



## A qualitative study into cancer survivors' relationship with nutrition post-cancer treatment

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A qualitative study into the relationship cancer survivors' have with nutrition post-cancer treatment.

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### Abstract

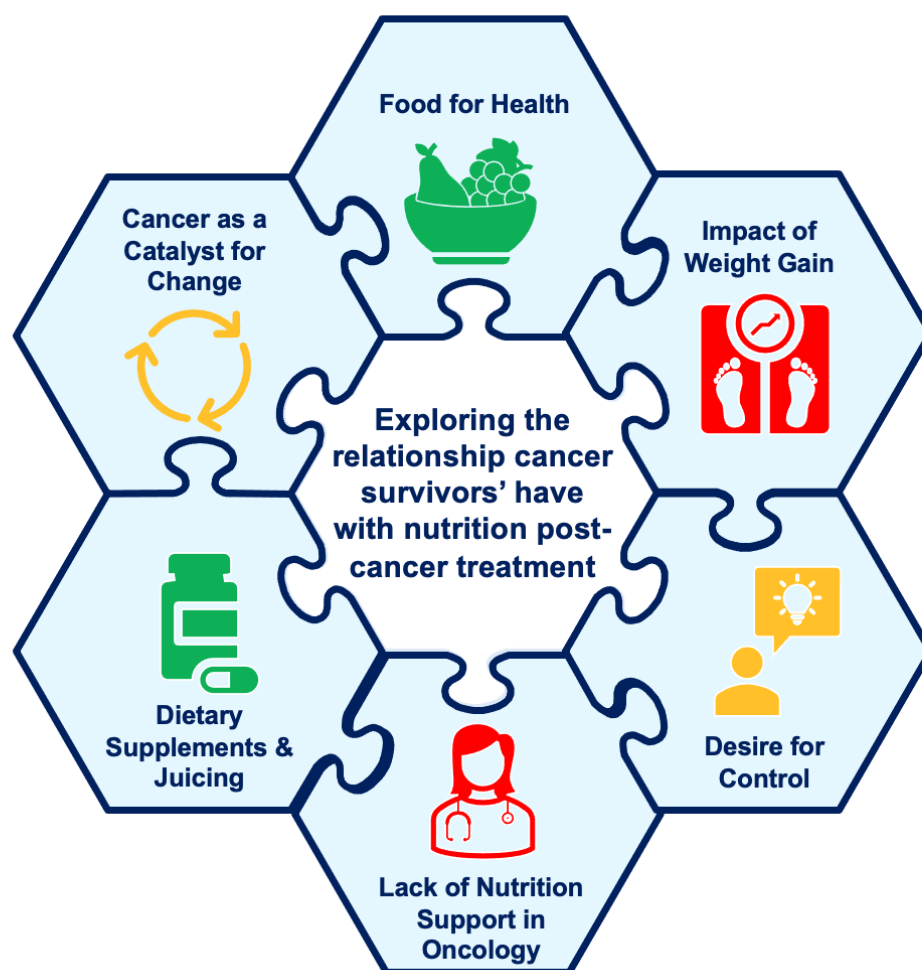
In Ireland, the number of individuals living with and beyond cancer equates to almost 4% of the population, projected to increase. Little is known about how cancer changes views on food and nutrition among cancer survivors. A patient-centered perspective is imperative for developing future health interventions in this cohort. This study aimed to explore these perceptions and views amongst Irish cancer survivors. Participants living across Ireland and who had completed active cancer treatment at least six months ago were eligible for this study. Semi-structured focus groups were conducted online via Microsoft Teams. Data was analysed using Braun and Clarke's updated

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six-phase process for reflexive thematic analysis. Five focus group interviews were held with cancer survivors (n=20). The cohort was predominately female (n=17) with a mean age of  $51.3 \pm 11.9$  years. Three core themes emerged (i) the role of nutrition, (ii) cancer as a catalyst for change and (iii) the overall lack of nutritional support in oncology. Findings suggest how a cancer diagnosis prompts a re-evaluation of health status and may prime survivors toward healthier dietary choices. The views of our participants indicate that survivors long for guidance from health professionals about their nutrition and the side effects of their cancer treatment and medication that impact dietary intake.

