supplements and/or oversee the administration of enteral or parenteral nutrition provision. Furthermore, PCC core competencies ensure that patients are not only given access to evidence-based guidance on nutrition but that it is individually and situationally tailored to all their needs. Healthcare professionals should provide evidence-based advice, enabling patients to make informed decisions about their diet that support their treatment goals and outcomes. This means that it is essential that patients and their caregivers fully understand how adequate and appropriate nutrition approaches can affect their well-being and treatment success. Ongoing patient education is thus another essential component of PCC, and it should be delivered collaboratively by oncology dietitians and cancer nurses. Such cooperation ensures consistent messaging and helps prevent patients from turning to unproven or even harmful dietary practices.[31] The European Federation of the Associations of Dietitians supports close collaboration between nurses and dietitians. Additionally, further research should focus more on how such collaborations improve clinical outcomes.

Cancer nurses are also responsible for the coordinating comprehensive care delivered by MDTs necessary for maintaining nutrition status. For example, it is the responsibility of the treating physician to ensure that all nutrition prescriptions are provided and regularly updated. When issues with dysphagia occur, a referral to the speech therapist may be required. For maintaining muscle mass and preventing cachexia and sarcopenia, physical activity should be encouraged in addition to nutritional counseling to achieve appropriate energy and protein intake. This may lead to cooperation with a physiotherapist, occupational therapist, or other specialist. For issues related to psychological well-being, a referral for psychosocial support is often necessary. In fact, social and psychological dimensions are intertwined with nutrition status and nutrition therapy. Eating is a social act, and changes caused by the disease itself and/or the treatments can lead to isolation and depression. Providing tailored nutritional support coordinated with targeted psychosocial interventions can thus help patients maintain social interactions and contribute positively to their overall psychological state.[65,66] Such cooperation within the MDT safeguards a more holistic consideration of issues, as well as providing more integrated and less conflicting guidance.[66] This type of approach can potentially improve treatment efficiency and effectiveness, as well as improve patient satisfaction.[67] Ultimately, cancer nurses can facilitate communication and coordination and help encourage patients to self-advocate for comprehensive support and treatment.

Conclusion

In 2023, the International Declaration on the Human Right to Nutritional Care, known as the Vienna Declaration, was endorsed by 74 different medical and patient organizations and advocates that access to evidence-based nutrition care is an inalienable human right.[68,69] The declaration emphasizes how nutrition care is principally linked to the basic human right to health and food. Therefore, from an ethical standpoint, the right to nutrition care should be seen as an essential part of PCC and a basic human right. In this context, malnutrition among cancer patients becomes more than a clinical issue that needs to be addressed; it is also an issue of providing equity and justice to all patients regardless of their geographical or economic status. When nutrition care is seen as a human right, the ethical obligation extends to healthcare providers.[68] Oncologists, nurses, dietitians, and all other members of the MDTs thus are duty-bound to ensure that a patient's nutritional requirements are identified and met throughout the entire treatment pathway. Cancer nurses are pivotal members of the MDT in this respect and have a crucial role in ensuring a proactive approach to identifying, addressing, and managing nutrition issues among all people living with and beyond cancer.

It is undeniable that nutrition status has a clinically significant impact on clinical, psychosocial, and patient-reported outcomes. Evidence-based nutrition care is an essential part of patient-centered

care delivery. As a fundamental human right, the universal, consistent provision of nutrition care should be viewed as an ethical duty among all healthcare professionals. Therefore, systematic approaches addressing this gap are essential. The model should integrate dietitian-led nutrition care into cancer treatment pathways, establish tandem work models between nurses and dietitians, and include better education for healthcare professionals. As cancer nurses are key members of the current usual care teams, they are ideally placed to lead such changes and should, therefore, be empowered and encouraged to take on this challenge.

