Nutrition Services in Oncology: A Cross-Sectional Survey of Patient Experiences, Needs, and Gaps in Care

Bailey M. Foster, MS, RD*; Melissa F. Miller, PhD, MPH*; Colleen K. Spees, PhD, RD; Cynthia A. Thomson, PhD, RD; Elaine B. Trujillo, MS, RD; Erica E. Fortune, PhD; Lauren Fay, MPH, RD-AP; Peter A. Adintori, MS, RD-AP; Renee Stubbins, PhD, RD, LD, CSO; Jill M. Hamilton-Reeves, PhD, RD, CSO

ARTICLE INFORMATION

Article history:
Submitted 24 December 2025
Accepted 12 June 2026

Keywords:
Oncology nutrition
Cancer survivors
Registered dietitian nutritionist
RDN
Nutrition care needs
Health disparities

Supplementary materials:
Figure 1 is available at www.jandonline.org

2212-2672/Copyright © 2026 Academy of Nutrition and Dietetics. Published by Elsevier Inc. All rights are reserved, including those for text and data mining, AI training, and similar technologies.
https://doi.org/10.1016/j.jand.2026.156395

*Both authors share equal authorship of this article.

ABSTRACT

Background Nutrition influences cancer outcomes, yet access to registered dietitian nutritionists (RDNs) remains inconsistent. Patient-centered data can reveal gaps in care, unmet needs, and disparities, providing real-world insight into oncology nutrition services.

Objective The objective of this study was to characterize cancer survivors' experiences with professional nutrition care since diagnosis, including sources, met and unmet needs, timing, and priority areas, and to examine variation by sociodemographic and clinical characteristics.

Design The cross-sectional study analyzed online surveys from the Cancer Experience Registry, an online patient-reported outcomes registry of cancer survivors in the United States and Canada, collected between November 2022 and November 2024; analyses of this study were restricted to US participants.

Participants/setting Participants included 1427 cancer survivors, predominantly women (76.5%), older adults (45.5% aged ≥65 years), and non-Hispanic White survivors (85.5%); smaller proportions identified as non-Hispanic Black (5.6%), Hispanic (3.2%), and non-Hispanic other race (4.3%); and 1.5% were missing. The most common cancers were breast (32.6%), blood (29.6%), and gastrointestinal (10.5%).

Main outcomes measures Primary outcomes included receipt of nutrition care since cancer diagnosis (ie, any nutrition care and care from an RDN and patient-reported nutrition care need), categorized as met (ie, wanted and received support), unmet (ie, wanted but did not receive support), no perceived need (ie, did not want support), or unsure.

Statistical analyses performed Descriptive statistics summarized receipt of nutrition services, expressed need, timing, and priority areas. Bivariate and multivariable regression analyses examined differences in nutrition care need and RDN engagement across patient characteristics.

Results Since diagnosis, 53.6% reported receiving nutrition care, with 39.3% from an RDN. Need was met in 41.0%, unmet in 13.4%, no perceived need in 33.2%, and unsure in 12.5%. Among participants desiring nutrition care, demand peaked during treatment and post-treatment. Unmet need was more common after treatment and was linked to increasing energy level ($P = .002$), emotional health ($P < .001$), intentional weight loss ($P < .001$), and cancer worry ($P < .001$). Endorsement of symptom management ($P = .008$) and intentional weight gain ($P = .001$) as reasons for nutrition support was higher among participants who saw a provider (RDN or non-RDN) compared with those who did not. Participants with unmet needs were more often younger, women, food-insecure, lacking caregiving support, and had higher symptom burden, and no perceived need was associated with rural residence, lower education, lacking caregiver support, and private practice care (all, $P < .05$).

Conclusions Unmet nutrition care needs were observed among cancer survivors and varied by sociodemographic and clinical characteristics. Future research should evaluate the impact of systematic malnutrition screening and referral pathways on access to RDN services and examine how nutrition care needs and engagement evolve from diagnosis through survivorship. Additional work is needed to understand and address disparities across population subgroups and care settings.
J Acad Nutr Diet. 2026;126(10):156395.

© 2026 Academy of Nutrition and Dietetics. Published by Elsevier Inc. All rights are reserved, including those for text and data mining, AI training, and similar technologies.

MAINTAINING ADEQUATE NUTRITIONAL STATUS is critical for optimizing prognosis, treatment tolerance, symptom management, and overall quality of life throughout the cancer continuum.[1] Despite the recognized importance of nutrition in cancer care, malnutrition and nutrition-related symptoms remain common among cancer patients, compromising treatment effectiveness and increasing morbidity.[2,3] This challenge is further exacerbated by inconsistent access to registered dietitian nutritionists (RDNs), highlighting persistent gaps in oncology care despite evidence linking engagement with nutrition services to improved cancer outcomes.[4]

Comprehensive, patient-centered data are essential to characterize these gaps, identify unmet needs, and examine disparities in the provision of nutrition services across different care settings, cancer types, and demographic groups.[5] By linking patient experiences with clinical and structural factors, these data provide a real-world perspective on priorities and barriers, highlighting opportunities to optimize resource allocation, clarify the role of RDNs, and inform policy and guideline development to support consistent integration of nutrition services into oncology care.

The objective of this study was to describe cancer survivors' experiences with professional nutrition services since cancer diagnosis, including sources of care, the extent of met and unmet needs, when nutrition services were desired, and types of nutrition services wanted. Expressed nutrition care need was classified as met (received the wanted care), unmet (wanted care but did not receive it), no perceived need (did not want care), or unsure. Using data from the Cancer Experience Registry (CER), variation in expressed nutrition care need and engagement with an RDN was examined across sociodemographic characteristics, economic and support resources, clinical characteristics, treatment history, and care settings.

RESEARCH SNAPSHOT

Research Question: What are cancer survivors' experiences with professional nutrition care since diagnosis, including sources of care, met and unmet needs, timing of need, and priority nutrition concerns, and how do these experiences vary by sociodemographic and clinical characteristics?

Key Findings: In this cross-sectional cohort study of 1427 cancer survivors, 53.6% reported receiving any nutrition care, and 39.3% engaged with a registered dietitian nutritionist. Overall, 13.4% reported unmet nutrition needs, which were considerably more common after treatment and among younger survivors, women, those experiencing very low food insecurity, lacking caregiving support, and reporting higher symptom burden.

METHODS

Data Source and Study Population

The CER is an ongoing observational clinical trial (ClinicalTrials.gov, NCT02333604) designed to understand the emotional, physical, practical, and financial impact of cancer and to identify unmet needs among patients, survivors, and caregivers across the United States and Canada.[6-8] The CER is hosted by the Cancer Support Community, a professionally led network of cancer support services with more than 200 locations in 50 markets worldwide. Adults aged 18 years and older who have ever received a cancer diagnosis and caregivers are eligible to enroll. Participants were required to be able to read English and have access to the internet to complete the survey. No additional exclusion criteria were applied beyond failure to meet eligibility requirements or data quality standards. Participants are recruited through Cancer Support Community and Gilda's Club affiliates, hospital and health care partners, state coalitions, advocacy organizations, and targeted social media outreach. All registrants review an online consent form approved by the Institutional Review Board and provide consent electronically before beginning the baseline survey. All surveys were administered electronically using Voxco Online (Voxco). After enrollment, participants are invited to complete follow-up surveys online every 6 months for 2 years (at 6, 12, 18, and 24 months). Participants received up to 4 automated reminder e-mails if surveys were not completed, and received a $25 gift card for completion of each follow-up survey. Beginning with the 12-month follow-up survey, Cancer Support Community added a supplemental nutrition-focused module to the patient-survivor survey to assess participants' experiences with and preferences for professional nutrition care. Survey items are provided in Figure 1 (available at www.jandonline.org). Items in the supplemental nutrition-focused module were developed through an iterative process involving the CER's principal investigator and a multidisciplinary team with expertise in survey development, oncology nutrition (RDNs), and patient-reported outcomes; the team also included members with lived experience as cancer survivors or caregivers. Item content was informed by prior CER work and clinical expertise. The module did not undergo formal pilot testing before implementation. Salus IRB (Austin, TX) serves as the Institutional Review Board of record (study number 22088). All procedures follow institutional and international ethical standards, including the Declaration of Helsinki.

To ensure data integrity, multiple safeguards were implemented during survey administration and data processing. Recruitment partners distributed unique survey links, and links were not posted on public social media platforms, limiting exposure to uncontrolled audiences. Survey access was further protected using reCAPTCHA (Google), and Internet Protocol addresses outside the United States and Canada were blocked. The survey included embedded data quality checks, such as attention and consistency items with varying response formats, to verify response validity. In addition, quantitative (fixed-response) and open-ended responses were reviewed for patterns of inconsistency or low-quality data. Observations failing data quality checks were excluded from analyses.

We used cross-sectional data from the CER patient-survivor 12-month survey, collected between November 2022 and November 2024, which included the full set of nutrition service items. A total of 1427 adult cancer survivors completed the 12-month survey and were included in the analytic sample. Some sociodemographic and clinical characteristics were obtained from the CER baseline survey (eg, date of birth, gender identity, race and ethnicity, education, and most recent primary cancer), and others were updated during follow-up (eg, ZIP code, employment status, caregiver status, metastatic status, and treatment history). Several measures

existed only at the 12-month assessment, including all nutrition care items, symptom burden, and food security. The overall response rate to the 12-month follow-up survey during the study period was approximately 40%. Among participants who initiated the 12-month survey, 95% completed the supplemental nutrition-focused module. Surveys were included if participants provided responses to the nutrition module; no additional exclusions were applied based on response patterns or data quality at the time of this analysis.

Nutrition Care Survey

Before responding to the nutrition-related questions, participants were provided with a definition of "professional support" for eating and nutrition to ensure consistent interpretation. Professional support was defined as "care from staff such as a registered dietitian or nutritionist, primary care or family practice doctor, oncology doctor, or other healthcare providers (eg, palliative care provider, holistic provider, pharmacist, or chiropractor)." Responses to these items are described as "nutrition care" (Figure 1).

Engagement with providers for nutrition care was assessed by asking participants whether they had received professional nutrition-related services from 9 possible provider types, including RDNs, oncology physicians, primary care clinicians, nurse navigators, and holistic or integrative providers. Participants could select all provider types they had seen. For analysis, RDN engagement served as the primary provider-related outcome, captured as ever having seen an RDN since diagnosis.