Graphical abstract



**Keywords:** Cancer Survivorship, Diet, Nutrition, Food Choice, Nutritional Support

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## Key points

- The views toward dietary change in survivorship were positive, especially around the potential benefits of healthy eating.
- Although differences were generally consistent with the WCRF/AICR cancer prevention recommendations, non-evidence-based actions, including dietary supplements and juicing, were cited.
- It must be noted that not all survivors felt dietary changes were necessary highlighting continuing the same dietary practices prior to their diagnosis.
- The participants' views generally suggest that cancer survivors would welcome guidance from health professionals during and post-treatment about their diet and how to manage the side effects of their cancer treatment nutritionally.

## Biography

In 2020, Niamh O'Callaghan graduated with a first-class honours degree in Human Nutrition. Niamh is now an Irish Research Council Government of Ireland Postgraduate Scholar, and her research explores Irish cancer survivors' nutrition practices and perspectives.

### Laura Keaver

Laura Keaver (BSc, MPH, RD, RNutr) is a lecturer at Atlantic Technological University, Sligo and programme co-ordinator for the BSc Human Nutrition (Hons). Laura's research interests are in oncology nutrition, the role of nutrition in the prevention, management and treatment of chronic disease and student health.

### Pauline Douglas

Pauline is currently Senior Lecturer; Clinical Dietetics Facilitator at Ulster University. Her research at the Nutrition Innovation Centre for Food and Health (NICHE) is focused on nutrition and hydration education. Pauline is also Vice Chair of NNEdPro Global Centre for Nutrition and Health.

## 1. Introduction:

The incidence of survivorship in oncology is increasing (1). Thus the health and well-being of cancer survivors are a priority. In comparison to the general population, cancer survivors have a greater risk of cancer recurrence and other chronic conditions, including cardiovascular disease (2), type 2 diabetes (3), and osteoporosis (4). Several prospective studies reflect the emerging recognition of the importance of survivorship care beyond treatment completion. Higher adherence to diet quality recommendations among cancer survivors is associated with better quality of life and survival (5-8).

Adult cancer survivors most commonly report the need for healthy lifestyle information after treatment completion (9). This suggests that the post-treatment phase of survivorship is a strategic opportunity for healthcare professionals to facilitate access to evidence-based dietary information and support (10). However, in a recent review by Johnston EA. et al. (2021), the authors concluded that post-treatment experiences of cancer survivors' accessing dietary information do not align with survivors' needs and preferences (11). Cancer survivors commonly identified needing information regarding healthy eating, practical skills, and support in changing dietary behaviours. Despite this, survivors frequently reported receiving generic advice from healthcare professionals, limited dietary follow-up, and a lack of referral to support. Similar limitations are present in Irish studies, where often cancer survivors do not receive a dietetic referral or nutritional advice (12-14).

Beyond the healthcare context, cancer survivors commonly report difficulty identifying credible sources of dietary information, especially online (15, 16). The era of digital media has significantly increased the availability and accessibility of health information outside the healthcare setting (17). In Ireland, there is limited nutrition information on the national health service (HSE) websites, national cancer centres and support groups (18). This can leave cancer survivors vulnerable to unregulated dissemination of health information online and may expose cancer survivors to nutrition messages that are not evidence-based (19). The Irish Cancer Society's Cancer Information Services (2014) evaluation found that 16% of all helpline callers primarily sought diet advice, while 46% of visitors to a hospital-based information centre sought diet advice (20). This implies significant nutrition information deficits within the oncology sector.

In Ireland, survivorship care is increasingly becoming a national priority in recent years. The government has highlighted the need to recognise cancer survivors' individual and distinct needs through the development of the National Cancer Strategy 2017-2026 (2). This study's definition of this strategy will be used; "a cancer survivor is a person with any type of cancer who has undergone treatment, completed the intervention and is living" (2). Further, the National Cancer Registry Ireland published a scoping review (2019) highlighting the lack of support services for various physical and psychological issues affecting cancer survivors (21). This review highlighted the lack of adequate nutritional information among the unmet domains. Current knowledge regarding survivors' beliefs about the importance of diet post-

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cancer-treatment and what guides dietary choices has not been comprehensively assessed. Therefore, this study aimed to explore, using a qualitative methodology, the relationship with nutrition amongst Irish cancer survivors. A patient-centred perspective is instrumental for developing future health interventions in this cohort (22). This could ultimately inform the provision of evidence-based dietary information to cancer survivors and develop future effective nutritional interventions.