Declaration of competing interest

N.E. has received speaker honoraria from Audi BKK, Baxter, CSL Behring, Fresenius, Freiraum, Janssen-Cilag GmbH, Cognitando Gmbh, and GHD. She served on the expert advisory board at Baxter, received consulting fees from Fresenius, and received compensation for writing articles from Klarigo Verlag Group. None of these activities were related to the content of this article. E.S.S. has received writing honoraria from Complete Nutrition and has received research funding as an Irish Research Council Enterprise Partnership Scheme Postdoctoral Fellow, co-funded by Nualtra. E.S.S. is also a member of the management committee of IrSPEN, the Irish Society for Clinical Nutrition and Metabolism. U.K. is president of the German Dietitian Society. W.R. and A.v.G.R. represent the European Federation of the Associations of Dietitians. J.W. is the executive director of the European Nutrition for Health Alliance. A.L. has received speakers' honoraria from Abbott, Baxter, Bbraun, Fresenius Kabi, Nestlé Health Science, and Nutricia. He has also received consulting fees from Abbott, Baxter, Bbraun, DSM, Nestlé Health Science, and Nutricia. He received a research grant from Fresenius Kabi. None of the above activities were related to the content of this article. All remaining authors declared no conflicts of interest.

CRediT authorship contribution statement

Nicole Erickson: Writing – review & editing, Writing – original draft, Visualization, Conceptualization. **Virpi Sulosaari:** Writing – review & editing, Writing – original draft, Visualization, Conceptualization. **Erin Stella Sullivan:** Writing – review & editing, Writing – original draft, Visualization, Conceptualization. **Alessandro Laviano:** Writing – review & editing, Visualization, Conceptualization. **Annemieke van Ginkel-Res:** Writing – review & editing, Conceptualization. **Wineke Remijnse:** Writing – review & editing, Conceptualization. **Joost Wesseling:** Writing – review & editing, Project administration, Conceptualization. **Ute Koepcke:** Writing – review & editing. **Nina Weber:** Writing – review & editing. **Jutta Huebner:** Writing – review & editing, Visualization. **Viktoria Mathies:** Writing – review & editing. **Sebastian Theurich:** Writing – review & editing. **Theres Fey:** Writing – review & editing, Supervision, Resources.

Acknowledgments

We would like to thank Sophia Inckemann for her help with proofreading and formatting this manuscript.