Nutrition care need was assessed using a single item asking participants which statement best described their experience with eating and nutrition support since being diagnosed with cancer. Response options included:

- I wanted eating and nutrition support and did get it (met need).
- I wanted eating and nutrition support and did not get it (unmet need).
- I did not want eating and nutrition support (no perceived need).
- I am not sure (unsure need).

Timing of desired nutrition care was assessed for those who indicated wanting nutrition care. Participants selected all time points when they wanted or would have wanted professional support (eg, at diagnosis, during treatment, after treatment, at recurrence, or when cancer advanced).

Areas of desired nutrition services were measured using a checklist of topics (eg, managing symptoms or adverse effects [eg, nausea and changes in taste], support around my weight [ie, maintain, gain, or loss], achieving healthy eating patterns, increasing my energy level, and improving my emotional or mental health). Participants selected all relevant topics. Weight-related support options (ie, maintaining, gaining, or losing weight) likely reflect intentional weight-related goals from the participant's perspective, although intention was not explicitly specified in the survey item.

Covariate Measurements

Sociodemographic characteristics included self-reported date of birth, gender identity, race, ethnicity, annual household income, education level, employment status, and health insurance coverage. Geographical residence was classified using Rural-Urban Commuting Area (RUCA) codes based on participants' ZIP codes and March 2020 census commuting data.[9] RUCA codes range from 1 (most urban) to 10 (most rural); residence was categorized as urban/suburban (RUCA 1-3) or rural (RUCA $\geq$ 4).

Economic and support resources included food security and caregiver status. Food security was assessed using the validated US Department of Agriculture Household Food Security Survey Module: 6-Item Short Form.[10] Caregiver status was defined as whether the participant did or currently does have a family or friend caregiver providing support related to their cancer experience.

Clinical characteristics included participants' primary cancer site, defined as the most recent primary diagnosis provided at CER enrollment, and time since diagnosis, calculated from the self-reported year first diagnosed with cancer. Metastatic disease was defined as any report of meeting any of the following criteria: reporting stage IV at diagnosis or self-report of current or ever metastatic disease at baseline or follow-up. Recurrent disease reflected self-reported cancer recurrence at or before the 12-month survey.

Treatment history included self-reported lifetime exposure to multiple modalities, including chemotherapy, radiation therapy, and immunotherapy, based on whether participants indicated they had ever received each treatment type up to the time of the 12-month follow-up survey. Additional treatment types assessed included hormone therapy, targeted therapy, chimeric antigen receptor T-cell therapy, hematopoietic stem cell transplantation, and other treatments (eg, surgery, steroid, topical, and palliative care).

Health care system characteristics included the self-reported site where participants received most of their cancer treatment, categorized as an academic or comprehensive cancer center, community cancer center, private oncology practice, US Department of Veterans Affairs/military health system, or other care setting.

Nutrition-impact symptoms were assessed in the 12-month survey using a patient-reported symptom checklist developed for the CER. Participants were asked: "In the past 6 months, have any of the following symptoms caused ongoing problems or required ongoing management?" Thirteen gastrointestinal-, oral-, and appetite-related symptoms were included (ie, taste changes, decreased appetite, early satiety, nausea, vomiting, gas, bloating, constipation, diarrhea, dry mouth, difficulty swallowing, mouth/throat sores, and fatigue). Item selection was informed by clinical expertise and common symptom domains relevant to oncology care. Symptom burden was categorized as 0, 1–2, or $\geq$3 symptoms to reflect increasing levels of symptom burden while maintaining a relatively balanced distribution across categories in the sample.

Analysis

Descriptive statistics were used to summarize participant characteristics, with frequencies and percentages reported for all variables. Bivariate associations between categorical variables were examined using χ^2 tests. In multivariate analysis, nutrition care need was modeled using multinomial logistic regression with met need as the reference

category, and RDN engagement (yes/no) was modeled using binary logistic regression. Covariates were selected *a priori* based on clinical and conceptual relevance and informed by bivariate associations. To retain the full analytic sample, missing data for covariates were handled by creating a separate category for missing observations in the multivariable analyses. For each outcome, analyses were conducted among participants with available outcome data, and no imputation procedures were applied. Given the study's emphasis on estimation rather than formal hypothesis testing, adjustment for multiple comparisons was not performed. Effect estimates are presented as odds ratios (ORs) or relative risk ratios (RRRs) with 95% CIs to support interpretation. Exact *P* values are reported for key findings in the text, with statistical significance defined as a 2-sided $P < .05$. All analyses were conducted using *StataNow/MP* software, version 18.5.[11]

RESULTS

Participant Characteristics

A total of 1427 CER participants completed the 12-month follow-up survey and responded to items regarding professional nutrition care (Table 1). Most respondents were women (76.5%), and nearly one-half (45.5%) were 65 years or older. Although eligibility included adults 18 years or older, no participants in this analytic sample were aged 18–24 years. The sample was predominantly non-Hispanic White (85.5%). More than one-half (52.2%) were 5 or more years from their initial cancer diagnosis. The most common primary cancer type was breast cancer (32.6%), and 28.2% reported metastatic disease. Overall, 15.1% reported low or very low food security, and many participants endorsed a substantial symptom burden, with 35.5% reporting 3 or more nutrition-impact symptoms that interfered with gastrointestinal function or appetite. Family or friend caregiving was common, with 79.9% indicating that they did or do have a family or friend caregiver.

Engagement with Provider Types for Nutrition Care

Among the 1427 respondents, more than one-half (53.6%) reported receiving some form of nutrition services since cancer diagnosis, whereas 46.4% (n = 662) reported not seeing any of the provider types listed in Table 2 for nutrition care. An additional 2.5% (n = 35) selected "other" provider type. Nearly 40% (39.3%) reported seeing an RDN for nutrition services since their cancer diagnosis; 18.9% received nutrition care exclusively from an RDN, whereas 20.4% saw an RDN in combination with 1 or more of the other 8 provider types listed in Table 2. Fewer than 1 in 5 (15.3%) reported an RDN visit in the past 6 months. Participants reported receiving nutrition-related services from other provider types as well, although at lower rates and not typically as their sole source of care. These included oncology physicians (18.0%), primary care providers (15.4%), and holistic or integrative practitioners (6.3%).

Distribution of Nutrition Care Need

Figure 2 displays the distribution of nutrition care needs among all respondents and by primary cancer type. In the full sample of 1427 participants, 41.0% reported a met nutrition care need, 13.4% reported an unmet need, 33.2% indicated no perceived need, and 12.5% were unsure whether they wanted nutrition care. Overall, nearly 1 in 2 respondents (45.6%) reported that they either did not want or were unsure if they wanted nutrition care. Participants with head and neck cancers reported the highest proportion of met need (65.2%), whereas unmet need was most common among those with breast cancer (17.0%). Respondents with lung cancer showed the highest proportion indicating no perceived need or uncertainty, with 57.9% reporting that they did not want or were unsure if they wanted nutrition care.

Timing of Desired Nutrition Care

Figure 3 presents the timing of desired nutrition care stratified by met vs unmet nutrition care need. Only participants who indicated that they wanted nutrition care were included in Figure 3. Bivariate associations were further examined to highlight points in the care trajectory where unmet need may be more pronounced. Among participants who desired nutrition care, the most common time point was during cancer treatment, endorsed by 65.1% of those with met need and 57.1% of those with unmet need ($P = .045$). The next most frequently selected time point was after completing treatment, with significantly higher endorsement among those with unmet need (52.9%) compared with those whose needs were met (41.2%; $P = .005$). Fewer participants reported wanting nutrition services at diagnosis (24.9% in full sample) or at the time of recurrence (27.1% among participants who experienced a recurrence; n = 225) or an advanced cancer diagnosis (27.6% among participants who experienced disease advancement, excluding those metastatic at diagnosis; n = 105). Overall, the stratified patterns highlight that the demand for nutrition care is highest during active treatment and the post-treatment period, and that individuals with unmet needs more frequently expressed a desire for services after treatment completion, indicating potential opportunities to address gaps in survivorship care.

Areas of Desired Nutrition Services

Figure 4 presents areas of desired nutrition services among participants who indicated that they wanted nutrition care. As with Figure 3, analyses were restricted to participants expressing a desire for nutrition care, and stratified patterns were examined using bivariate associations to identify areas where unmet need may be more pronounced.

Figure 4A displays areas of desired nutrition services stratified by met vs unmet nutrition care need. Among participants whose nutrition care needs were met, the most frequently endorsed areas were healthy eating (55.6%) and symptom management (49.4%). Compared with those whose nutrition care needs were met, participants with unmet needs were more likely to want support related to increasing energy level (61.8% vs 47.5%; $P = .002$), emotional health (42.9% vs 25.8%; $P < .001$), worry about cancer recurrence or spread (41.4% vs 26.2%; $P < .001$), and losing weight (40.3% vs 25.1%; $P < .001$). In contrast, participants with a met need were significantly more likely to endorse gaining weight as an area of desired services (12.3% vs 3.7%; $P = .001$).