## **2. Methodology:**

### **2.1. Study design**

This qualitative research study used focus group interviews to explore the relationship cancer survivors have with nutrition post-cancer treatment and gain deeper insight into the shared opinions of the participants. The study was performed from an interpretive point of view using a general inductive approach. A qualitative methodology was chosen because we were not seeking to test a hypothesis but rather to obtain a rich information source to understand better the rationale behind the relationship with nutrition in this population. As there are few tailored dietary recommendations for survivors, and we were interested in current beliefs and ideas about the benefits of diet for long-term health and survival in general, as opposed to nutritional needs specific to certain cancers, we sought to recruit a range of survivors. This also meant we would represent a wide range of views applicable to the broader survivorship population instead of focusing on a more specific group.

We used the Standards for Reporting Qualitative Research (SRQR) (23). SRQR aims to improve the transparency of all aspects of qualitative research by providing clear standards for reporting qualitative research. The authors define and explain the key elements of each item, and we have included the page and line numbers illustrating how the standards have been met. The SRQR can be found in the supplementary material of this paper (supplementary material 1).

### **2.2. Participants and recruitment**

This was a qualitative interview study with cancer survivors (aged  $\geq 18$  years) who had completed active cancer treatment at least six months before taking part in this study and lived across Ireland. The participants were recruited as part of a more extensive quantitative study on the nutrition practices of cancer survivors living on the Island of Ireland (24). Surveys for the quantitative analysis were anonymous. However, participants had the option to express interest in participating in this qualitative study focusing on a more in-depth analysis of cancer survivors'

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relationship with nutrition. The participants who indicated an interest in partaking in this qualitative study were sent an information sheet and provided informed written consent before the commencement of the focus group. Two participants couldn't attend the scheduled focus groups. Thus were subsequently offered the alternative of an individual interview. The formation of the focus groups was pragmatically based. It was hoped that proposing a combination of participation dates that the participants could choose from would increase interest.

### 2.3. Interview guide

The interviewer attended a qualitative methodology course and was trained to have minimal verbal input and prompt only when appropriate. The participants were informed that their participation was voluntary and confidential and encouraged to share their experiences. All interviews were audio-recorded with the participant's permission. The semi-structured focus group and individual interviews were conducted and recorded online via Microsoft Teams. Microsoft Teams was used due to the study taking place during the COVID-19 pandemic. The participants all had their cameras on. Five focus groups with group numbers ranging from 3-5 cancer survivors per group. The first author noted that using Microsoft Teams did not seem to affect the participants discussing their experiences. It was pointed out among the participants how the online facilitation was an opportunity to reach more participants from across the Island of Ireland. The focus group interviews lasted approximately 60 to 90 minutes, and each personal interview lasted 30 minutes. A topic guide (supplementary material 2) was developed by the study team to guide the interviews and consisted of a series of open questions which focused on three main areas: (i) the impact of a cancer diagnosis on the original perception of nutrition; (ii) current relationship with food; and (iii) long-term impacts from cancer or cancer treatment that may have affected dietary intake.

### 2.4. Analysis

The qualitative data was audio-recorded via Microsoft Teams and transcribed verbatim. Additional notes and annotations to indicate vocal inflexions and utterances were taken to capture body language. The transcripts were anonymised, and each participant was given a code number. It was analysed using Braun and Clarke's reflexive thematic analysis (2). A six-phase process that systematically builds from data familiarisation to coding to theme development and refinement. The researcher (NOC) analysed the transcripts in full using a semantic, inductive approach as defined

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by Braun and Clarke (2). Microsoft Excel was used to manage the data as the sample size was not large enough to require specialised qualitative software. The study team (NOC., L.K., and P.D.) discussed the data collectively, identified codes and grouped them into similar principles to form themes. The transcripts were then analysed for themes. These themes were refined, defined and named, each given a written description at meetings between the study team until the emergent three themes were agreed upon and illustrative quotes were chosen for each.

### 2.5. Positionality and reflexivity

The first author (NOC) is a female MSc student currently working on the topic of cancer survivorship and nutrition. The first author conducted all focus groups and interviews between February and August 2021. The interviewer did not have any direct relationship with any participants except for one participant whom the interviewer had previously worked with part-time in a hospitality setting. Participants knew that the study was part of the interviewer's research degree. Although she has an undergraduate degree in nutrition, she did not reveal this to the participants. Her interest in researching diet and oncology stemmed from her final year project, where she analysed the hand grip strength of ambulatory oncology patients and its association with quality of life. She was surprised to discover a lack of nutrition research in oncology in Ireland. NOC has neither had a cancer diagnosis nor her direct family; therefore, she lacks an understanding of cancer survivors' relationship with nutrition post-treatment. This research has not been carried out qualitatively in Ireland before. The first author believes in the value it could add to the literature and cancer care services across Ireland. NOC does not represent an organisation or healthcare professionals in oncology.