References

1. Bray F, Laversanne M, Sung H, et al. Global cancer statistics 2022: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA Cancer J Clin*. 2024;74(3):229–263. https://doi.org/10.3322/caac.21834.
2. Lekas HM, Pahl K, Fuller Lewis C. Rethinking cultural competence: shifting to cultural humility. *Health Serv Insights*. 2020;13:1178632920970580. https://doi.org/10.1177/1178632920970580.
3. Balint E. The possibilities of patient-centered medicine. *J R Coll Gen Pract*. 1969;17(82):269–276.
4. Balogh EP, Ganz PA, Murphy SB, Nass SJ, Ferrell BR, Stovall E. Patient-centered cancer treatment planning: improving the quality of oncology care. Summary of an Institute of Medicine workshop. *Oncologist*. 2011;16(12):1800–1805. https://doi.org/10.1634/theoncologist.2011-0252.
5. Bardes CL. Defining "patient-centered medicine". *N Engl J Med*. 2012;366(9):782–783. https://doi.org/10.1056/NEJMp1200070.
6. Rathert C, Wyrwich MD, Boren SA. Patient-centered care and outcomes: a systematic review of the literature. *Med Care Res Rev*. 2013;70(4):351–379. https://doi.org/10.1177/1077558712465774.
7. Prado CM, Purcell SA, Laviano A. Nutrition interventions to treat low muscle mass in cancer. *J Cachexia Sarcopenia Muscle*. 2020;11(2):366–380. https://doi.org/10.1002/jcsm.12525.
8. Schuetz P, Fehr R, Baechli V, et al. Individualised nutritional support in medical inpatients at nutritional risk: a randomised clinical trial. *Lancet*. 2019;393(10188):2312–2321. https://doi.org/10.1016/s0140-6736(18)32776-4.
9. Laviano A, Di Lazzaro L, Koverech A. Nutrition support and clinical outcome in advanced cancer patients. *Proc Nutr Soc*. 2018;77(4):388–393. https://doi.org/10.1017/s0029665118000459.
10. Britton B, Baker AL, Wolfenden L, et al. Eating As Treatment (EAT): a stepped-wedge, randomized controlled trial of a health behavior change intervention provided by dietitians to improve nutrition in patients with head and neck cancer undergoing radiation therapy (TROG 12.03). *Int J Radiat Oncol Biol Phys*. 2019;103(2):353–362. https://doi.org/10.1016/j.ijrobp.2018.09.027.
11. Keaver L, Connolly P, Richmond J. Providing nutrition advice in the oncology setting: a survey of current practice, awareness of guidelines and training needs of Irish healthcare professionals in three hospitals. *Eur J Cancer Care (Engl)*. 2021;30(4):e13405. https://doi.org/10.1111/ecc.13405.
12. Kiss N, Bauer J, Boltong A, et al. Awareness, perceptions and practices regarding cancer-related malnutrition and sarcopenia: a survey of cancer clinicians. *Support Care Cancer*. 2020;28(11):5263–5270. https://doi.org/10.1007/s00520-020-05371-7.
13. Deutz NEP, Ashurst I, Ballesteros MD, et al. The underappreciated role of low muscle mass in the management of malnutrition. *J Am Med Dir Assoc*. 2019;20(1):22–27. https://doi.org/10.1016/j.jamda.2018.11.021.
14. Osborn R, Moulds D, Squires D, Doty MM, Anderson C. International survey of older adults finds shortcomings in access, coordination, and patient-centered care. *Health Aff (Millwood)*. 2014;33(12):2247–2255. https://doi.org/10.1377/hlthaff.2014.0947.
15. Baracos VE. Cancer-associated malnutrition. *Eur J Clin Nutr*. 2018;72(9):1255–1259. https://doi.org/10.1038/s41430-018-0245-4.