Figure 4B displays areas of desired nutrition services stratified by nutrition provider engagement (eg, saw an RDN, saw non-RDN providers only, or saw no provider). Overall,

Table 1. Sample characteristics for total sample and by nutrition care need and engagement with a registered dietitian nutritionist since cancer diagnosis

Characteristic	Total sample (N = 1427)	Nutrition Care Need					Saw RDN[a] Since Diagnosis		
		Met need (n = 585)	Unmet need (n = 191)	No perceived need (n = 473)	Unsure (n = 178)	*P* value[b] (χ^2 statistic)	No (n = 866)	Yes (n = 561)	*P* value[b] (χ^2 statistic)
Sociodemographic characteristics	←———			*n (%)*	———→		←———	*n (%)*	———→
Age group						<.001 (40.1)			.003 (11.3)
25-44 y	173 (12.1)	65 (11.1)	33 (17.3)	53 (11.2)	22 (12.4)		99 (11.4)	74 (13.2)	
45-64 y	604 (42.3)	260 (44.4)	101 (52.9)	160 (33.8)	83 (46.6)		342 (39.5)	262 (46.7)	
≥65 y	649 (45.5)	259 (44.3)	57 (29.8)	260 (55.0)	73 (41.0)		425 (49.1)	224 (39.9)	
Missing	1 (0.07)	1 (0.2)	0 (0)	0 (0)	0 (0)		0 (0)	1 (0.2)	
Gender						<.001 (30.0)			.52 (1.3)
Man	329 (23.2)	133 (22.9)	19 (10.0)	137 (29.0)	40 (22.5)		208 (24.0)	121 (21.6)	
Woman	1086 (76.5)	447 (76.8)	170 (89.5)	333 (70.4)	136 (70.4)		651 (75.2)	435 (77.5)	
Other	4 (0.3)	2 (0.3)	1 (0.5)	0 (0)	1 (0.6)		2 (0.2)	2 (0.4)	
Missing	8 (0.6)	3 (0.5)	1 (0.5)	3 (0.6)	1 (0.6)		5 (0.6)	3 (0.5)	
Race and Ethnicity						<.001 (35.0)			.027 (9.2)
Non-Hispanic White	1220 (85.5)	486 (83.1)	158 (85.7)	423 (89.4)	153 (86.0)		756 (87.3)	464 (82.7)	
Non-Hispanic Black	80 (5.6)	48 (8.2)	11 (5.8)	11 (2.3)	10 (5.6)		38 (4.4)	42 (7.5)	
Hispanic (any race)	45 (3.2)	17 (2.9)	15 (7.9)	9 (1.9)	4 (2.3)		28 (3.2)	17 (3.0)	
Non-Hispanic other	61 (4.3)	28 (4.8)	6 (3.1)	21 (4.4)	6 (3.4)		31 (3.6)	30 (5.4)	
Missing	21 (1.5)	6 (1.0)	1 (0.5)	9 (1.9)	5 (2.8)		13 (1.5)	8 (1.4)	
Geographic region (RUCA[c])						.033 (8.7)			.41 (0.7)
Urban/suburban	1275 (89.4)	530 (90.6)	176 (92.2)	407 (86.1)	162 (91.0)		767 (88.6)	508 (90.6)	
Rural	146 (10.2)	53 (9.1)	15 (7.9)	64 (13.5)	14 (17.9)		93 (10.7)	53 (9.5)	
Missing	6 (0.4)	2 (0.3)	0 (0)	2 (0.4)	2 (1.1)		6 (0.7)	0 (0)	
Highest level of education						.002 (15.1)			.078 (3.1)
College or more	1065 (74.6)	461 (78.8)	144 (75.4)	344 (72.7)	116 (65.2)		632 (73.0)	433 (77.2)	
Less than college	356 (25.0)	122 (20.9)	44 (23.0)	129 (27.3)	61 (34.3)		230 (26.6)	126 (22.5)	
Missing	6 (0.4)	2 (0.3)	3 (1.6)	0 (0)	1 (0.6)		4 (0.5)	2 (0.4)	
Employment status						<.001 (59.2)			.045 (8.1)
Employed	533 (37.4)	229 (39.2)	79 (41.4)	173 (36.6)	52 (29.2)		328 (37.9)	205 (36.5)	
Retired	597 (41.8)	246 (42.1)	54 (28.3)	234 (49.5)	63 (35.4)		376 (43.4)	221 (39.4)	

(*continued on next page*)

Table 1. Sample characteristics for total sample and by nutrition care need and engagement with a registered dietitian nutritionist since cancer diagnosis (*continued*)

		Nutrition Care Need					Saw RDN[a] Since Diagnosis		
Characteristic	Total sample (N = 1427)	Met need (n = 585)	Unmet need (n = 191)	No perceived need (n = 473)	Unsure (n = 178)	*P* value[b] (χ^2 statistic)	No (n = 866)	Yes (n = 561)	*P* value[b] (χ^2 statistic)
Unemployed, disability	197 (13.8)	77 (13.2)	40 (20.9)	39 (8.3)	41 (23.0)		102 (11.8)	95 (16.9)	
Unemployed, other	92 (6.5)	31 (5.3)	17 (8.9)	25 (5.3)	19 (10.7)		55 (6.4)	37 (6.6)	
Missing	8 (0.6)	2 (0.3)	1 (0.5)	2 (0.4)	3 (1.7)		5 (0.6)	3 (0.5)	
Insurance						.055 (20.7)			.30 (4.8)
Private only	541 (37.9)	223 (38.1)	94 (49.2)	163 (34.5)	61 (34.3)		319 (36.8)	222 (39.6)	
Government only	700 (49.1)	282 (48.2)	80 (41.9)	250 (52.9)	88 (49.4)		436 (50.4)	264 (47.1)	
Private + government	137 (9.6)	63 (10.8)	11 (5.8)	45 (9.5)	18 (10.1)		78 (9.0)	59 (10.5)	
Uninsured	3 (0.2)	1 (0.2)	1 (0.5)	0 (0)	1 (0.6)		1 (0.1)	2 (0.4)	
Other	26 (1.8)	8 (1.4)	3 (1.6)	10 (2.1)	5 (2.8)		19 (2.2)	7 (1.3)	
Missing	20 (1.4)	8 (1.4)	2 (1.1)	5 (1.1)	5 (2.8)		13 (1.5)	7 (1.3)	
Economic and social resources									
Food security						<.001 (41.7)			.26 (2.7)
High/marginal	1202 (84.2)	503 (86.0)	141 (73.8)	424 (89.6)	134 (75.3)		737 (85.1)	465 (82.9)	
Low	119 (8.3)	49 (8.4)	22 (11.5)	26 (5.5)	22 (12.4)		64 (7.4)	55 (9.8)	
Very low	97 (6.8)	32 (5.5)	28 (14.7)	20 (4.2)	17 (9.6)		57 (6.6)	40 (7.1)	
Missing	9 (0.6)	1 (0.2)	0 (0)	3 (0.6)	5 (2.8)		8 (0.9)	1 (0.2)	
Caregiver status (family/ friend)						<.001 (32.6)			<.001 (31.2)
Did/does have a caregiver	1140 (79.9)	507 (86.7)	148 (77.5)	352 (74.4)	133 (74.7)		651 (75.2)	489 (87.2)	
Did not/does not have a caregiver	267 (18.7)	70 (12.0)	36 (18.9)	119 (25.2)	42 (23.6)		202 (23.3)	65 (11.6)	
Missing	20 (1.4)	8 (1.4)	7 (3.7)	2 (0.4)	3 (1.7)		13 (1.5)	7 (1.3)	
Clinical characteristics									
Time since diagnosis						.57 (7.6)			.53 (2.2)
1 to <3 y	312 (21.9)	141 (24.1)	43 (22.5)	92 (19.5)	36 (20.2)		185 (21.4)	127 (22.6)	
3 to <5 y	354 (24.8)	148 (25.3)	47 (24.6)	116 (24.5)	43 (24.2)		207 (23.9)	147 (26.2)	
5 to <10 y	399 (28.0)	156 (26.7)	58 (30.4)	130 (27.6)	55 (30.9)		246 (28.4)	153 (27.3)	
≥10 y	360 (24.2)	139 (23.8)	42 (22.0)	135 (28.5)	44 (24.7)		228 (26.3)	132 (23.5)	
Missing	2 (0.1)	1 (0.2)	1 (0.5)	0 (0)	0 (0)		0 (0)	2 (0.4)	

(*continued on next page*)

Table 1. Sample characteristics for total sample and by nutrition care need and engagement with a registered dietitian nutritionist since cancer diagnosis (*continued*)

		Nutrition Care Need					Saw RDN[a] Since Diagnosis		
Characteristic	Total sample (N = 1427)	Met need (n = 585)	Unmet need (n = 191)	No perceived need (n = 473)	Unsure (n = 178)	*P* value[b] (χ^2 statistic)	No (n = 866)	Yes (n = 561)	*P* value[b] (χ^2 statistic)
Primary cancer site						.12 (28.9)			.001 (23.4)
Breast	465 (32.6)	186 (31.8)	79 (41.4)	149 (31.5)	51 (28.7)		282 (32.6)	183 (32.6)	
Blood	422 (29.6)	172 (29.4)	50 (26.2)	149 (31.5)	51 (21.7)		267 (30.8)	155 (27.6)	
Gastrointestinal	150 (10.5)	67 (11.5)	15 (7.9)	43 (9.1)	25 (14.0)		81 (9.4)	69 (12.3)	
Genitourinary	104 (7.3)	38 (6.5)	11 (5.8)	43 (9.1)	12 (6.7)		75 (8.7)	29 (5.2)	
Gynecologic	108 (7.6)	49 (8.4)	16 (8.4)	30 (6.3)	13 (7.3)		58 (6.7)	50 (8.9)	
Lung	57 (4.0)	21 (3.6)	3 (1.6)	23 (4.9)	10 (5.6)		40 (4.6)	17 (3.0)	
Head/neck	23 (1.6)	15 (2.6)	2 (1.1)	5 (1.1)	1 (0.6)		7 (0.8)	16 (2.9)	
Other	98 (6.9)	37 (6.3)	15 (7.9)	31 (6.6)	15 (8.4)		56 (6.5)	42 (7.5)	
Metastatic disease						.094 (6.4)			.003 (8.7)
No	1024 (71.8)	399 (68.2)	140 (73.3)	354 (74.8)	131 (73.6)		646 (74.6)	378 (67.4)	
Yes	403 (28.2)	186 (31.8)	51 (26.7)	119 (25.2)	47 (26.4)		220 (25.4)	183 (32.6)	
Recurrent disease						.54 (2.2)			.24 (1.4)
No	1017 (71.3)	409 (69.9)	142 (74.4)	343 (72.5)	123 (69.1)		627 (72.4)	390 (69.5)	
Yes	410 (28.7)	176 (30.1)	49 (25.7)	130 (27.5)	55 (30.9)		239 (27.6)	171 (30.5)	
Nutrition-impact symptoms						<.001 (65.0)			<.001 (30.1)
None	538 (37.7)	195 (33.3)	43 (22.5)	234 (49.5)	66 (37.1)		372 (43.0)	166 (29.6)	
1-2	382 (26.8)	163 (27.9)	51 (26.7)	125 (26.4)	43 (24.2)		227 (26.2)	155 (27.6)	
≥3	507 (35.5)	227 (38.8)	97 (50.8)	114 (24.1)	69 (38.8)		267 (30.8)	240 (42.8)	
Treatment history									
Chemotherapy						.008 (11.8)			<.001 (17.1)
No	446 (31.3)	155 (26.5)	71 (31.2)	156 (33.0)	64 (36.0)		306 (35.3)	140 (25.0)	
Yes	981 (68.8)	430 (73.5)	120 (62.8)	317 (67.0)	114 (64.0)		560 (64.7)	421 (75.0)	
Radiation therapy						<.001 (19.4)			<.001 (23.6)
No	810 (56.8)	293 (50.1)	111 (58.1)	298 (63.0)	108 (60.7)		536 (61.9)	274 (48.8)	
Yes	617 (43.2)	292 (49.9)	80 (41.9)	175 (37.0)	70 (39.3)		330 (38.1)	287 (51.2)	