### 2.6. Ethical Approval

Ethical approval for this study was provided by the Institute of Technology Sligo Research Ethics Committee (reference, 2020023).

## 3. Results:

### 3.1 Participants' characteristics

From the original quantitative survey study ( $n = 170$ ), eighty-four participants opted to leave their contact details, indicating interest in participating in this study. Twenty cancer survivors responded to an invitation to participate in this study, a response rate of 23.8%.



The cohort was predominately female (n=17) with a mean age of  $51.3 \pm 11.9$  years (23-69 years). Most participants (n = 12, 60%) were breast cancer survivors, and 75% were five years or less post-treatment. The majority of the cohort had received chemotherapy and surgery (85% and 80%), with rates for radiotherapy (50%) and hormonal therapy (40%) varying. Over half were working full time (65%). All participants had higher education of varying levels. (Table 1).

Table 1. Characteristics of the cancer survivors (n=20) who took part in the stud

<b>Respondents Characteristics</b>	<b><i>n (%)</i></b> <b><i>Mean <math>\pm</math> SD</i></b>
<b>Gender</b>	
Male	3 (15.0)
Female	17 (85.0)
<b>Age (years)</b>	51.3 $\pm$ 11.9
<b>Education</b>	
Post Leaving Certificate (PLC) Diploma or Cert	7 (35.0)
Bachelor's degree	8 (40.0)
Graduate Degree (Master's or PhD)	5 (25.0)
<b>Employment</b>	
Part-time employment	2 (10.0)
Full-time employment	13 (65.0)
Home-maker	1 (5.0)
Unemployed	1 (5.0)
Retired	3 (15.0)
<b>Clinical Characteristics</b>	
<b>Primary tumour</b>	
Breast Cancer	12 (60.0)
Hematologic	3 (15.0)

Bowel & Colon Cancer	3 (15.0)
Prostate Cancer	2 (10.0)
Oesophageal	1 (5.0)
<b>Years since treatment finished</b>	
1-2	5 (25.0)
3-5	10 (50.0)
6-10	2 (10.0)
>10	3 (15.0)
<b>Completed treatments</b>	
Chemotherapy	17 (85.0)
Radiotherapy	10 (50.0)
Hormone Therapy	8 (40.0)
Surgery	16 (80.0)

### 3.2. Key Themes

Three key themes emerged, which were as follows: (i) the role of nutrition, (ii) cancer as a catalyst for change and (iii) the overall lack of nutritional support in oncology.

### 3.3. Theme 1: The role of nutrition

The role of nutrition was divided into two sub-themes (i) impact of weight gain and (ii) desire for control. The sub-themes recognise the role of nutrition, but each is unique to different relationships cancer survivors have with food post-cancer treatment.

#### 3.3.1. Impact of weight gain

In particular, the breast cancer survivors highlighted the impact of weight gain post-treatment and associated it with a type of hormonal therapy known as Tamoxifen. They described the impact it has on their relationship with their nutrition, describing *“I had to alter my diet really because of the knock-on effect of the breast cancer medication”* (female, aged 47, breast cancer, two years post-treatment). There was a shared understanding among the breast cancer survivors that the weight gain was from their treatment instead of their dietary intake; however, a struggle was evident regarding accessing dietary information to prevent weight gain.

*“I’m on tamoxifen and hormone blockers for the foreseeable future; you know they have a huge impact on your nutrition and your body’s ability to lose weight, so I gained about 20 kilos after chemotherapy, I’ve since lost about 11 or 12, but it’s I’ve never had a weight issue in my life until cancer, so I’m kind of looking at it from that side.”*

(female, aged 37, breast cancer, one-year post-treatment)

### 3.3.2. Desire for control

Participants described their dietary intake as one aspect of their survivorship they have control over. Overall this was mostly a positive response; one participant cited, *“I don’t feel I have any sort of an obsession, but it’s something I give thought and time to”* (female, aged 62, breast cancer, eight years post-treatment). Participants emphasised the importance of a balanced diet and their approach to moderation; expressly, participants agreed on an 80/20 approach to their nutrition. This approach included an allowance of treats. For example, chocolate and sweet cakes were mentioned in moderation. However, not all the survivors in our cohort had gained the same control or outlook on their dietary intake; others expressed feelings of uncertainty regarding their dietary include. In one focus group, one participant who had not gained control, like the other participants, cited confusion over nutrition labels, and the inclusion or exclusion of certain food groups, for example, dairy, was mentioned.

