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Abstract

Limited literature exists on attitudes towards, knowledge of and where cancer survivors seek information on physical activity. This study aimed to address these gaps in the literature. Interviews were conducted with 19 UK-based adult cancer survivors. Interviews covered participants' knowledge of the relationship between physical activity and cancer, sources of information, and attitudes towards physical activity following their cancer treatment. Data were analysed using Thematic Analysis. Key themes included "physical activity is good for you," "desire to be more physically active," "limited guidance on participation in physical activity," "multi-dimensional barriers and facilitators of physical activity." Participants thought physical activity was good for them, and felt they should be more physically active. Participants reported receiving little information from oncology health professionals, as well as a desire for more guidance. Tiredness/ fatigue was an important reported barrier to physical activity participation, as were situational constraints. Social support and structured exercise programmes were reported to facilitate physical activity. Health professionals should be encouraged to direct patients to appropriate sources for guidelines on physical activity for cancer survivors. Multi-component interventions to increase physical activity behaviour that consider tiredness/ fatigue and incorporate components of social support could be explored.

Key Words: Physical Activity/ Cancer Survivor/ Qualitative/ Barriers/ Facilitators

Introduction

There are approximately two million cancer survivors, across all cancer types, in the UK and this figure is expected to rise to four million by 2030 (Maddams et al. 2012). Cancer survivors are at increased risk of secondary primary cancers as well as other non-communicable diseases (eg, diabetes, osteoporosis and disease of the cardiovascular system; see eg, Schaapveld et al. 2008 & Nuver et al, 2002). Physical activity may reduce these risks and there is evidence linking physical activity with improved survival (Lahart et al. 2015). Furthermore, physical activity interventions have been found to improve functional quality of life and self-esteem, and to reduce anxiety for cancer survivors (Speck et al. 2010 & Fong et al. 2012). The American College of Sports Medicine has provided guidelines for physical activity in cancer survivors. These state that survivors should follow the physical activity guidelines for the general population but with specific exercise programme adaptations based on disease and treatment related adverse effects. However, no formal guidelines for cancer have been published in the UK. The British Association of Sport and Exercise Sciences state "unless advised otherwise, cancer survivors should follow the health-related physical activity guidelines provided for the general UK population" and "all cancer survivors including those with existing disease or who are undergoing difficult treatments should be encouraged, as a minimum, to avoid being sedentary" (Campbell et al. 2012).

Little is known about cancer survivors' awareness of the benefits of physical activity for their long-term health and well-being. A qualitative study with breast cancer survivors identified the main factors influencing physical activity to be body image, weight issues, vitality, mood and the desire to carry on as normal (Whitehead & Lavelle 2009), with no mention of potential health benefits. Similarly qualitative work with colorectal cancer survivors has identified gaps in both patient and professional knowledge about the importance of physical activity for disease reduction and long-term health (Anderson et al. 2010).

This lack of awareness may in part explain the low levels of physical activity reported by cancer survivors. A recent survey of 15,254 UK colorectal cancer survivors found that 45% of patients reported doing at least some brisk activity but just 22% met the guidelines for physical activity, and 33% reported doing none. Cancer patients who recalled receiving physical activity advice from a health care professional after diagnosis had higher levels of

physical activity (at two to three years post diagnosis) compared to those who did not recall receiving advice. Moreover, only a third of patients recalled receiving such advice (Fisher et al. 2015). This is in line with a recent study of UK oncology health professionals, which found that only 51% reported giving physical activity advice to the majority of their patients, with many (36%) unaware of any lifestyle guidelines for cancer survivors and around half (49%) aware of physical activity guidelines (Williams et al. 2015). Lack of patient interest was a commonly endorsed barrier to giving advice; however this is inconsistent with studies suggesting survivors would welcome advice. For example, in a recent study examining physical activity preferences in 175 early-stage lung cancer survivors, the majority of respondents (62%) reported a desire to receive advice regarding physical activity (Philip et al. 2014). In another study, in a sample of 307 cancer survivors, 84% expressed desire for exercise counselling at the same point during their cancer treatment (Jones & Courneya 2002).

