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The Truth Behind Food and Cancer: Simple Explanations Based on Scientific Evidence

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Abstract

Background: Specialist oncology dietetic care is lacking in Ireland. This results in knowledge gaps that are filled by unreliable information from unqualified outlets such as the media and alternative-health providers, who promote complementary/alternative medicine (CAM). The aim of this resource is to provide cancer survivors with up-to-date, evidence-based information on cancer and nutrition.

Methods: Common myths about nutrition and cancer and the most popular CAM used by Irish cancer survivors were included.[26] National cancer organisations were also reviewed. To ensure readability, content was written according to the National Adult Literacy Agency recommendations, and peer-reviewed by other dietitians. Patient feedback was sought from patient advocates. Funding was secured from Breakthrough Cancer Research to print 20,000 copies for free distribution.

Results: 'The Truth Behind Food and Cancer: Simple Explanations based on Scientific Evidence' is a coloured printed resource written by dietitians. It discussed popular diet-based CAM and food-avoidance patterns practiced by patients with cancer and provides an evidence-based response to myths and unproven dietary strategies. Conclusion: Following a restrictive dietary strategy can place vulnerable cancer patients at an even greater risk of malnutrition and its debilitating effects. Research shows that a significant number of cancer survivors turn to unproven dietary strategies in the absence of dietetic care or reliable resources.

Keywords: cancer, cancer diet, diet nutrition, nutrition complementary and alternative medicine.

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Introduction

Complementary and Alternative Medicine (CAM) can be defined as a group of diverse medical health care systems, practices and products that are not generally considered to be part of conventional medicine[12].[3] Research shows that the most commonly used forms of CAM in cancer survivors include different types of diets, exercise, yoga, breathing techniques, plant-based medicines, vitamin and mineral supplements and relaxation techniques.[4] It has been reported that the proportion of cancer patients using CAM has increased in recent years.[13]

Today, the media has a significant ability to both positively and negatively impact public awareness, attitude and knowledge regarding health-related behaviours.[7] But this coincides with the emerging 'Nutribabble' epidemic which is particularly potent among cancer survivors.[21] Misinformation about diet and cancer is readily available for all cancer survivors at any stage in their cancer journey.

Why is it used?

Cancer patients report using CAM in order to reduce the side effects of cancer treatment (chemotherapy, radiotherapy), improve quality of life, slow the progression of the disease, cope with feelings of anxiety and depression, to have a feeling of control over their disease and maximise the success of treatment, whether perceived or not.[4]

Metabolic derangements and co-morbidities are highly prevalent among both cancer survivors and those undergoing active treatment.[19] Therefore, both cohorts tend to be highly motivated to seek additional information on diet, exercise and CAM practices to prevent disease recurrence, improve quality of life and delay disease progression.[1] The European Society for Clinical Nutrition and Metabolism (ESPEN) report that cancer survivors often seek out information about food choices, physical activity and dietary supplements to improve overall survival and treatment outcomes, but the information sought out is often not evidence-based.[1]

Cam in Ireland

The National Nutrition and Cancer Patient Survey (NNCPS) conducted by UCC and the Irish Society for Clinical Nutrition and Metabolism examined Irish cancer survivors' attitude to nutrition, nutritional problems and access to dietetic care throughout their cancer journey.[26] This survey revealed that 37% of cancer survivors had tried an alternative, unproven dietary strategy (e.g., herbal remedies, juicing diet, restrictive diets) and 32% report avoiding specific foods (e.g. dairy, processed meats, carbohydrates).[16]

In 2019, the Irish Nutrition and Dietetic Institute (INDI) estimated in their submission to the National Cancer Control Programme (NCCP), that there was one dietitian per 4500 cancer survivors in Ireland, the majority of whom are not solely dedicated to oncology care . This shows that the oncology services in Ireland are understaffed and under resourced. Outside of the capital city Dublin, access to resources are even more scarce with priority given to more complex surgical cases[16] . This leaves the vast majority of cancer patients without access to

reliable, evidence-based information. This stark knowledge gap may encourage concerned cancer survivors to look for information about their condition from unreliable sources and unqualified individuals[12] .