*“What I am trying to say is 80/20, everything in moderation. You have to treat yourself.*

*“(female, aged 49, breast cancer, 14 years post-treatment)*

*“I’m not like the last lady who was in control of it, I’m not, you know, I’m sort of cutting out things, and again, that’s fine, you know, but I’m struggling to have an ordinary diet that makes sense.”*

(male, aged 69, prostate cancer, one-year post-treatment)

### 3.4. Theme 2: Cancer as a catalyst for change

The second theme, ‘cancer as a catalyst for change,’ is divided into two sub-themes (i) food for health and (ii) dietary supplements and juicing. Overall this theme encompasses a combination of a new positive outlook on nutrition and positive dietary changes made since diagnosis. However, some participants felt their perspective on nutrition was favourable before diagnosis and described continuing

their original dietary choices. In addition, dietary supplements and some non-evidence-based actions were introduced after the completion of cancer treatment.

### 3.4.1. Food for health

The participants described a positive relationship with their nutrition since their cancer diagnosis. Participants cited how they are more conscious of their dietary intake for long-term health, resulting in positive and mindful nutritional choices. In making these choices, the participants describe the importance of the function and balance of the nutrients and their understanding of how they will support their health and nourish their bodies. The cancer survivors discussed the role of specific nutrients; for example, protein was mentioned for repair and growth, calcium for bone health and fibre for bowel function.

*“I guess it’s just better understanding what food I eat and what to do. You know what? I have to feed my body, nourish my body, my body. I guess it’s for me to prevent cancer hopefully or not to give me that risk of cancer returning, but also for the day-to-day to help me fight fatigue and give me energy.”*

(female, aged 53, non-Hodgkin’s lymphoma, one-year post-treatment)

While describing this positive relationship and highlighting the importance of nourishment, participants also talked about how their diagnosis impacted their dietary choice. Since completing treatment, several cancer survivors have tried avoiding or cutting down on particular unhealthy foods. They mentioned a range of foods, but these were typically processed foods and meat, with some saying the removal of dairy and the heightened cooking from scratch. This was evident in all focus groups; participants shared recipes they now make from scratch. However, participants did not strongly believe in specific dietary components that could prevent cancer recurrence.

*“When I had my prostate removed, I had to look at my diet, so I got rid of dairy, meat, and chocolates. I got rid of processed foods and tea, so this is like cancer is a great motivator in your diet. You know, that’s what kicked me into action, as you know, and I’d be fairly ruthless.”*

(male, aged 69, prostate cancer, one-year post-treatment)

A topic discussed among the cohort was removing and reducing red and processed meat from the diet, with some participants opting for a more plant-based diet after the completion of cancer treatment. Those in the cohort who still consumed red meat had

a similar perspective on sourcing the product, highlighting the importance of sourcing produce from local butchers whom participants trust.

*“Well, as I said, I was always into healthy eating, but I suppose I would be much more vegetarian now; we’d only have red meat, I’d say once every six months.”*

(female, aged 67, colon cancer, one-year post-treatment)

In the focus groups, some participants described their original outlook on nutrition before their diagnosis, which they felt content with, and highlighted their continuation. Adding that they didn’t question if diet had played a role in the initial cause of their cancer development, their view of nutrition hasn’t changed, even when others have posed this question to them. Two participants explained that close friends had said to them that a possible cause of their cancer was ‘*something you were doing food-wise*’. It was clear from the discussion had by the cancer survivors that this was an unacceptable comment about their cancer diagnosis. Other survivors in the focus group reacted, shocked at how someone would make this comment.