Insufficient professional advice, coupled with a desire for information leads some cancer survivors to seek out information about physical activity themselves. This was found in a recent qualitative study of colorectal cancer survivors in the UK, where several people reported actively trying to seek out further information about lifestyle (Anderson et al. 2013). Cancer survivors may therefore particularly seek guidance on appropriate physical activity (ie, quantity, duration, physical activity type), and how to be physically active following diagnosis (Philip et al. 2014). However, a recent review of the availability of information about lifestyle for cancer survivors in England from statutory and charitable sector organizations and from cancer centres, found that most did not provide adequate information and advice about lifestyle for cancer survivors (Williams et al. 2015). This risks cancer survivors turning to less reliable sources of information, and feeling unsupported to make changes post-diagnosis.

Research exists on barriers to physical activity participation in cancer survivors. A cross-sectional survey of 456 cancer survivors found the main reported barriers to physical activity were predominantly owing to health or treatment related factors, such as illness/other health problems, joint stiffness, pain, weakness, and fatigue (Blaney et al. 2013). Courneya et al. (2005) investigated barriers to exercise participation in a group of colorectal cancer survivors and found that the three most common barriers reported were lack of time/ too

busy, non-specific treatment side effects, and fatigue. Ottenbacher et al. (2011) investigated barriers to exercise in breast and prostate cancer survivors and the commonly reported barriers to exercise were “too busy” and “no willpower.” Rogers et al. (2007) administered surveys to 23 breast cancer patients during treatment and found that common exercise adherence barriers (i.e. lack of priority, self-discipline, procrastination, and fatigue) demonstrated significantly negative associations with exercise. Some data on facilitators of physical activity in cancer survivors also exits. In a recent review (Midtgaard et al. 2015) of qualitative studies on physical activity and cancer survivorship, it was identified that cancer survivors were motivated to exercise to protect themselves from disease recurrence (McGrath et al. 2011) and the motivational aspect of the group setting was noted as important (Emsile et al 2007, Midtgaard et al 2006). Blaney and colleagues (2011) investigated exercise facilitators, using postal surveys, in a mixed sample of cancer survivors. The main reported physical activity facilitators were: fun, includes a variety of exercises, exercise progresses gradually, flexible, involves personal goal setting, includes good music, tailored to the individual, includes feedback, and approved by an oncologist or GP. Further qualitative research is required to investigate barriers and facilitators to physical activity participation in cancer survivors to provide context to current findings and to capture further expressive information.

A clear understanding as to cancer survivors’ awareness of the importance of physical activity post-diagnosis, and sources of information on physical activity is needed. Moreover, in depth knowledge as to why cancer survivors do not participate in physical activity, and what might facilitate participation, is required. Understanding these concepts may aid in the development of successful interventions to increase physical activity in this population. The present study therefore aimed to explore cancer survivors’ attitudes towards and knowledge of physical activity, sources of advice, and potential barriers and facilitators of engagement. For the present study a qualitative methodology was chosen because we were not seeking to test a hypothesis, but rather sought to obtain a rich source of information to better understand physical activity behaviour, or the lack of, in cancer survivors (Holliday, 2010).

Method

Participants and recruitment

The study was advertised on Cancer Research UK's 'Cancer Chat' online forum and by posters and flyers displayed in the University College Hospital Macmillan Cancer Centre, these adverts contained details on how to contact the study team to check eligibility. Our inclusion criteria were UK-based adult (>18 years) cancer survivors (defined as not currently undergoing any active treatment for cancer); we excluded individuals who had a cancer develop in childhood. We chose to interview a range of survivors because this meant we would be representing a wide range of views, applicable to the wider survivorship population as opposed to focusing on a more specific group. Interviews were chosen over focus groups as we were interested in hearing about patients' individual beliefs and experiences, rather than determining a group consensus. We did not want individuals' unique beliefs and experiences be influenced by group discussions or concerns that others might view their beliefs to be 'incorrect'. Those interested in the study and eligible were given an information sheet and told that the aim of the study was to help us to learn more about what people who have had cancer think about lifestyle (including activity) and their long-term health. They were given the opportunity to ask questions and we then obtained signed informed consent. Ethical approval was granted by the University College London Research Ethics Committee, reference 0793/004.