Consequences of CAM

Cancer patients often experience a significant burden of nutritional impact symptoms (NIS) while undergoing conventional treatment and these are associated with an increased risk of malnutrition as well as reduced quality of life.[5,6] It has been noted that even modest weight loss at diagnosis is associated with increased risk of death. Cancer associated malnutrition is multi-factorial and occurs due to poor oral intake, side effects of treatment or surgery and metabolic abnormalities induced by the tumour. Reduced lean body mass is often associated with dose-limiting toxicities and delays in chemotherapy which in turn can be life-threatening.[9]

There is no scientific evidence that following any type of diet can cure or replace conventional cancer treatments.[29] Complementary or 'fad diets' tend to be restrictive and make false claims about curing or treating cancer.[28] These types of diets often suggest excluding whole food groups, such as dairy or carbohydrate from your diet. Because of NIS, cancer survivors often struggle to meet the energy (25-30 kcals/kg/day) and protein (> 1-1.5 g/kg/day) targets recommended by ESPEN. Following restrictive diets or omitting food groups can make these targets even more unreachable.[1]

Some CAM can potentially pose serious risks for cancer patients, in particular, unregulated products or those with known toxicity. Patients are also at an increased risk of harm if they delay or stop using proven conventional medicine for example chemotherapy or radiotherapy in favour of CAM with little to no scientific backing.[3] A 2018 study comparing overall survival among patient with curable cancers who used complementary medicine versus conventional cancer treatment when examining treatment adherence, found that patients who engaged in complementary medicine were more likely to refuse at least 1 component of conventional therapy (e.g., surgery, hormone therapy) and had a 2-fold greater risk of death than those who did not engage in complementary therapy practices.[15]

Cancer Prevention

With the high burden of cancer seen worldwide, primary prevention has been identified as a key cancer control strategy. The World Cancer Research Fund (WCRF) alongside the American Institute for Cancer Research (AIRC) continually update their guidelines relating to cancer prevention on the basis of emerging evidence.[29] The WCRF have made evidence-based suggestions that have been estimated to reduce the risk of some cancers by 30%.[11,17] These include alcohol avoidance, avoiding processed meat, limiting red meat, consuming fruit and vegetables and remaining a healthy weight throughout your life.[14]

The WCFR specifically say that mineral and vitamin supplementation should be not used for cancer prevention and nutritional needs should be met through diet alone unless advised by

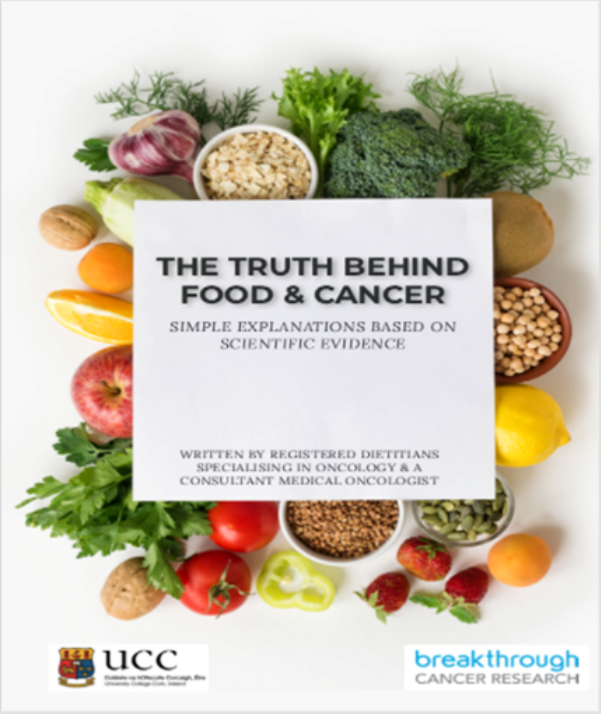

Figure 1: The Truth Behind Food and Cancer

a healthcare professional.[29] A 2010 secondary analysis of the Survey of Lifestyle, Attitudes and Nutrition (SLAN) here in Ireland reported that despite WCRF advice, non-prescription herbal and vitamin and mineral supplements were the most commonly reported self-prescribed CAM among the general public.[8]

Following on from this, a 2016 systematic review of 12 observational studies from 10 different cohorts, 11 countries and 1.6 million participants found that high versus low adherence to the WCRF guidelines was associated with a significant reduction (10-61%) in overall cancer incidence and mortality if each recommendation is assigned an equal weight.[11] Despite this, cancer survivors and even members of the general public often look to the appeal of a silver bullet of cancer prevention or treatment, usually in the form of CAM.