*“Somebody said to me, “Oh, it must have been something you’re, you were doing food-wise”, and I said, “No, no, because before I got a cancer diagnosis, we had very little processed food”, and so we haven’t changed anything.”*

(female, aged 61, breast cancer, two years post-treatment)

#### 3.4.2. Dietary supplements and juicing

Several participants reported taking dietary supplements and had indicated they had started juicing since finishing treatment. Their research influenced these views, including online sources; fellow cancer survivors were mainly mentioned as a source for recommendations. It was evident that survivors were hopeful of health benefits from the nutritional supplements and juicing and did not perceive any potential harmful effects. The survivors who did follow fellow cancer survivors online indicated they trusted the nutrition suggestions. The participants state being vulnerable regarding their nutrition and desire professional nutritional advice, which relates to the focus group’s final theme, the ‘lack of nutritional support in oncology’.

*“I used to follow Bernadette Bohan, who is very interested in juicing; if you have read her books, she went through cancer twice, and she swears by juicing.”*

(female, aged 67, colon cancer, one-year post-treatment)

*“Yeah, the fella I follow he’s a big advocate now for vitamin D, we need a good source of Vitamin D a day, and he also mentioned black seed oil, which I have ordered.”*

(female, aged 46, breast cancer, one-year post-treatment)

In contrast, another participant specified dietary supplements as a money racket and gave people false hope of being healthy.

*“The only thing I take is vitamin D; I don’t believe in all the other vitamins; I think it’s a money racket, giving people false hope. Sorry, that’s my view anyway.”*

(female, aged 61, breast cancer, three years post-treatment)

### **3.5. Theme 3: Lack of nutritional support in oncology**

A coherent theme throughout the focus groups was the lack of nutritional information and professional advice relating to diet. Participants highly commended their support for their diagnosis and treatment but noted nutrition support was the only element of care missing. Nutrition support was stated missing during treatment and survivorship. Several participants in the focus group survivors said they went online or bought books and proceeded with their self-directed research on the topic.

*“There was nothing to do with diet, and throughout the whole thing, I found that missing. I wish I would have been advised on diet and nutrition, not just during the treatment but also as a survivor.”*

(female, aged 37, breast cancer, one-year post-treatment)

### **Discussion:**

This study aimed to explore the relationship with nutrition amongst Irish cancer survivors. The findings revealed how a cancer diagnosis appears to prompt a re-evaluation of health status among cancer survivors. This encourages survivors to make healthier dietary choices. Although nutritional changes were mainly consistent with healthy eating guidelines for cancer survivors, nutritional supplements and other non-evidence-based actions were mentioned. A small subgroup highlighted the continuation of positive nutrition practices before cancer diagnosis. The findings suggest that some participants struggle with the side effects of cancer-related treatments, for example, weight gain, which impacts their relationship with nutrition. The participants’ views suggest that cancer survivors would welcome guidance from health professionals during and post-treatment about their diet and how to nutritionally manage the side effects of their cancer treatment and medication.

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The role of nutrition was seen differently among the cohort, but its importance was an all-encompassing component, an evident finding from our cohort. In particular, breast cancer survivors highlighted the struggle with weight gain about post-treatment medication. The battle they described has an apparent impact on their relationship with their dietary choices. As evident in the literature, obesity in this cohort is a growing crisis in the cancer care (25), presenting a significant risk for the development of co-morbid conditions and the risk of disease recurrence, which can have a negative impact on the quality of life (26). Similar to the literature (27), breast cancer survivors within our study were highly concerned about their weight gain, reinforcing the need for the oncology team to provide weight management support or referral to dietetic support.

A cancer diagnosis appears to prompt a re-evaluation of health status among cancer survivors and immediate positive dietary changes. As displayed with other cancer survivor groups, the motivations for doing this seemed to be driven by beliefs about the importance of diet for improving overall health rather than reducing their risk of recurrence (15, 28). Similar to other studies, our participants valued healthy eating for their overall health and well-being (28, 29). This revealed a desire to take control (30) and was also coherent with the idea that a cancer diagnosis may be a “teachable moment” in which individuals are more open to change, which can have long-term health benefits (31).

Evidence suggests that cancer survivors (32) often have diverse interpretations of healthy eating. However, in our study, awareness of the components of a healthy diet echoed the current dietary recommendations for cancer survivors (33). Participants removed or reduced dietary intake of specific foods such as red and processed meat. Moreover, they introduced more plant-based foods into their diets, such as fruit, vegetables, and whole grains. These changes are consistent with World Cancer Research Fund/American Institute for Cancer Research recommendations that embody cancer prevention and survival (33). Six recommendations focus on aspects of diet, including following a dietary pattern rich in whole grains, vegetables, fruit and beans and limiting consumption of red meat and processed food to reduce cancer incidence and mortality. There was also an approach to “everything in moderation” towards dietary choices among the cohort.