Data Collection

Consenting participants were interviewed by trained research staff. No participants were excluded based on where they lived in the UK, for logistical reasons either face-to-face or over the telephone interviews were offered. In addition, participants were mailed a questionnaire to provide information on demographics. This was sent in advance to minimise participant burden and to enable participants to complete this aspect of the study in their own time, and privately. This also permitted the interview to be focused on the topic guide as opposed to more quantitative questions about participants' background. For pragmatic reasons and to accommodate participant preferences for timing of the

interviews, these were carried out by three researchers (all female and working in health research) between March and July 2013 and were recorded and transcribed verbatim. Interviews followed a topic guide (Table 1), developed by three researchers and informed by existing literature, to explore cancer survivors' views of lifestyle factors and the risk of cancer recurrence or chronic disease development. The guide covered participants' knowledge about the relationship between physical activity and cancer, sources of information, and opinions of physical activity including barriers and facilitators following the cancer diagnosis. Participants were asked to talk about each topic in the guide, with interviewers trained to have minimal verbal input and prompt only when appropriate. The topic guide was piloted with two participants whose data were included because no substantial changes were required. Interviews lasted 52 minutes on average (range: 26-76 mins). Emerging themes were discussed during the data collection period, and data collection continued until it was felt saturation had been reached.

Analysis

Data were analysed using Thematic Analysis, a qualitative method for identifying, analysing, and reporting themes (Braun and Clarke, 2006). Thematic analysis was chosen to provide a rich description of the data, and to identify themes at an explicit level using a realist approach (Braun and Clarke, 2006). The first three transcripts were reviewed independently by three researchers who each generated an initial list of codes. These lists were then amended and refined through discussion between the researchers until a single list was agreed. A researcher entered the list of codes into NVivo version 10 (QSR International Pty Ltd, 2012) and coded all the transcripts, with codes added to the list where necessary. Once the coding had been agreed, LS and RB reviewed the coded transcripts to search for common themes specifically related to physical activity. These themes were reviewed and refined, named and each given a written description.

Results

A total of 24 participants enquired about the study, 19 agreed to take part in interviews (see Table 2 for participant characteristics), but five declined. Five of the interviews were carried out face-to-face and the rest over the telephone. After 15 interviews researchers discussed whether saturation had been reached, it was believed this was the case, but a further four interviews were carried out for confirmation. All participants reported being white, 68%, 53% and 58% reported being married, working in some capacity, and having a higher education qualification, respectively. Breast cancer was the most common diagnosis (37%) and the majority of participants had been diagnosed in the past five years (63%).

Themes

Four themes emerged from the data: (i) physical activity is good for you, (ii) desire to be more physically active, (iii) limited guidance on participation in physical activity, (iv) multi-dimensional barriers and facilitators of physical activity. There were no obvious differences in responses by cancer type or gender, so results are presented from the whole sample.

Physical activity is good for you

Participants described physical activity as generally being a good thing for overall well-being, "I think that makes a lot of difference, keeping happy and keeping reasonably active" (104, Male, 69 years, prostate cancer). Physical activity was viewed as important for weight management, for example, "And the weight management, I assumed that once I was eating healthily, I might…but I think I am aware now that I actually need to take more exercise" (103, Female, 62 years, breast cancer and NHL). Others mentioned it was important for cardiovascular health "I've just recently bought a bike and I really enjoy the cycling,…it is more to do with blood pressure and heart stuff than cancer, in a way" (115, Female, 63 years, breast cancer).

Participants also discussed how the benefits of physical activity relate more specifically to cancer. For example, some were aware that physical activity could improve recovery, "There's now reasonably strong evidence that it aids recovery from that [breast cancer] to make lifestyle changes, lower-fat diet, do more exercise. There's really good evidence now that that's [physical activity] certainly a good idea" (107, Male, 50 years, melanoma), "It

seems that today's thinking is exercise is good for you. I don't think there's any doubt about that anyway and it's particularly good in recovery from cancer, I gather" (116, Male, 68 years, lung cancer). Others thought it would reduce the risk of cancer returning, for example, "One of the things my oncologist said to me at the end of my treatment was, 'exercise has been proven to be a factor in reducing the risk of it coming back, that's proven'" (106, Female, 50 years, breast cancer).