(*continued on next page*)

Table 1. Sample characteristics for total sample and by nutrition care need and engagement with a registered dietitian nutritionist since cancer diagnosis (*continued*)

		Nutrition Care Need					Saw RDN[a] Since Diagnosis		
Characteristic	**Total sample (N = 1427)**	**Met need (n = 585)**	**Unmet need (n = 191)**	**No perceived need (n = 473)**	**Unsure (n = 178)**	***P* value[b] (χ^2 statistic)**	**No (n = 866)**	**Yes (n = 561)**	***P* value[b] (χ^2 statistic)**
Immunotherapy						.89 (0.6)			.54 (0.38)
No	1126 (78.9)	463 (79.2)	154 (80.6)	371 (78.4)	138 (77.5)		688 (79.5)	438 (78.1)	
Yes	301 (21.1)	122 (20.9)	37 (19.4)	102 (21.6)	40 (22.5)		178 (20.6)	123 (21.9)	
Health care system characteristics									
Site of most cancer treatment						.013 (29.8)			<.001 (35.6)
Academic/comprehensive	655 (45.9)	296 (50.6)	73 (38.2)	210 (44.4)	76 (42.7)		355 (41.0)	300 (53.5)	
Community	417 (29.2)	176 (30.1)	60 (31.4)	138 (29.2)	43 (24.2)		253 (29.2)	164 (29.2)	
Private oncology practice	230 (16.1)	71 (12.1)	38 (19.9)	86 (18.2)	35 (19.7)		172 (19.9)	58 (10.3)	
VA[d]/military	12 (0.8)	5 (0.9)	1 (0.5)	6 (1.3)	0 (0)		7 (0.8)	5 (0.9)	
Other	53 (3.7)	18 (3.1)	8 (4.2)	16 (3.4)	11 (6.2)		38 (4.4)	15 (2.7)	
Not sure	18 (1.3)	5 (0.9)	1 (0.5)	7 (1.5)	5 (2.8)		14 (1.6)	4 (0.7)	
Missing	42 (2.9)	14 (2.4)	10 (5.2)	10 (2.1)	8 (4.5)		27 (3.1)	15 (2.7)	

[a]RDN = registered dietitian nutritionist.
[b]*P* values derived from χ^2 tests comparing distributions across nutrition care need (4 groups) and across RDN utilization (yes/no), based on complete cases only; χ^2 statistics are shown in parentheses.
[c]RUCA = Rural-Urban Commuting Area.[9]
[d]VA = US Department of Veterans Affairs.

Table 2. Types of providers seen for nutrition care among participants (N = 1427)[a]

Variable	Since Being Diagnosed With Cancer[b]			
	This provider type seen	Only this provider type seen	This and other provider types seen	This provider type seen in past 6 mo[c]
	← n (%) →			
Registered dietitian nutritionist	561 (39.3)	269 (18.9)	292 (20.4)	218 (15.3)
Oncology physician	257 (18.0)	38 (2.7)	219 (15.3)	96 (6.7)
Oncology nurse	182 (12.8)	19 (1.3)	163 (11.4)	73 (5.1)
Primary care physician	219 (15.4)	39 (2.7)	180 (12.6)	118 (8.3)
Primary care nurse	52 (3.6)	7 (0.5)	45 (3.2)	19 (1.3)
Palliative care provider	42 (2.9)	7 (0.5)	35 (2.5)	22 (1.5)
Holistic provider	90 (6.3)	13 (0.9)	77 (5.4)	49 (3.4)
Pharmacist	41 (2.9)	3 (0.2)	37 (2.6)	19 (1.3)
Chiropractor	33 (2.3)	2 (0.1)	31 (2.2)	11 (0.8)

[a]A total of 662 (46.4%) did not report seeing any of these provider types for nutrition care since cancer diagnosis. An additional 2.5% (n = 35) selected "other."
[b]Survey items: "Since being diagnosed with cancer, have you ever gotten professional support for eating and nutrition from any of the following care providers?" Participants could select all that applied.
[c]"Have you gotten professional support for eating and nutrition in the past 6 months from any of the following care providers?" Participants could select all that applied.

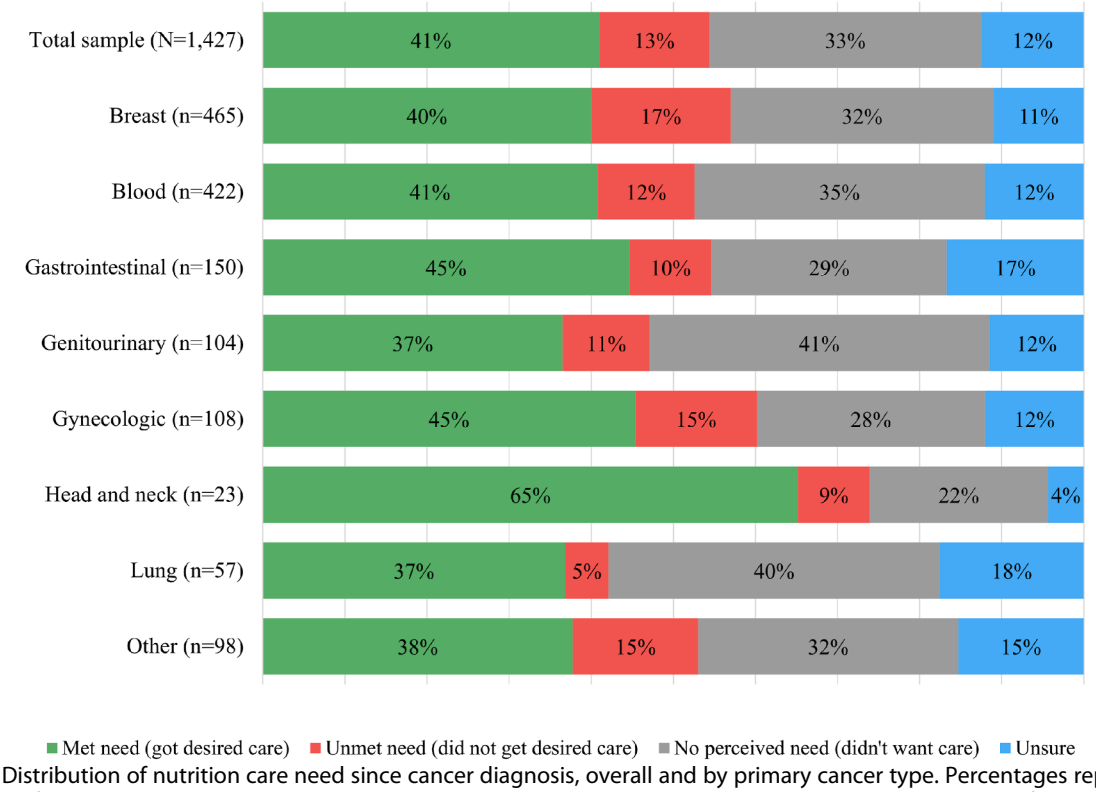


Figure 2. Distribution of nutrition care need since cancer diagnosis, overall and by primary cancer type. Percentages represent the proportion of respondents within each cancer type reporting a met, unmet, low-perceived, or unsure need for nutrition care; categories sum to 100% per group. Survey item: "Which of the following describe your experience with professional support for eating and nutrition since being diagnosed with cancer?" Response options: I wanted eating and nutrition support and did get it; I wanted eating and nutrition support and did not get it; I did not want eating and nutrition support; I am not sure.

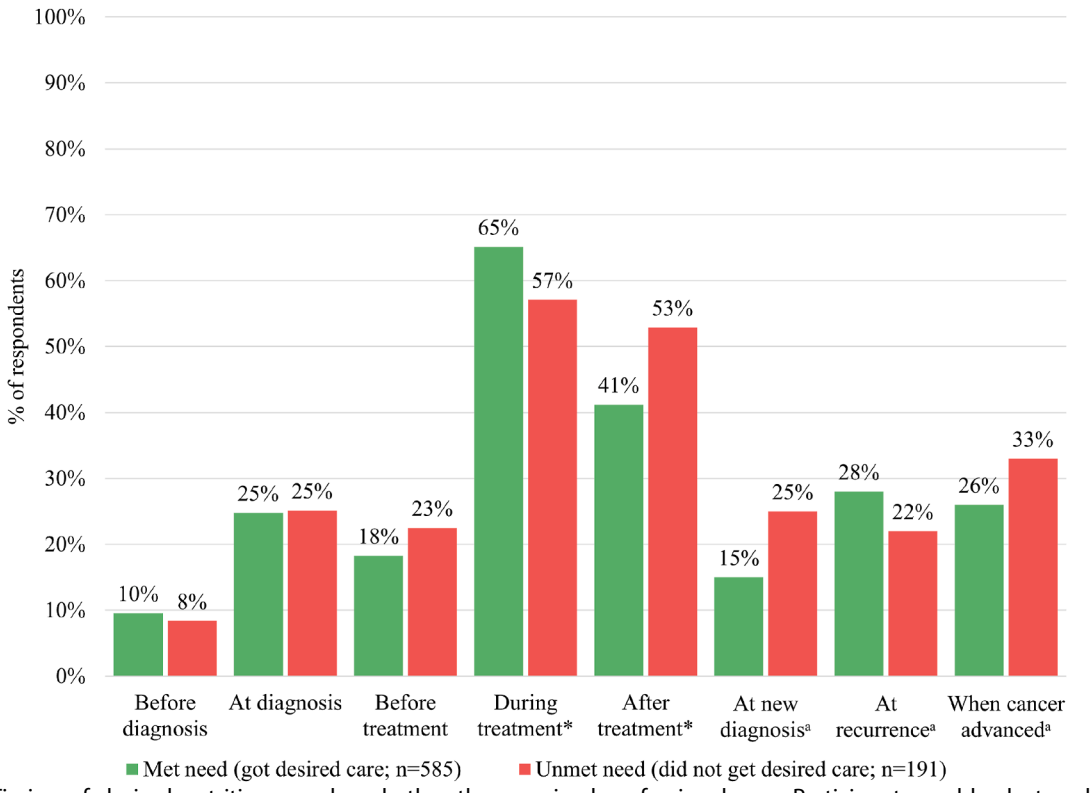


Figure 3. Timing of desired nutrition care by whether they received professional care. Participants could select multiple time points; percentages do not sum to 100%. Survey item: "When did you want professional support for eating and nutrition?" Participants could select all that applied. [a]Items applicable only to participants who experienced a new cancer within the past 12 months (n = 45), a recurrence (n = 225), or an advanced cancer diagnosis (excluding those metastatic at diagnosis; n = 105). *$P < .05$ (χ^2 test).

the distribution of endorsed areas of support differed significantly by provider engagement for several domains. Among participants who had engaged with an RDN, healthy eating (59.1%) and symptom management (50.0%) were the most frequently endorsed areas, and endorsement of these domains differed significantly across provider engagement groups ($P = .001$ and $P = .008$, respectively). In contrast, participants who reported no provider engagement had lower endorsement of symptom management (35.8%) and gaining weight (3.0%), with significant differences observed across groups for these domains ($P = .008$ and $P = .001$, respectively).