Cancer Treatment

ESPEN have devised practical guidelines based on the current scientific evidence available to make recommendations relating to cancer treatment and nutrition.[1] ESPEN have directly stated that they do not recommend the use of dietary provisions that restrict energy intake in patients with or at risk of malnutrition.[1] Furthermore, ESPEN report that there are currently no diets that have been shown to reproducibly cure cancer or prevent cancer recurrence.[18] ESPEN also acknowledges that arguments supporting these types of diets tends to stem from unverifiable sources on the internet, rather than from peer-reviewed literature.[18]

Results from the NNCP survey of 1073 cancer survivors across Ireland show that the most common types of restrictive or 'Fad Diets' in use include the Ketogenic Diet, Juicing/Detox Di-

ets, Exclusion Diets and Anti-Cancer Diets.[26] Given the popularity of the ketogenic diet among cancer patients and its omnipresence in the media, ESPEN have explicitly dis-encouraged its use[1] . The guidelines state that the are no clinical trials demonstrating the benefit of a ketogenic diet in the cancer population and that the low palatability of the diet may lead to insufficient intake to meet requirements and subsequent weight loss with a detrimental impact on treatment and survival.[22]

While most supplements at the recommended dose are safe for people with cancer to use alongside their conventional treatment, there is a risk that some supplements especially at high doses could interact with types of anti-cancer drugs and make them less effective.[2] Epidemiological evidence indicates that diets high in vitamins and minerals from fruit and vegetables are associated with a reduced risk of cancer.[2] But there is also evidence to suggest that supplementation with beta-carotene (20mg day) increased incidence of lung cancer in male smokers.[10] ESPEN do not recommend the use of high dose vitamin and mineral supplements in the absence of a deficiency yet despite this, almost one quarter of Irish cancer survivors report using vitamin and mineral supplements.[26] This shows that recommendations from policy makers are often lost in translation before reaching the public as a meaningful message.

Tackling Nutrition and Cancer Related Myths

Results from the NNCP survey also show that 56% of cancer survivors in Ireland felt confused by the conflicting nutritional information offered to them by friends, family and the media. 57% of people who did not see a dietitian during their cancer journey, reported wanting access to more support (including reliable resources or helplines). Almost all (98%) of Irish cancer survivors rated nutrition as 'important" but only 39% had received treatment from a dietitian.[26] These statistics show us that there is demand among cancer survivors for good quality dietary advice.

Nationally, there is also very little evidence-based guidance available to cancer patients interested in using CAM for self-management of their disease, especially with regards to nutrition and different types of diets. The Irish Cancer Society have published a booklet on 'Cancer and Complementary Therapies' which broadly discusses all the different forms of CAM, but this resource is out of date and not solely focused on dietary forms of CAM.[25] CAM information that is available to patients is often misleading and patients may unknowingly take risks with their health.[12] To fill this gap, the UCC Clinical Nutrition and Oncology Research Group, led by Dr Aoife Ryan RD in collaboration with Consultant Oncologist Dr Derek Power and supported by Breakthrough Cancer Research have embarked to develop a patient-friendly resource for cancer survivors in search for more information on CAM.

Common myths about nutrition and cancer and the most popular CAM used by Irish cancer survivors were included in the booklet. National cancer organisation websites were also reviewed to establish other CAM practices for inclusion (Cancer Research UK, American Cancer Society, British Dietetic Association, and the Cancer Council).[23,24,27] To ensure readability,

the content was written according to the National Adult Literacy Agency recommendations and peer reviewed by other dietitians. Patient feedback was sought from patient advocates and cancer survivors using an existing Patient and Public Involvement (PPI) panel. Once the text was agreed upon, the resource underwent professional graphic design and proof reading. Funding was secured from Breakthrough Cancer Research to print 20,000 copies for free distribution.

'The Truth Behind Food and Cancer: Simple explanations based on scientific evidence' is a colourful resource written by dietitians for patients with cancer.[20] The resource discusses the most popular diet-based CAM and food avoidance patterns practiced by patients with cancer and provides an evidence-based response to myths and unproven dietary strategies.

Conclusion

It is anticipated that this resource would help to resolve some of the confusion felt by cancer survivors around diet and nutrition, and to bridge the gap for those who do not have access to dietetic care. It is also hoped that this resource would reassure cancer patients who are going through treatment that they do not need to change their dietary pattern because of pressures felt from external sources. Foods that the person enjoys should not be replaced by diets that are unpalatable, expensive and difficult to adhere to. This is the key message highlighted by this resource.

Declaration of interests

None

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