Desire to be more active

In line with their views that physical activity is beneficial, participants spoke of their desire to be more active following their cancer diagnosis, and of their efforts to achieve this, for example, "I did think I should be taking more exercise and I did start various things" (103, Female, 62 years, breast cancer and NHL), "I want to do more [physical activity]" (106, Female, 50 years, breast cancer), and "but I think I am aware now that I actually need to take more exercise. I think I need to maybe start... "(103, Female, 62 years, breast cancer and NHL). However participants also acknowledged that any changes in physical activity had been modest or that they were not currently doing enough physical activity, for example, "I slightly increased the amount of exercise" (107, Male, 50 years, melanoma), and "I try to have a walk each day but I think I need to up the pace. I think a leisurely stroll to the shops possibly doesn't count." (103, Female, 62 years, breast cancer and NHL). Participants were not clear on how much physical activity they should be doing other than 'more,' for example, "I would say I am conscious that I should do more exercise" (111, Female, 63 years, thyroid cancer).

Limited guidance on physical activity participation

Although participants described good "evidence" and talked about "today's thinking" relating to the role of physical activity in cancer survivorship, it was not clear where this information came from. Some mentioned receiving some information from health professionals, for example, "My GP has, on numerous occasions, discussed with me...encouraging me to try and take exercise as a means of stress management, and also try and get to a healthier weight" (103, Female, 62 years, breast cancer and NHL). Others sought advice from personal trainers "Whatever you have had wrong with you, he [personal trainer] will devise method things for you to do. And he's brilliant" (119, Female, 67 years,

melanoma), and “This guy [personal trainer] did work with me and developed a programme of exercises which was a combination of running machine but also lots of weights...And it was completely magical” (106, Female, 50 years, breast cancer). However, participants also described how little professional advice was given in the oncology context, for example, “well, shamefully, I wasn’t given much information” (111, Female, 63 years thyroid cancer), and “I think it would be useful for most if there was opportunities to...encourage you to adapt your diet or adapt your exercise levels and things like that.”

Several participants mentioned that they had researched information about physical activity themselves. Some had used the internet to do this, for example, “they gave me a website to have a look and I had a look at it, a thyroid cancer site. I’ve looked at all of them” (111, Female, 63 years thyroid cancer), and “I read , as well, on some of the sites, I mean, they were American sites, and the Americans go jogging when they have chemotherapy” (110, Female, 51 years, breast and bladder cancer).

Participants also mentioned reading about lifestyle in the media such as newspapers and magazines, for example, “if there’s an article in the newspaper, I’ll read that, on cancer prevention” (118, Female, 64 years, breast cancer), “I’ve read magazines and stuff and it says you should exercise three or four times for a half an hour a week and I think if you don’t work up a sweat, you are not doing yourself any favours” (109, Male, 77 years, colon cancer), and “Because I keep an eye on reports and media [relating to physical activity], I suppose, if it’s in the media. If it’s in the media, I see it. I suppose the people who don’t have much media input, it’s probably more difficult” (116, Male, 68 years, lung cancer).

Multi-dimensional barriers and facilitators of physical activity

Health-related barriers

The side-effects of cancer or cancer treatment were reported to negatively influence physical activity behaviour. Fatigue was commonly mentioned, for example, “And the tiredness is the biggest, it’s the biggest problem, it’s the biggest factor of the whole thing” (102, Male, 38 years, Hodgkins disease), “When I went out I use to buzz around anyway. Now I get a bit more tired” (111, Female, 63 years, thyroid cancer), and “I do keep active, but I do get very tired” (114, Female, 74 years, breast cancer).