Unmet Need vs Met Need

In adjusted multinomial models, several factors were significantly associated with unmet nutrition care need (Table 3). Participants aged 25 to 44 years had a higher likelihood of being in the unmet need group compared with adults 65 years and older (RRR 2.17; 95% CI, 1.07 to 4.41). Higher likelihood of unmet need was also observed among women (RRR 2.20; 95% CI, 1.21 to 4.03), those experiencing very low food security (RRR 2.16; 95% CI, 1.17 to 3.99), those who did not or do not have a caregiver (RRR 2.07; 95% CI, 1.25 to 3.42), participants reporting 3 or more nutrition-impact symptoms (RRR 2.01; 95% CI, 1.27 to 3.18), and individuals whose primary treatment setting was a private oncology practice (RRR 2.08; 95% CI, 1.26 to 3.43). Lower likelihood of unmet need was observed among non-Hispanic Black participants compared with non-Hispanic White participants (RRR 0.46; 95% CI, 0.22 to 0.96), those with metastatic disease (RRR 0.63; 95% CI, 0.41 to 0.96), and those treated with chemotherapy (RRR 0.66; 95% CI, 0.44 to 0.98) or radiation therapy (RRR 0.65; 95% CI, 0.44 to 0.97).

No Perceived Need vs Met Need

Several sociodemographic and clinical characteristics were associated with no perceived need. Participants were more likely to be in the no perceived need group if they lived in rural areas (RRR 1.55; 95% CI, 1.02 to 2.35), had less than a college education (RRR 1.49; 95% CI, 1.09 to 2.03), or did not/do not have a caregiver (RRR 2.54; 95% CI, 1.73 to 3.73). A higher likelihood of no perceived need was also observed among those who were treated primarily in private oncology practices (RRR 1.63; 95% CI, 1.11 to 2.40). Lower likelihood of no perceived need was observed in non-Hispanic Black participants compared with non-Hispanic White participants (RRR 0.28; 95% CI, 0.14 to 0.56), in those reporting 1–2 symptoms (RRR 0.63; 95% CI, 0.46 to 0.86) or 3 or more symptoms (RRR 0.47; 95% CI, 0.34 to 0.66) compared with those reporting no symptoms, and among those who received radiation therapy compared with those who did not (RRR 0.61; 95% CI, 0.46 to 0.82).

Table 3. Multivariable multinomial and logistic regression models of nutrition care need and engagement with a registered dietitian nutritionist since cancer diagnosis

	Model 1: Nutrition Care Need (Multinomial) [Reference: Met Need]			Model 2: Saw RDN[a] (Logistic)
Independent Variable	**Unmet need vs reference**	**No perceived need vs reference**	**Unsure vs reference**	**Yes vs No**
	←——— *RRR[b] (95% CI)* ———→			OR[c] (95% CI)
Sociodemographic characteristics				
Age group [reference: ≥65 y]				
45-64 y	1.44 (0.83-2.48)	0.76 (0.52-1.10)	0.90 (0.53-1.54)	1.38 (0.98-1.94)
25-44 y	2.17 (1.07-4.41)*	1.26 (0.74-2.15)	1.19 (0.57-2.50)	1.24 (0.77-1.97)
Gender [reference: Man]				
Woman	2.20 (1.21-4.03)*	0.71 (0.50-1.01)	0.87 (0.53-1.43)	1.06 (0.77-1.47)
Race and Ethnicity [reference: Non-Hispanic White]				
Non-Hispanic Black	0.46 (0.22-0.96)*	0.28 (0.14-0.56)*	0.47 (0.22-1.02)	1.78 (1.08-2.94)*
Hispanic (any race)	1.96 (0.90-4.28)	0.65 (0.28-1.52)	0.63 (0.20-2.00)	0.91 (0.48-1.74)
Non-Hispanic other	0.39 (0.15-1.02)	0.92 (0.49-1.74)	0.42 (0.16-1.09)	1.85 (1.04-3.29)*
Geographic region (RUCA[d]) [reference: Urban/suburban]				
Rural	0.68 (0.36-1.29)	1.55 (1.02-2.35)*	0.74 (0.39-1.42)	0.87 (0.59-1.28)
Highest level of education [reference: College or more]				
Less than college	0.97 (0.63-1.50)	1.49 (1.09-2.03)*	1.64 (1.09-2.45)*	0.78 (0.59-1.03)
Employment status [reference: Employed]				
Retired	0.91 (0.51-1.62)	0.95 (0.64-1.40)	0.97 (0.55-1.73)	1.50 (1.05-2.15)*
Unemployed, disability	1.51 (0.89-2.58)	0.88 (0.55-1.43)	2.85 (1.64-4.96)*	1.32 (0.90-1.93)
Unemployed, other	1.27 (0.64-2.51)	1.14 (0.63-2.07)	2.29 (1.14-4.58)*	1.11 (0.68-1.81)
Economic and social resources				
Food security (USDA[e]) [reference: High/marginal]				
Low	1.28 (0.70-2.32)	0.79 (0.46-1.37)	1.61 (0.87-2.96)	1.13 (0.74-1.73)
Very low	2.16 (1.17-3.99)*	0.77 (0.41-1.45)	1.37 (0.68-2.74)	1.04 (0.64-1.67)
Caregiver status (family/friend) [reference: Did/does have a caregiver]				
Did not/does not have a caregiver	2.07 (1.25-3.42)*	2.54 (1.73-3.73)*	2.70 (1.64-4.45)*	0.43 (0.30-0.62)*
Clinical characteristics				
Primary cancer site [reference: Breast]				
Blood	0.66 (0.39-1.11)	0.71 (0.47-1.06)	0.82 (0.47-1.44)	1.02 (0.71-1.45)
Gastrointestinal	0.60 (0.31-1.17)	0.70 (0.43-1.13)	1.35 (0.73-2.52)	1.29 (0.85-1.95)
Genitourinary	1.26 (0.53-2.98)	0.84 (0.46-1.51)	1.04 (0.44-2.44)	0.76 (0.44-1.32)
Gynecologic	0.75 (0.38-1.47)	0.72 (0.42-1.24)	0.98 (0.47-2.06)	1.27 (0.80-2.01)
Lung	0.39 (0.11-1.42)	1.29 (0.65-2.56)	1.58 (0.65-3.86)	0.55 (0.29-1.05)
Head/neck	0.42 (0.08-2.11)	0.36 (0.12-1.12)	0.19 (0.02-1.70)	3.32 (1.23-8.98)*
Other	0.96 (0.46-1.99)	0.82 (0.45-1.47)	1.05 (0.49-2.25)	1.25 (0.76-2.07)

(*continued on next page*)

Table 3. Multivariable multinomial and logistic regression models of nutrition care need and engagement with a registered dietitian nutritionist since cancer diagnosis (*continued*)

	Model 1: Nutrition Care Need (Multinomial) [Reference: Met Need]			Model 2: Saw RDN[a] (Logistic)
Independent Variable	**Unmet need vs reference**	**No perceived need vs reference**	**Unsure vs reference**	**Yes vs No**
Metastatic disease [reference: No]				
Yes	0.63 (0.41-0.96)*	0.87 (0.64-1.19)	0.66 (0.42-1.02)	1.16 (0.88-1.52)
Symptom burden (GI[f]/appetite) [reference: None]				
1-2	1.48 (0.91-2.40)	0.63 (0.46-0.86)*	0.74 (0.47-1.19)	1.49 (1.11-2.00)*
≥3	2.01 (1.27-3.18)*	0.47 (0.34-0.66)*	0.84 (0.54-1.31)	1.76 (1.32-2.34)*
Treatment history				
Chemotherapy [reference: No]				
Yes	0.66 (0.44-0.98)*	1.01 (0.74-1.36)	0.81 (0.54-1.22)	1.27 (0.97-1.67)
Radiation therapy [reference: No]				
Yes	0.65 (0.44-0.97)*	0.61 (0.46-0.82)*	0.66 (0.44-0.98)*	1.56 (1.21-2.02)*
Health care system characteristics				
Site of most cancer treatment [reference: Academic/ comprehensive]				
Community	1.30 (0.86-1.97)	1.09 (0.80-1.48)	0.88 (0.56-1.36)	0.75 (0.58-0.99)*
Private oncology practice	2.08 (1.26-3.43)*	1.63 (1.11-2.40)*	1.84 (1.11-3.06)*	0.39 (0.27-0.55)*
VA[g]/military	0.57 (0.05-6.56)	1.09 (0.30-3.95)	Too small	1.28 (0.36-4.56)
Other	2.25 (0.89-5.71)	1.17 (0.56-2.44)	2.77 (1.20-6.40)	0.50 (0.26-0.95)*
Not sure	0.65 (0.07-6.02)	1.80 (0.53-6.11)	3.09 (0.81-11.8)	0.35 (0.11-1.12)

[a]RDN = registered dietitian nutritionist.
[b]RRR = relative risk ratio.
[c]OR = odds ratio.
[d]RUCA = Rural-Urban Commuting Area.[9]
[e]USDA = US Department of Agriculture.
[f]GI = gastrointestinal.
[g]VA = US Department of Vseterans Affairs.
*$P < .05$.