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A few participants described their positive relationship with nutrition before and highlighted their continuation post-treatment. This is consistent with conclusions that survivors perceive their dietary behaviours as positive (28, 34, 35). Additionally, they report maintaining these dietary behaviours post-cancer treatment. In agreement with previous studies (15, 36), some participants did not attribute their cancer diagnosis to diet, even when others presented this question to them.

Our participants emphasised the desire to receive advice on a diet from healthcare professionals while undergoing treatment and during the period post-treatment. This is evident especially for those survivors struggling with the impacts of side effects and who aren't confident in their dietary choices. Our cohort reported receiving no professional advice about diet and highlighted it was an element of care missing, despite recommendations that cancer survivors should receive nutrition support (37). Several research studies show that dietetic referral and provision of nutrition support in cancer survivorship are low across Ireland (12, 13, 38). Irish healthcare professionals recognise that early nutrition intervention in practice is essential (39). However, they state there is a lack of resources and recognise a need for different interventions depending on cancer type and stage. Those who reported low awareness of approaches have also expressed interest in further oncology nutrition training (39).

Considering the dearth of professional health advice, it is no surprise that some of our participants highlighted their use of dietary supplements and 'juicing'. Nutritional supplements are widely used by cancer survivors (12, 40). Future studies are required to identify and classify supplements taken by cancer survivors and explore factors associated with their use. Our participants did express their interest in juicing due to the online and print influence of fellow cancer survivors. In a recent national survey of oncology survivors examining nutrition behaviours by Sullivan et al. (12), 10% of Irish cancer survivors reported using juicing. Health care professionals must have open and supportive dialogues with cancer survivors on evidence-based complementary and alternative medicine to ensure symptom management and safety (41).

This study had several limitations. Given the nature of a small heterogeneous sample, it is difficult to compare experiences, although it gives a perspective of cancer

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survivors' views on their relationship with nutrition. The primary group represented in the study are breast cancer survivors, which is reflected in specific themes. For example, the impact of weight gain was predominant in breast cancer survivors. Therefore, this should be taken into consideration when interpreting findings.

Additionally, self-selection bias could explain the positive dietary relationships within the current study. We recruited through a survey of the nutrition practices of cancer survivors. Therefore, some participants may have been mainly motivated to learn nutrition information. All participants in our study were well educated, and future research should seek to explore those from a lower socio-economic group in more depth. The study uptake was only 24%. This low response rate may be due to recruiting through a survey on the nutrition practices of cancer survivors, and the cancer survivors didn't wish to discuss the topic in more depth in a focus group. Those who wanted to partake but could not attend the focus groups contacted us via email to explain that time was a barrier or had personal commitments.

## **5. Conclusion**

A cancer diagnosis appears to prompt a re-evaluation of health status among cancer survivors and may potentially prime survivors toward making healthier dietary choices. The views toward dietary change in survivorship were positive, especially around the potential benefits of healthy eating. Although differences were generally consistent with cancer survivor diet recommendations, non-evidence-based actions, including dietary supplements and juicing, were cited. It must be noted that not all survivors felt dietary changes were necessarily highlighting continuing the same dietary practices before their diagnosis. The participants' views suggest that cancer survivors would welcome guidance from health professionals during and post-treatment about their diet and how to manage the side effects of their cancer treatment nutritionally. Further research is required to determine how Irish cancer survivors wish to receive nutrition support.

### **Transparency Declaration**

The lead author affirms that this manuscript is an honest, accurate, and transparent account of the reported study. The reporting of this work is compliant with the Standards for Reporting Qualitative Research (SRQR) Guidelines. The lead author

affirms that no important aspects of the study have been omitted and that any discrepancies from the study as planned have been explained.

### **Author Contributions**

All authors contributed to the study conception and questionnaire design. N.O.C. was responsible for data curation; N.O.C., L.K. and P.D. performed data analysis; L.K. and P.D. supervised the project; the first draft of the manuscript was written by N.O.C., and all authors commented on all versions of the manuscript. All authors have read and agreed to the published version of the manuscript.

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### **Conflicts of Interest**

The authors declare no conflict of interest.

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