Some participants felt that having cancer had left them unfit, for example, “I am fatter, I am not as healthy, I am not as fit, I don’t do as much because of my cancer treatment” (102, Male 38 years, Hodgkins disease), and “…And I am still disabled from the therapy…it damaged my heart muscle, so my heart function is weak and I’m quite breathless at times” (101, Male, 60 years, NHL). Others mentioned arthritis “Oh yeah I gained weight and I couldn’t walk very well because I have got arthritis, which is caused by the chemotherapy. I couldn’t walk and I used to like to walk before” (110, Female, 51 years, breast and bladder cancer), and peripheral neuropathy “The peripheral neuropathy I’ve got is a permanent legacy of one of the therapy drugs, so walking is difficult” (101, Male, 60 years, NHL). For others the side effects of cancer were discussed in more general terms, for example, “So since then I have had more difficulty keeping things going. I still do the cycling but it’s not as regular as I want” (117, Male, 65 years, testicular cancer).

Situational barriers

Other reported barriers to physical activity predominantly related to the climate, for example, “I am waiting for the weather to get better so I can actually walk” (106, Female, 50 years, breast cancer), and “Well, I should be doing a lot more walking than I’m doing, to be honest. I mean, the one problem is that, just lately, the weather’s been so cold, and last year, it was so damp” (104, Male, 69 years, prostate cancer). Other barriers related to time restraints and priorities, “It’s just not always possible to always fit it in” (106, Female, 50 years, breast cancer), and “I think I am a bit of a perfectionist as a teacher…I found that I put that first rather than maybe continuing at the gym or my aerobics class” (103, Female, 62 years, breast cancer and NHL).

Social support

Several people talked about how their physical activity was positively influenced by those around them, for example, “Loads of my friends are doing it and we’re, sort of, saying, ‘we could start dancing’ so we make sure we do a bit more” (106, Female, 50 years, breast cancer), “We’d visit her [daughter] and she’d probably be on her treadmill. And I suppose we talked about it and I think she probably encouraged me that it’s something I should do” (109, Male, 77 years, colon cancer).

Participants also reported that social aspects facilitate physical activity, for example, "Keeping fit is also keeping fit in a social thing. I am not the sort of person who likes, say, walking by myself or jogging or any of that. I like the company. Two things, really: a group thing, yeah, and I have made a lot of friends and everything" (112, Female, 69 years, NHL), and "Well, meet local people; meet local people and a bit of exercise" (111, Female, 63 years, thyroid cancer).

Structured exercise

Gyms were often discussed as a place to facilitate activity, for example, "First of all, I hired a personal trainer. And I go to the gym fairly often" (113, Female, 47 years, thyroid cancer), and "I had never been into a gym before…This guy did work with me and developed a programme of exercises which was a combination of running machine but also lots of weights…" (118, Female, 64 years, breast cancer). Participants also reported being part of "sports" clubs, for example, "I joined a running club and entered my first Race for Life in 2010" (106, Female, 50 years, breast cancer), and "I also belong to a walking group. Every month we do five or seven miles. I walk quite a lot" (116, Male, 68 years, lung cancer).

Exercise DVDs were mentioned as an aid to be physically active with, for example, "I haven't done any exercise for a while and I got a DVD out and spent an hour doing some exercise on that" (106, Female, 50 years, breast cancer), and "I have got an exercise video...and I do, sort of, you know, I have started doing that regular and try and tone my body up and that" (110, Female, 51 years, breast cancer and bladder cancer).

Discussion

Main finding of this study

The present study aimed to explore cancer survivors' attitudes towards and knowledge of physical activity, sources of information, and potential barriers and facilitators of engagement. In this qualitative study of British cancer survivors, most participants were aware that physical activity is good for general health and some mentioned the benefits of physical activity specifically relating to cancer and other chronic conditions, such as

cardiovascular disease. Most participants had a “desire” to be more active, which is encouraging. However, little information was given from oncology health professionals on how to achieve adequate levels of physical activity and many participants sought information via other methods, such as, through media and websites. Reported barriers to physical activity were predominantly related to health, such as, side effects to treatment, fatigue and arthritis. Other reported barriers included time restraints and the weather. Reported facilitators to physical activity were predominantly social, such as a positive influence by others, and being part of a “sports” group. Moreover, gyms and exercise DVDs were used to assist in being physically active.