Unsure Need vs Met Need

Participants were more likely to be unsure about their nutrition care need if they had less than a college education (RRR 1.64; 95% CI, 1.09 to 2.45), were unemployed due to disability (RRR 2.85; 95% CI, 1.64 to 4.96) or other reasons (RRR 2.29; 95% CI, 1.14 to 4.58), or among those who did not/do not have a caregiver (RRR 2.70; 95% CI, 1.64 to 4.45). A higher likelihood of being unsure was also observed among those who received treatment primarily in a private oncology practice (RRR 1.84; 95% CI, 1.11 to 3.06). Lower likelihood of uncertainty was observed among participants who had received radiation therapy (RRR 0.66; 95% CI, 0.44 to 0.98).

Independent Correlates of RDN Engagement

In the adjusted logistic regression model, participants were more likely to have seen an RDN if they were non-Hispanic Black (OR 1.78; 95% CI, 1.08 to 2.94) or non-Hispanic other (OR 1.85; 95% CI, 1.04 to 3.29) compared with non-Hispanic White, were retired (OR 1.50; 95% CI, 1.05 to 2.15), reported nutrition-impact symptoms (1–2 symptoms: OR 1.49; 95% CI, 1.11 to 2.00; 3 or more symptoms: OR 1.76; 95% CI, 1.32 to 2.34), had head and neck cancer (OR 3.32; 95% CI, 1.23 to 8.98), or had undergone radiation therapy (OR 1.56; 95% CI, 1.21 to 2.02). Participants who did not or do not have a caregiver were significantly less likely to have engaged with an RDN (OR 0.43; 95% CI, 0.30 to 0.62). Lower likelihood of RDN engagement was also observed among those treated primarily at a community cancer center (OR 0.75; 95% CI, 0.58 to 0.99) or in private oncology practices (OR 0.39; 95% CI, 0.27 to 0.55).

DISCUSSION

Our findings are consistent with a growing body of literature demonstrating that nutrition interventions delivered by RDNs improve symptom burden, nutritional status, quality of life,

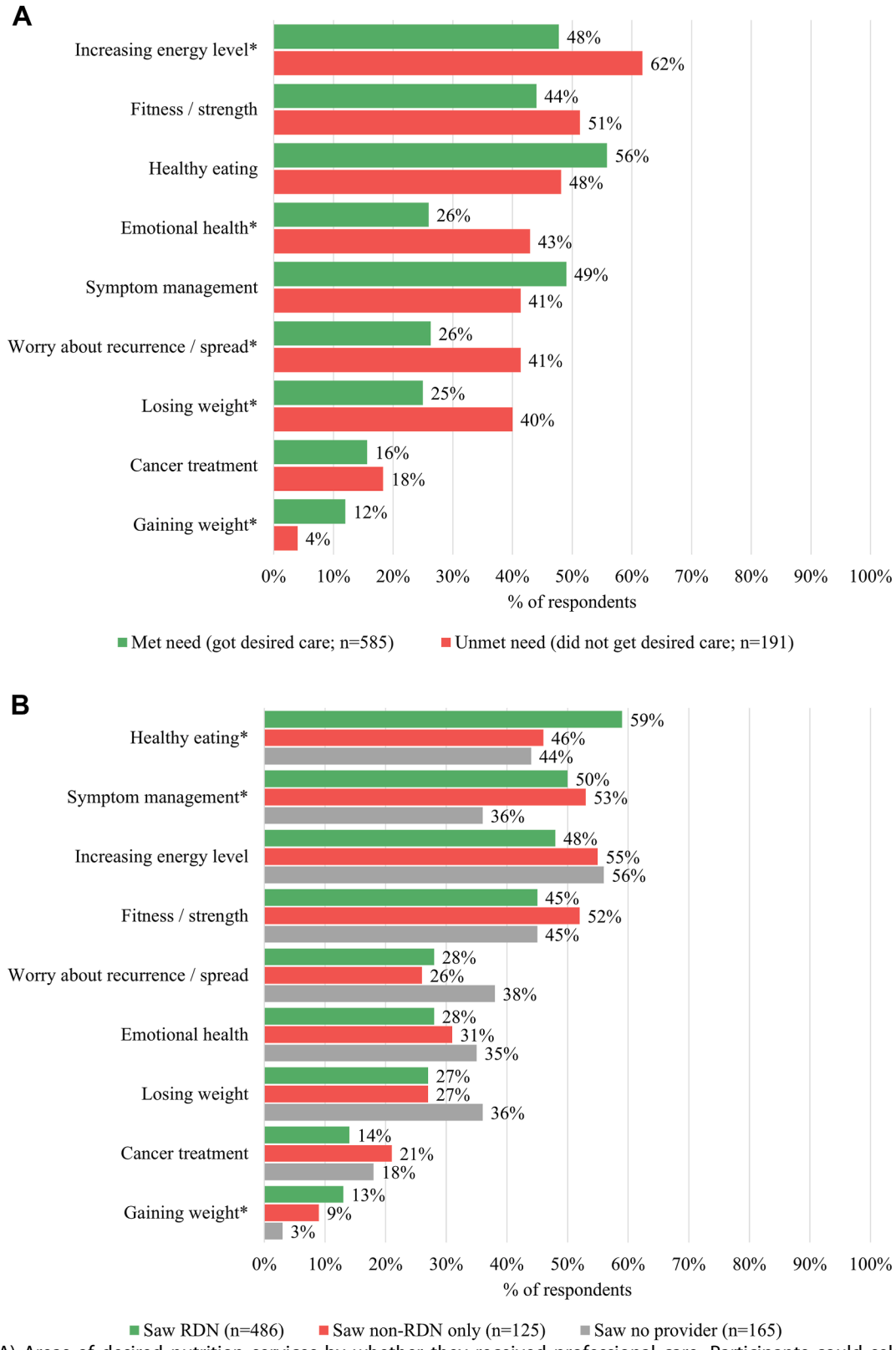


Figure 4. (A) Areas of desired nutrition services by whether they received professional care. Participants could select multiple reasons; percentages do not sum to 100%. Categories are ordered by frequency of unmet need. Survey item: "What eating and nutrition needs did you want or get professional support for?" Participants could select all that applied. *$P < .05$ (χ^2 test). (B) Areas of desired nutrition services, by provider type seen for nutrition care (saw registered dietitian nutritionist [RDN], saw non-RDN only,

and, in some populations, treatment tolerance and clinical outcomes, while economic evaluations suggest that timely nutrition intervention and malnutrition prevention may reduce downstream health care utilization and costs.[12,13] Evidence from qualitative, quantitative, and mixed-methods research demonstrates that survivors value individualized, professional nutrition guidance and often perceive unmet needs related to energy, emotional well-being, and survivorship transitions—findings that closely mirror the patient-reported priorities observed in this study.[5,14-16]

This study underscores the unmet need for nutrition services among cancer survivors. Although more than one-half of respondents reported receiving some form of nutrition care, only approximately one-third received care from an RDN. This pattern suggests a meaningful disconnect between clinical need and access to specialized nutrition services. In addition, more than one-half of respondents who desired nutrition care reported unmet need during cancer treatment and after treatment completion, pointing to critical periods in the cancer care continuum where nutrition services may be especially critical for long-term health and recovery. These findings emerged in a cohort characterized by substantial symptom burden (35.5% with 3 or more symptoms), with a notable subgroup experiencing socioeconomic vulnerability, including low (8.3%) or very low (6.8%) food security, as well as variability in treatment settings. These results underscore the importance of timely, coordinated, and specialized nutrition care across the cancer experience with and beyond cancer.

A considerable proportion of solid tumor oncology outpatients are at high risk of malnutrition at diagnosis, highlighting the need for early and standardized screening to target nutritional interventions effectively.[17,18] Despite this evident need, the availability of RDNs in outpatient oncology centers remains limited, with an average of only 1 full-time equivalent RDN per 2308 patients with cancer.[4] Given the substantial unmet nutritional needs among cancer survivors, the high risk of malnutrition in oncology outpatients, and limited access to RDNs, improving staffing ratios of RDNs and implementing validated malnutrition screening tools in the clinical workflow is imperative for appropriate referrals and identification of patients at high risk for malnutrition. This integration would ensure early, standardized nutritional screening and intervention, addressing the gap between patient needs and specialized dietetic care.[19]

Engagement with nutrition providers varied across the sample. Although nearly 40% of respondents reported seeing an RDN since diagnosis, fewer than 20% relied exclusively on RDNs for nutrition care, and many reported receiving nutrition-related guidance from clinicians who are not nutrition specialists. These patterns are notable, given the high symptom burden and prevalence of clinical indications for specialized nutrition care. Healthy eating, symptom management, and increasing energy level were the most frequently reported reasons for exclusive RDN consultation, while emotional health was less commonly cited overall. However, participants with unmet nutrition care needs were significantly more likely than those with met needs to desire support related to increasing energy level, emotional health, worry about cancer recurrence or spread, and weight loss (all, $P < .05$). These findings indicate that unmet nutrition care needs frequently co-occur with psychosocial distress and symptom burden, highlighting the relevance of nutrition services to both physical and emotional domains of survivorship.[20] Collectively, the results support the role of RDNs in addressing a broad spectrum of nutrition-related concerns and underscore the importance of systematic referral pathways and nutrition screening to improve alignment between patient needs and access to specialized nutrition care.[16]

Patterns of nutrition care need also differed by cancer type. Respondents with head and neck cancer had the highest proportion of met need, while unmet need was most common among breast cancer survivors. Participants with lung cancer frequently reported no perceived need or uncertainty, suggesting gaps in awareness or communication regarding nutrition services. These patterns are consistent with literature showing that survivors' need for supportive care often differs by cancer type, which can only be met when supportive care resources are available and accessible.[6,21]

The timing of desired nutrition care was concentrated during active treatment and the post-treatment period. Those with an unmet need were more likely to indicate a desire for nutrition care after treatment completion, highlighting a critical but underused point for nutrition interventions. This general pattern differs from research in patients with head and neck cancers who prefer to receive nutrition counseling before treatment is initiated.[15] Nutrition impact symptoms persist long beyond active treatment and greatly influence recovery, quality of life, and functional status.[22] Incorporating nutrition services into survivorship care planning may help address this gap, particularly during transitions from oncology to primary care.[14,23]

Multivariable analyses identified several sociodemographic and clinical correlations of unmet need, no perceived need, and uncertainty. Unmet need was more common among younger adults, women, those experiencing very low food security, individuals without caregiving support, and participants receiving care in private oncology practices. Employment status and educational attainment were associated with uncertainty about whether to seek nutrition care, potentially reflecting concerns about affordability or limited awareness of RDN benefits.[16] Education has been described as a super-determinant of health, with lower attainment linked to poorer diet quality, potentially due to reduced resources or nutritional knowledge.[24] Embedding RDNs within the oncology care team could provide accessible education and support for all patients, allowing them to make informed decisions about engaging with nutrition services. These patterns highlight structural and interpersonal factors that may limit access to nutrition care. The independent association between very low food security and unmet need underscores a critical equity concern, emphasizing the importance of linking oncology patients to both

did not see a provider). Participants could select multiple reasons; percentages do not sum to 100%. Categories are ordered by frequency of unmet need. Survey item: "What eating and nutrition needs did you want or get professional support for?" Participants could select all that applied. *$P < .05$ (χ^2 test).

clinical nutrition care and community food assistance resources.[25-27]

No perceived need and uncertainty for nutrition services were strongly associated with lower educational attainment and absence of a caregiver, suggesting limited awareness of the benefits of nutrition or concerns about affordability or accessibility. Uncertainty, but not no perceived need, was also associated with unemployment, including unemployment due to disability, suggesting that economic instability and competing health demands can reduce engagement with nonurgent supportive services.[28,29] Participants treated in private practice settings were consistently more likely to fall into these categories, highlighting potential differences in resource availability across care settings.