16. Sullivan ES, Daly LE, Scannell C, et al. A large, multi-centre prospective study demonstrating high prevalence of malnutrition associated with reduced survival in ambulatory systemic anti-cancer therapy patients. *Clin Nutr ESPEN*. 2022;52:208–217. https://doi.org/10.1016/j.clnesp.2022.10.009.
17. Muscaritoli M, Molfino A, Scala F, Christoforidi K, Manneh-Vangramberen I, De Lorenzo F. Nutritional and metabolic derangements in Mediterranean cancer patients and survivors: the ECPC 2016 survey. *J Cachexia Sarcopenia Muscle*. 2019;10(3):517–525. https://doi.org/10.1002/jcsm.12420.
18. Maschke J, Kruk U, Kastrati K, et al. Nutritional care of cancer patients: a survey on patients' needs and medical care in reality. *Int J Clin Oncol*. 2017;22(1):200–206. https://doi.org/10.1007/s10147-016-1025-6.
19. Bauer F, Schmidt T, Eisfeld H, et al. Information needs and usage of complementary and alternative medicine in members of a German self-help group for gastrointestinal stroma tumours, sarcoma, and renal cancer. *Complement Ther Med*. 2018;41:105–110. https://doi.org/10.1016/j.ctim.2018.09.008.
20. Medicine Io. *Crossing the Quality Chasm: A New Health System for the 21st Century*. The National Academies Press; 2001:360.
21. Erickson N, Sullivan ES, Kalliostra M, Laviano A, Wesseling J. Nutrition care is an integral part of patient-centred medical care: a European consensus. *Med Oncol*. 2023;40(4):112. https://doi.org/10.1007/s12032-023-01955-5.
22. Institute of Medicine Committee on Psychosocial Services to Cancer Patients/Families in a Community S. The National Academies Collection: Reports funded by National Institutes of Health. In: Adler NE, Page AEK, eds. *Cancer Care for the Whole Patient: Meeting Psychosocial Health Needs*. National Academies Press (US) Copyright ©; 2008. National Academy of Sciences2008.
23. Mitchell AJ, Ferguson DW, Gill J, Paul J, Symonds P. Depression and anxiety in long-term cancer survivors compared with spouses and healthy controls: a systematic review and meta-analysis. *Lancet Oncol*. Jul 2013;14(8):721–732. https://doi.org/10.1016/s1470-2045(13)70244-4.
24. Barry MJ, Edgman-Levitan S. Shared decision making–pinnacle of patient-centered care. *N Engl J Med*. 2012;366(9):780–781. https://doi.org/10.1056/NEJMp1109283.
25. Dopelt K, Bashkin O, Asna N, Davidovitch N. Health locus of control in cancer patient and oncologist decision-making: an exploratory qualitative study. *PLoS One*. 2022;17(1):e0263086. https://doi.org/10.1371/journal.pone.0263086.
26. Swan WI, Vivanti A, Hakel-Smith NA, et al. Nutrition care process and model update: toward realizing people-centered care and outcomes management. *J Acad Nutr Diet*. 2017;117(12):2003–2014. https://doi.org/10.1016/j.jand.2017.07.015.
27. Yu C, Xian Y, Jing T, et al. More patient-centered care, better healthcare: the association between patient-centered care and healthcare outcomes in inpatients. *Front Public Health*. 2023;11:1148277. https://doi.org/10.3389/fpubh.2023.1148277.
28. Stewart M, Brown JB, Donner A, et al. The impact of patient-centered care on outcomes. *J Fam Pract*. 2000;49(9):796–804.
29. Dornan M, Semple C, Moorhead A, McCaughan E. A qualitative systematic review of the social eating and drinking experiences of patients following treatment for head and neck cancer. *Support Care Cancer*. 2021;29(9):4899–4909. https://doi.org/10.1007/s00520-021-06062-7.