What is already known on this topic and what this study adds

Although participants had a desire to be more active most participants acknowledged any changes made to physical activity behaviour had been modest. This supports previous research which has shown only approximately 21% of cancer survivors incorporated new physical activity into their lives (Patterson et al. 2003). These modest changes in physical activity levels may be partially explained by reporting tiredness and feeling unfit, as side-effects of cancer treatment. Previous research has found similar findings; Richardson and Ream (Richardson & Ream 1996) found in a sample of 129 participants, that 90% suffered from fatigue. Moreover, Curt et al. (2000) found that fatigue decreased the quality of life in 88% of the patients (n=379) and 75% of those employed (n=177) had to adapt their professional activity due to fatigue. This fatigue/ tiredness is likely owing to a combination of a long-lasting increase in heart rate and respiratory work, less effective energy production, and metabolic acidosis, as a result of cancer and its treatment. Interestingly, participation in physical activity has been shown to reduce this fatigue and tiredness in cancer patients (eg see, Dimeo. 2001 & Dimeo et al. 1999), but participants in our study did not appear to be aware of this or at least did not mention it in their discussions. Cancer survivors may benefit if health professionals are trained to educate them on the potential benefits of physical activity for tiredness/ fatigue.

Participants reported searching for information on physical activity themselves via the internet and media. While these can be useful sources of information, evidence suggest science may get misinterpreted by journalists and website authors and consequently the

information provided may not always be accurate nor evidence-based (see eg, Goldacre. 2009). Oncology health care professionals should be encouraged to supply cancer survivors with reliable and trustworthy websites to access for information on physical activity. Participants also reported seeking activity advice from healthcare professionals and personal trainers. However, participants described how little professional advice was given in the oncology context. Previous research has reported similar findings (see e.g. Fisher et al. 2015, Williams et al. 2015). This is of concern, receiving physical activity advice after a cancer diagnosis from a health care professional is associated with higher levels of physical activity (Fisher et al. 2015).

In line with previous research, participants reported that their physical activity behaviour was positively influenced, by those around them and they often used gyms or "sports" groups to facilitate exercise. In a recent systematic review by Barber (2012) on social support and physical activity engagement in cancer survivors 50% of studies (n=22) showed a significant relationship. The review concluded that additional research is needed to develop social support strategies that will increase physical activity engagement in this population. The present study suggests that the utilisation of gyms or "sports" groups is one strategy that could be explored.

A review by Midtgaard et al. (2015) synthesized qualitative studies on cancer survivors' experiences of participation in exercise-based rehabilitation. The findings from the review suggest that the potential of rebuilding structure in everyday life, creating a normal context and enabling the individual to re-establish confidence and trust in their own body and physical potential constitutes substantial qualities. Moreover, the review identified that exercise appears to serve as a means to achieve a sense of continuity whereby the individual may feel less alienated from themselves, their friends, and family. The review also identified reasons why cancer survivors were motivated to exercise; some cancer survivors were motivated to exercise to protect themselves from disease recurrence (McGrath et al. 2011) others emphasized the motivational aspect of the group setting (Emsile et al 2007, Midtgaard et al 2006). The present study adds to this review by identifying specific barriers (e.g. situational) and facilitators (e.g. "sports" clubs, gyms, exercise DVDs) that can be

utilised in the development of interventions to encourage physical activity participation in this population.

The present study supports previous work in cancer survivors (modest changes made to physical activity levels, barriers to physical activity including tiredness and feeling unfit). This is important as if consistent findings are observed by different persons in different places with different samples this strengthens the likelihood that the observed findings are "true," reproducible, and therefore may be considered in intervention design.

Limitations of this study

The sample included participants who survived a broad range of different cancers thus physical activity beliefs between participants could not be compared. To our knowledge there are no tailored physical activity recommendations for survivors of different cancers, this paper aimed to understand opinions of physical activity in general, as opposed to physical activity needs specific to certain cancers/treatments, we therefore sought to recruit a range of cancer survivors. In the present study current and previous physical activity levels were not considered. Those interested in our study may be those with a long term interest in physical activity, or those who have become interested since diagnosis. We did not ask about pre-diagnosis activity levels except in the context of how things had changed post-diagnosis. To be geographically inclusive this study used a combination of face-to-face and telephone interviews. However, mixing such methods can also be viewed as a limitation (Irvine 2011). It has been found that telephone interviews are typically shorter than those conducted face-to-face. Moreover, in telephone interviews participants and researchers speak for less and greater time, respectively (Irvine 2011). This may result in a loss of data (breadth of coverage/ depth of detail).