RDN engagement was more likely among participants with clinical indicators of nutrition risk, including higher symptom burden, head and neck cancer, and receipt of radiation therapy. Engagement was also higher among retired participants and those identifying as non-Hispanic Black or non-Hispanic other. In contrast, participants without caregiving support and those treated in community or private practice settings were less likely to engage with an RDN, reflecting limited staffing of RDNs in nonacademic oncology centers.[30] Expanding access to RDNs across all treatment settings, including through telehealth, may help reduce disparities in nutrition care for rural and community-based populations.

The findings have important policy implications and underscore the need for systematic and equitable approaches to identifying and addressing nutrition care needs. Standardized nutrition screening and clear referral pathways could ensure timely access to specialized nutrition care, particularly during treatment and post-treatment periods when demand is greatest. National guidelines and standards are needed to ensure consistent, high-quality nutritional screening and early intervention across all settings, thereby bridging the substantial gap between patient needs and specialized dietetic provision.[30,31] Such integration would not only improve patient outcomes, but also reduce health care costs associated with malnutrition-related complications, as evidence indicates that appropriate nutritional support can lead to cost savings and improved clinical outcomes.[12,15] Given the high symptom burden, unmet nutritional needs among cancer survivors, and risk of malnutrition in oncology outpatients, advocacy for greater integration of RDNs into oncology care teams is needed.[17-19] Establishing equitable reimbursement for nutrition care is essential to improve patient access to these vital services and incorporate RDNs as core members of oncology care teams.[13,32-34]

Strengths and Limitations

The sample was drawn from the CER, which may not fully represent the broader survivor population. As an open, self-enrolled survey without a defined sampling frame, the CER limits the ability to assess differences between participants and nonparticipants or to evaluate nonresponse bias at the population level. Participants are often recruited through community-based advocacy and support organizations, which may disproportionately engage individuals who are more connected to supportive care services, including nutrition-related resources. As such, estimates of met need may be higher than in the general population of cancer survivors. At the same time, more engaged individuals may also have greater expectations for care, potentially contributing to higher reporting of unmet need. The direction and magnitude of these potential biases are difficult to determine.

The sample was predominantly female, non-Hispanic White, and composed largely of breast cancer survivors, which does not reflect the broader cancer survivor population. This limited diversity may influence findings, as access to nutrition care, health-seeking behaviors, and ability to advocate for services may differ across sociodemographic groups, including those who are underinsured or from historically underserved populations. These factors should be considered when interpreting both prevalence estimates and observed associations.

Although completion of the nutrition module was high among those who reached the 12-month survey, it is possible that participation in this section was influenced by interest in or perceived need for nutrition-related care. The placement of these items at the end of the survey may introduce bias related to survey fatigue or differential completion. All measures were self-reported, which may introduce recall error; however, standardized survey items and multivariable models help reduce bias in estimated associations. Analyses were conducted using available data without imputation, and individuals who completed the full survey or specific modules may differ systematically from those who did not.

The cross-sectional design limits inferences about temporality, although models accounted for treatment history and time since diagnosis. Clinical nutrition assessment data, such as measured malnutrition status or weight trajectories, were not available, limiting interpretation of clinical need beyond reported symptoms. Despite these limitations, the study benefits from a large national sample, detailed characterization of symptoms and care experiences, and comprehensive modeling of factors associated with perceived need and RDN engagement, offering valuable insights into nutrition care delivery across the cancer continuum.

Future Directions

Future research can evaluate the impact of systematic malnutrition screening and automated referral pathways on access to RDN services across diverse oncology settings. Longitudinal studies can characterize how nutrition care needs and engagement evolve from diagnosis through survivorship and identify clinical and structural drivers of unmet need. Research examining racial and ethnic, age, sex, and geographic differences in perceived need and RDN engagement can deepen understanding of inequities and inform targeted interventions. To enhance generalizability and address limitations in current samples, future studies should incorporate broader recruitment strategies, including clinic-based and population-based approaches, to reach individuals less connected to supportive care networks, and consider the use of targeted recruitment strategies or demographic quotas to improve representation of underserved populations. Integrating food-security screening and community resource linkage may clarify how addressing

structural barriers influences uptake of nutrition care. Workforce and implementation studies can determine effective models for integrating RDNs into community oncology practices and resource-constrained environments, including through telehealth or shared-care approaches.

CONCLUSIONS

The results of this survey underscore the importance of integrating RDNs into care teams across the cancer care continuum and of enhancing patient awareness of nutrition service provisions during their experience with and beyond cancer. This large-scale national survey demonstrates substantial unmet nutrition care needs among cancer survivors and identifies important disparities by age, gender, socioeconomic resources, caregiving support, symptom burden, food security, and care setting. Despite the documentation of the risks of malnutrition in cancer outcomes, nutrition needs remain unmet for a considerable proportion of patients across all cancer types.

References

1. Soares CH, Beuren AG, Friedrich HJ, Gabrielli CP, Stefani GP, Steemburgo T. The importance of nutrition in cancer care: a narrative review. *Curr Nutr Rep*. 2024;13(4):950-965. https://doi.org/10.1007/s13668-024-00578-0
2. Arends J. Malnutrition in cancer patients: Causes, consequences and treatment options. *Eur J Surg Oncol*. 2023:107074. https://doi.org/10.1016/j.ejso.2023.107074
3. 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
4. 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
5. Kastrati K, Huebner J, Kipp PA, Mathies V. Nutritional care in metastatic RCC: patient experiences and reported unaddressed needs. *Support Care Cancer*. 2025;33(8):754. https://doi.org/10.1007/s00520-025-09801-2
6. Brick RS, Gallicchio L, Mollica MA, et al. Survivorship concerns among individuals diagnosed with metastatic cancer: findings from the Cancer Experience Registry. *J Cancer Surviv*. 2025;19(5):1568-1579. https://doi.org/10.1007/s11764-024-01573-8
7. Miller MF, Olson JS, Doughtie K, Zaleta AK, Rogers KP. The interplay of financial toxicity, health care team communication, and psychosocial well-being among rural cancer patients and survivors. *J Rural Health*. 2024;40(1):128-137. https://doi.org/10.1111/jrh.12779
8. Mollica MA, Zaleta AK, Gallicchio L, et al. Financial toxicity among people with metastatic cancer: findings from the Cancer Experience Registry. *Support Care Cancer*. 2024;32(2):137. https://doi.org/10.1007/s00520-024-08328-2
9. Rural–Urban Commuting Area Codes (RUCAs). WWAMI Rural Health Research Center. Accessed September 1, 2025. https://depts.washington.edu/uwruca/
10. Rabbitt MP, Hales LJ, Reed-Jones M. Food Security in the U.S. — Survey Tools. US Department of Agriculture, Economic Research Service. Accessed December 16, 2025. https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/survey-tools
11. *StataNow/MP*. Version 18.5. StataCorp LLC; 2024.
12. Bossi P, De Luca R, Ciani O, D'Angelo E, Caccialanza R. Malnutrition management in oncology: an expert view on controversial issues and future perspectives. *Front Oncol*. 2022;12:910770. https://doi.org/10.3389/fonc.2022.910770
13. Schuetz P, Sulo S, Walzer S, Krenberger S, Brunton C. Nutritional support during the hospital stay is cost-effective for preventing adverse outcomes in patients with cancer. *Front Oncol*. 2022;12:916073. https://doi.org/10.3389/fonc.2022.916073
14. Baguley BJ, Benna-Doyle S, Drake S, Curtis A, Stewart J, Loeliger J. Access to nutrition services and information after active cancer treatment: a mixed methods study. *J Cancer Surviv*. 2024;18(1):176-185. https://doi.org/10.1007/s11764-023-01352-x
15. Crowder SL, Douglas KG, Frugé AD, et al. Head and neck cancer survivors' preferences for and evaluations of a post-treatment dietary intervention. *Nutr J*. 2019;18(1):57. https://doi.org/10.1186/s12937-019-0479-6
16. 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
17. Kadakia CK, Symanowski TJ, Aktas A, et al. Malnutrition risk at solid tumor diagnosis: the malnutrition screening tool in a large US cancer institute. *Support Care Cancer*. 2022;30(3):2237-2244. https://doi.org/10.1007/s00520-021-06612-z
18. Trujillo BE, Kadakia CK, Thomson C, et al. Malnutrition risk screening in adult oncology outpatients: an ASPEN systematic review and clinical recommendations. *JPEN J Parenter Enteral Nutr*. 2024;48(8):874-894. https://doi.org/10.1002/jpen.2688
19. Hustad KS, Koteng LH, Urrizola A, et al. Practical cancer nutrition, from guidelines to clinical practice: a digital solution to patient-centred care. *ESMO Open*. 2025;10(4):104529. https://doi.org/10.1016/j.esmoop.2025.104529
20. Miller MF, Olson JS, Fortune EE. Attitudinal and accessibility barriers predict unmet mental health care needs in distressed cancer patients and survivors. *Psychooncology*. 2025;34(11):e70333. https://doi.org/10.1002/pon.70333
21. Jensen RE, Potosky AL, Moinpour CM, et al. United States population-based estimates of patient-reported outcomes measurement information system symptom and functional status reference values for individuals with cancer. *J Clin Oncol*. 2017;35(17):1913-1920. https://doi.org/10.1200/jco.2016.71.4410
22. McShane E, Hanna L, Zoanetti C, Murnane L, Baguley B, Furness K. The effect of nutrition impact symptoms on nutrition status after completion of curative-intent treatment for gastric, oesophageal, and pancreatic cancer: a systematic review. *Nutrients*. 2025;17(16):2691. https://doi.org/10.3390/nu17162691
23. 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 Surviv*. 2025;19(5):1694-1725. https://doi.org/10.1007/s11764-024-01583-6
24. Olstad DL, McIntyre L. Educational attainment as a super determinant of diet quality and dietary inequities. *Adv Nutr*. 2025;16(9):100482. https://doi.org/10.1016/j.advnut.2025.100482
25. Gany F, Melnic I, Wu M, et al. Food to overcome outcomes disparities: a randomized controlled trial of food insecurity interventions to improve cancer outcomes. *J Clin Oncol*. 2022;40(31):3603-3612. https://doi.org/10.1200/jco.21.02400
26. Gany FM. Call to action for treatment of food insecurity: a vital element of equitable cancer care. *JCO Oncol Pract*. 2025;21(8):1053-1056. https://doi.org/10.1200/op-25-00092
27. Raber M, Jackson A, Basen-Engquist K, et al. Food insecurity among people with cancer: nutritional needs as an essential component of care. *J Natl Cancer Inst*. 2022;114(12):1577-1583. https://doi.org/10.1093/jnci/djac135
28. Abdullah A, Liu Z, Molinari M. From diagnosis to survivorship: the role of social determinants in cancer care. *Cancers (Basel)*. 2025;17(7):1067. https://doi.org/10.3390/cancers17071067
29. Parks CA, Carpenter LR, Sullivan KR, et al. A scoping review of food insecurity and related factors among cancer survivors. *Nutrients*. 2022;14(13):2723. https://doi.org/10.3390/nu14132723
30. Prado MC, Laviano A, Gillis C, et al. Examining guidelines and new evidence in oncology nutrition: a position paper on gaps and opportunities in multimodal approaches to improve patient care. *Support Care Cancer*. 2022;30(4):3073-3083. https://doi.org/10.1007/s00520-021-06661-4
31. Li Z, Ding X, Chen Y, et al. Review of nutrition guidelines and evidence on diet and survival outcomes for cancer survivors: call for