30. Adamczyk D, Maison D, Lignou S, et al. The role of food during oncology treatment: perspectives of cancer patients, caregivers and healthcare professionals. *Supportive Care in Cancer*. 2024;32(5):303. https://doi.org/10.1007/s00520-024-08469-4.
31. Sullivan ES, Rice N, Kingston E, et al. A national survey of oncology survivors examining nutrition attitudes, problems and behaviours, and access to dietetic care throughout the cancer journey. *Clin Nutr ESPEN*. 2021;41:331–339. https://doi.org/10.1016/j.clnesp.2020.10.023.
32. Caccialanza R, Goldwasser F, Marschal O, et al. Unmet needs in clinical nutrition in oncology: a multinational analysis of real-world evidence. *Ther Adv Med Oncol*. 2020;12:1758835919899852. https://doi.org/10.1177/1758835919899852.
33. Levonyak NS, Hodges MP, Haaf N, et al. Implementation of a quality improvement project to increase access to dietitian services for patients with gastrointestinal cancer in a safety-net hospital system. *JCO Oncol Pract*. 2021;17(7):e1048–e1054. https://doi.org/10.1200/op.20.01031.
34. Hopkinson JB. Psychosocial impact of cancer cachexia. *J Cachexia Sarcopenia Muscle*. 2014;5(2):89–94. https://doi.org/10.1007/s13539-014-0142-1.
35. Lize N, Raijmakers N, van Lieshout R, et al. Psychosocial consequences of a reduced ability to eat for patients with cancer and their informal caregivers: A qualitative study. *Eur J Oncol Nurs*. 2020;49:101838. https://doi.org/10.1016/j.ejon.2020.101838.
36. Hopkinson JB. Food connections: A qualitative exploratory study of weight- and eating-related distress in families affected by advanced cancer. *Eur J Oncol Nurs*. 2016;20:87–96. https://doi.org/10.1016/j.ejon.2015.06.002.
37. Baladia EKV, Soguel L, Griffin A, O'Reily S, McCullough F, Joossens S. *Evidence-Based Dietetic Practice: EFAD Discussion Paper on Challenges for Implementation, Education, Research, and Lifelong Learning*. Karger; 2023.
38. Fukahori M, Shibata M, Hamauchi S, Kasamatsu E, Machii K. A retrospective cohort study to investigate the incidence of cancer-related weight loss during chemotherapy in gastric cancer patients. *Support Care Cancer*. 2021;29(1):341–348. https://doi.org/10.1007/s00520-020-05479-w.
39. Bernadach M, Lapeyre M, Dillies AF, et al. [Toxicity of docetaxel, platine, 5-fluorouracil-based induction chemotherapy for locally advanced head and neck cancer: The importance of nutritional status]. *Cancer Radiother*. 2019;23(4):273–280. https://doi.org/10.1016/j.canrad.2018.08.003.
40. da Rocha IMG, Marcadenti A, de Medeiros GOC, et al. Is cachexia associated with chemotherapy toxicities in gastrointestinal cancer patients? A prospective study. *J Cachexia Sarcopenia Muscle*. 2019;10(2):445–454. https://doi.org/10.1002/jcsm.12391.
41. Martin L, Senesse P, Gioulbasanis I, et al. Diagnostic criteria for the classification of cancer-associated weight loss. *J Clin Oncol*. 2015;33(1):90–99. https://doi.org/10.1200/jco.2014.56.1894.
42. Ryan AM, Sullivan ES. Impact of musculoskeletal degradation on cancer outcomes and strategies for management in clinical practice. *Proc Nutr Soc*. 2021;80(1):73–91. https://doi.org/10.1017/s0029665120007855.
43. Richards J, Arensberg MB, Thomas S, Kerr KW, Hegazi R, Bastasch M. Impact of early incorporation of nutrition interventions as a component of cancer therapy in adults: a review. *Nutrients*. 2020;12(11). https://doi.org/10.3390/nu12113403.
44. Pérez-Pitarch A, Guglieri-López B, Nacher A, Merino V, Merino-Sanjuán M. Impact of undernutrition on the pharmacokinetics and pharmacodynamics of anticancer drugs: a literature review. *Nutr Cancer*. 2017;69(4):555–563. https://doi.org/10.1080/01635581.2017.1299878.
45. Trobec K, Kerec Kos M, von Haehling S, Springer J, Anker SD, Lainscak M. Pharmacokinetics of drugs in cachectic patients: a systematic review. *PLoS One*. 2013;8(11):e79603. https://doi.org/10.1371/journal.pone.0079603.
46. Prado CM, Baracos VE, McCargar LJ, et al. Body composition as an independent determinant of 5-fluorouracil-based chemotherapy toxicity. *Clin Cancer Res*. 2007;13(11):3264–3268. https://doi.org/10.1158/1078-0432.Ccr-06-3067.
47. Brown JC, Caan BJ, Cespedes Feliciano EM, et al. Weight stability masks changes in body composition in colorectal cancer: a retrospective cohort study. *Am J Clin Nutr*. 2021;113(6):1482–1489. https://doi.org/10.1093/ajcn/nqaa440.
48. Langius JA, Zandbergen MC, Eerenstein SE, et al. Effect of nutritional interventions on nutritional status, quality of life and mortality in patients with head and neck cancer receiving (chemo)radiotherapy: a systematic review. *Clin Nutr*. 2013;32(5):671–678. https://doi.org/10.1016/j.clnu.2013.06.012.
49. Zhang F, Jin Y, Qiang W. The effects of dietary advice on malnutrition in cancer patients: a systematic review and meta-analysis. *Supportive Care in Cancer*. 2020;28(4):1579–1585. https://doi.org/10.1007/s00520-019-05222-0.
50. Ryding HG, Mitchell LJ, Rigby RR, Ball L, Hobby J, Williams LT. Effectiveness of dietetic care for cancer survivors in the primary care setting: a systematic review and meta-analysis of randomized controlled trials. *J Cancer Survivorship*. 2024. https://doi.org/10.1007/s11764-024-01583-6.
51. Ueshima J, Nagano A, Maeda K, et al. Nutritional counseling for patients with incurable cancer: systematic review and meta-analysis. *Clin Nutr*. 2023;42(2):227–234. https://doi.org/10.1016/j.clnu.2022.12.013.
52. Gliwska E, Guzek D, Przekop Z, Sobocki J, Głąbska D. Quality of life of cancer patients receiving enteral nutrition: a systematic review of randomized controlled trials. *Nutrients*. 2021;13(12). https://doi.org/10.3390/nu13124551.
53. Leis C, Arthur AE, Chen X, Greene MW, Frugé AD. Systematic review of nutrition interventions to improve short term outcomes in head and neck cancer patients. *Cancers (Basel)*. 2023;15(3). https://doi.org/10.3390/cancers15030822.
54. de van der Schueren MAE, Laviano A, Blanchard H, Jourdan M, Arends J, Baracos VE. Systematic review and meta-analysis of the evidence for oral nutritional intervention on nutritional and clinical outcomes during chemo(radio)therapy: current evidence and guidance for design of future trials. *Ann Oncol*. 2018;29(5):1141–1153. https://doi.org/10.1093/annonc/mdy114.
55. Balstad TR, Solheim TS, Strasser F, Kaasa S, Bye A. Dietary treatment of weight loss in patients with advanced cancer and cachexia: a systematic literature review. *Crit Rev Oncol Hematol*. 2014;91(2):210–221. https://doi.org/10.1016/j.critrevonc.2014.02.005.
56. Baldwin C, Spiro A, Ahern R, Emery PW. Oral nutritional interventions in malnourished patients with cancer: a systematic review and meta-analysis. *J Natl Cancer Inst*. 2012;104(5):371–385. https://doi.org/10.1093/jnci/djr556.
57. Gan T, Cheng HL, Tse MMY. Feasibility, acceptability, and effects of behavior change interventions for improving multiple dietary behaviors amongA. *Support Care Cancer*. 2022;30(3):2877–2889. https://doi.org/10.1007/s00520-021-06582-2.
58. Arends J, Bachmann P, Baracos V, et al. ESPEN guidelines on nutrition in cancer patients. *Clin Nutr*. 2017;36(1):11–48. https://doi.org/10.1016/j.clnu.2016.07.015.
59. Muscaritoli M, Arends J, Bachmann P, et al. ESPEN practical guideline: clinical nutrition in cancer. *Clin Nutr*. 2021;40(5):2898–2913. https://doi.org/10.1016/j.clnu.2021.02.005.
60. Arends J, Strasser F, Gonella S, et al. Cancer cachexia in adult patients: ESMO clinical practice guidelines. *ESMO Open*. 2021;6(3):100092. https://doi.org/10.1016/j.esmoop.2021.100092.
61. Trujillo EB, Claghorn K, Dixon SW, et al. Inadequate nutrition coverage in outpatient cancer centers: results of a national survey. *J Oncol*. 2019;2019:7462940. https://doi.org/10.1155/2019/7462940.
62. Taberna M, Gil Moncayo F, Jané-Salas E, et al. The Multidisciplinary team (MDT) approach and quality of care. *Front Oncol*. 2020;10:85. https://doi.org/10.3389/fonc.2020.00085.
63. Jost N, Erickson N, Bratu E, et al. Closing the cancer care gap with a patient-reported nutrition screening: a retrospective analysis of a quality improvement project on an oncology ward (CCC study). *Clin Nutr ESPEN*. 2023;57:246–252. https://doi.org/10.1016/j.clnesp.2023.06.029.
64. Alsbrook KE, Donovan HS, Wesmiller SW, Hagan Thomas T. Oncology nurses' role in promoting patient self-advocacy. *Clin J Oncol Nurs*. 2022;26(3):239–243. https://doi.org/10.1188/22.Cjon.239-243.
65. Keller H, Slaughter S, Gramlich L, Namasivayam-MacDonald A, Bell JJ. Multidisciplinary nutrition care: benefitting patients with malnutrition across healthcare sectors. In: Geirsdóttir ÓG, Bell JJ, eds. *Interdisciplinary Nutritional Management and Care for Older Adults: An Evidence-Based Practical Guide for Nurses*. Springer International Publishing; 2021:177–188.
66. Pemau RC, González-Palacios P, Kerr KW. How quality of life is measured in studies of nutritional intervention: a systematic review. *Health Qual Life Outcomes*. 2024;22(1):9. https://doi.org/10.1186/s12955-024-02229-y.
67. Gabel M, Hilton NE, Nathanson SD. Multidisciplinary breast cancer clinics. Do they work? *Cancer*. 1997;79(12):2380–2384.
68. Cárdenas D, Toulson Davisson Correia MI, Hardy G, et al. Nutritional care is a human right: translating principles to clinical practice. *Clin Nutr*. 2022;41(7):1613–1618. https://doi.org/10.1016/j.clnu.2022.03.021.
69. Cardenas D, Correia M, Hardy G, et al. The international declaration on the human right to nutritional care: a global commitment to recognize nutritional care as a human right. *Clin Nutr*. 2023;42(6):909–918. https://doi.org/10.1016/j.clnu.2023.04.009.