integrating nutrition into oncology care. *J Nutr*. 2024;154(8):2346-2362. https://doi.org/10.1016/j.tjnut.2024.05.024

32. González-Rodríguez M, Villar-Taibo R, Fernández-Pombo A, et al. Early versus conventional nutritional intervention in head and neck cancer patients before radiotherapy: benefits of a fast-track circuit. *Eur J Clin Nutr*. 2021;75(5):748-753. https://doi.org/10.1038/s41430-020-00786-1

33. Hiatt RA, Clayton MF, Collins KK, et al. The Pathways to Prevention program: nutrition as prevention for improved cancer outcomes. *J Natl Cancer Inst*. 2023;115(8):886-895. https://doi.org/10.1093/jnci/djad079

34. 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):3403.

AUTHOR INFORMATION

B. M. Foster is a PhD student, Department of Urology, University of Kansas Medical Center, Kansas City. M. F. Miller is the director of research, Peterson Life with Cancer, Inova Schar Cancer Institute, Fairfax, VA. C. K. Spees is a professor, Division of Medical Dietetics, The Ohio State University College of Medicine, Columbus. C. A. Thomson is a professor emeritus, Department of Health Promotion Sciences, Mel & Enid Zuckerman College of Public Health, University of Arizona, Tucson. E. B. Trujillo is a registered dietitian nutritionist, TruNu Consulting, Rockville, MD. E. E. Fortune is a vice president of research, Cancer Support Community, Washington, DC. L. Fay is the clinical nutrition manager, Peterson Life with Cancer, Inova Schar Cancer Institute, Fairfax, VA. P. A. Adintori is an outpatient oncology dietitian, Department of Clinical Nutrition, Mount Sinai Queens Cancer Center, Astoria, NY. R. Stubbins is an assistant professor of nutritional sciences in medicine, Houston Methodist Neal Cancer Center, Houston, TX. J. M. Hamilton-Reeves is a professor, Department of Urology, University of Kansas Medical Center, Kansas City.

Address correspondence to: Melissa F. Miller, PhD, MPH, Inova Schar Cancer Institute, 8081 Innovation Park Dr, Fairfax, VA 22031. E-mail: melissa.miller@inova.org

STATEMENT OF POTENTIAL CONFLICT OF INTEREST

E. E. Fortune reports institutional research funding from the Academy of Nutrition and Dietetics, the Biller Family Foundation, Gilead, Grail, Lilly Oncology, Merck, and Takeda; consulting funding from BioNTech, Pfizer, and Precision AQ. No potential conflict of interest was reported by the remaining authors.

FUNDING/SUPPORT

Funding for the Cancer Experience Registry was provided by Bristol Myers Squibb, Genentech (a member of the Roche Group), and Novartis. Funding for data use and statistical analysis was provided by the Oncology Nutrition Dietetics Practice Group of the Academy of Nutrition and Dietetics. Nutrition Shared Resource (J.H.R.) funded in part by the National Cancer Institute Cancer Center Support grant P30CA168524.

This study was registered at ClinicalTrials.gov, NCT02333604.

ACKNOWLEDGEMENTS

The authors thank Jeannine Mills, MS, RDN, CSO, LD, CNSC, for their contributions to the conceptualization and framing of this study and for their subject matter expertise, which informed the interpretation of findings and the positioning of this work within the broader context of oncology nutrition care.

AUTHOR CONTRIBUTIONS

B. Foster: conceptualization, methodology, writing; M. F. Miller: conceptualization, data curation, formal analysis, funding acquisition, investigation, methodology, project administration, writing (original draft, review, and editing); C. A. Thomson: conceptualization, methodology, writing; C. K. Spees: conceptualization, methodology, writing; E. B. Trujillo: conceptualization, methodology, writing; E. E. Fortune: funding acquisition, supervision, writing (review and editing); L. Fay: funding acquisition, writing (reviewing and editing); C. K. Spees: conceptualization, methodology, writing (reviewing and editing); P. A. Adintori: conceptualization, writing (review and editing); R. Stubbins: conceptualization, writing (review and editing); J. Hamilton-Reeves: conceptualization, methodology, writing (original draft, review, and editing); all authors read and approved the final manuscript.

DATA AVAILABILITY

The dataset analyzed during the study is available from the corresponding author on reasonable request.

Introductory Note: The following items were administered as part of an observational survey assessing participants' experiences with eating- and nutrition-related care following a cancer diagnosis. Items are presented in the order administered. Response options are shown as presented to participants.

Survey Instructions: The next questions ask about your eating and nutrition experiences and professional support for eating and nutrition since being diagnosed with cancer.

By professional support, we mean care from staff such as a registered dietitian or nutritionist, primary care or family practice doctor, oncology doctor, or other healthcare provider (eg, palliative care provider, holistic provider, pharmacist, or chiropractor).

Use of Professional Support

1. **Since being diagnosed with cancer, have you ever received professional support for eating and nutrition from any of the following care providers?** (Select all that apply.)
   - Registered dietitian
   - Oncology doctor
   - Oncology nurse
   - Primary care or family practice doctor
   - Primary care or family practice nurse
   - Palliative care provider
   - Holistic provider (e.g., naturopath, integrative medicine provider)
   - Pharmacist
   - Chiropractor
   - Other (please specify): _____
   - None of these
2. **In the past 6 months, have you received professional support for eating and nutrition from any of the following care providers?** (Select all that apply.)
   - Registered dietitian
   - Oncology doctor
   - Oncology nurse
   - Primary care or family practice doctor
   - Primary care or family practice nurse
   - Palliative care provider
   - Holistic provider (e.g., naturopath, integrative medicine provider)
   - Pharmacist
   - Chiropractor
   - Other (please specify): _____
   - None of these

Experience With Support

3. **Which of the following best describes your experience with professional support for eating and nutrition since being diagnosed with cancer?**
   - I wanted eating and nutrition support and **did get it**
   - I wanted eating and nutrition support and **did not get it**
   - I did not want eating and nutrition support
   - I am not sure / Prefer not to share

Timing of Desired Support

4. **When did you want professional support for eating and nutrition?** (Select all that apply.)
   - Before being diagnosed with cancer
   - Around the time when I was first diagnosed with cancer
   - Before beginning treatment for cancer
   - During active treatment for cancer
   - After my active treatment ended

(continued on next page)

Figure 1. Nutrition Care Survey.

- Around the time of a new cancer diagnosis
- When my cancer came back (cancer recurrence)
- When my cancer advanced or spread
- Other (please specify): _____
- None of these

Nutrition-Related Needs

5. **What eating and nutrition needs did you want or receive professional support for?** (Select all that apply.)
   - Achieving healthy eating patterns
   - Increasing physical fitness or strength
   - Increasing energy level
   - Improving emotional or mental health
   - Managing symptoms or side effects (e.g., nausea, changes in taste)
   - Managing worries about nutrition and cancer recurrence or progression
   - Treating cancer
   - Support around weight (maintain, gain, or lose weight)
   - Other (please specify): _____
   - None of these

If support around weight was selected:

Which best describes the type of weight-related support you wanted or received?

- Maintaining weight
- Gaining weight
- Losing weight
- Prefer not to share

Health Behavior Changes

6. **To what extent are the following statements true for you since being diagnosed with cancer?**

Response options for all items:

Not at all; A little bit; Somewhat; Quite a bit; Very much

- I changed my eating patterns to manage symptoms and side effects
- I changed my eating patterns to improve long-term health
- I increased my level of physical activity to manage symptoms and side effects
- I increased my level of physical activity to improve long-term health

Nutrition-Related Symptoms

7. **In the past 6 months, have any of the following symptoms caused ongoing problems or required ongoing management?** (Select all that apply.)
   - Taste changes
   - Decreased appetite
   - Inability to eat a full meal or feeling full after only a small amount of food
   - Nausea
   - Vomiting
   - Gas
   - Bloating
   - Constipation
   - Diarrhea
   - Dry mouth
   - Difficulty swallowing
   - Mouth or throat sores
   - Fatigue
   - None of these

Figure 1. *(continued)* Nutrition Care Survey.