In a semi-structured interview the interviewer has a list of questions or series of topics to cover, but there is flexibility in how and when the questions are put and how the interviewee can respond. The interviewer can probe answers, pursuing a line of discussion opened by the interviewee, and a dialogue can ensue. When using multiple interviewers, as in the present study, variations between interviewers approaches may lead to variation in

level of detail disclosed by the interviewee. For example, if the interviewee feels comfortable and relaxed with the interviewer they may discuss personal topics (e.g. side-effects of cancer treatment); some interviewers may be more effective at achieving this than others. Interview transcripts were not returned to participants for comments and/or corrections after the interviews, which would have given participants the opportunity to verify the content and quality of the transcripts.

Conclusion

In this sample of cancer survivors most participants were aware that physical activity was good for health and participants wanted to take part in physical activity. Oncology health professionals should be encouraged to direct patients to appropriate sources for guidelines on physical activity for cancer survivors. Structured, multi-component interventions to increase physical activity behaviour in cancer survivors that consider tiredness/ fatigue and incorporate components of social support should be explored.

Conflicts of interest

None declared.

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566 Table1. Topic guide for qualitative interviews

Topics		**Prompts**
Introductions and background	Introductions	Who we are and aims of study Check length of interview (45-60 mins) okay
	Cancer history	When diagnosed Type of cancer Recovery
	Social context	Brief overview of family set up and any support received/ receiving in relation to cancer diagnosis/ treatment/ recovery
Beliefs about factors involved in causing cancer and in keeping healthy in the future	Causal factors	Any particular things related to diet or physical activity? Anything else (e.g. smoking, alcohol, stress, weight)?
	Keeping healthy in the future (e.g. reducing risk of cancer recurrence or of long-term health condition such as heart disease or diabetes)	Any particular things related to diet or physical activity? Anything else (e.g. smoking, alcohol, stress, weight, supplements)
Experiences with making changes to behaviour since recovering from cancer	Have you tried anything/ doing anything different from before your diagnosis?	Any particular things related to diet or physical activity? Anything else (e.g. stopping smoking, cutting down alcohol, reducing stress, losing weight, taking supplements)? Reasons for doing this and whether think helping? Plan to continue?
Sources of information regarding lifestyle and long-term health	Who from	Have doctors/ other health professional/ anyone else talked about this? Any other sources of information?
	How received	How did you feel about getting this information – was it welcome?
	Other information wanted	Any other information you wanted or that you have tried to access?
		If so, what type of information, when and from whom would you prefer it?
Anything else?		

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570 Table 2: Socio-demographic and health characteristics

Socio-demographic details	**Total sample (n=19)**
Gender: n (%)	
Male	8 (42.1)
Female	11 (57.9)
Age (years): mean ± SD (range)	59±13.11 (24-77)
Ethnicity: n (%)	
White British	19 (100.0)
Marital status: n (%)	
Single/never married	2 (10.5)
Married/living with partner	13 (68.4)
Married separated from partner	1 (5.3)
Divorced	3 (15.8)
Highest educational status: n (%)	
Degree or higher degree	9 (47.4)
Higher education below degree	2 (10.5)
Secondary school qualifications	5(26.3)
No formal qualifications	1 (5.3)
Other	2 (10.5)
Employment status: n (%)	
Employed full-time	5 (26.3)
Employed part-time	2 (10.5)
Self-employed	3 (15.8)
Retired	8 (42.1)
Disabled or too ill to work	1 (5.3)
Cancer diagnosis*: n (%)	
Breast	7 (36.8)
Colorectal	1 (5.3)
Prostate	1 (5.3)
Lung	1 (5.3)
Thyroid	2 (10.5)
Non Hodgkin lymphoma	3 (15.8)
Hodgkin lymphoma (Hodgkin disease)	1 (5.3)
Testicular	1 (5.3)
Bladder	1 (5.3)
Melanoma	2 (10.5)
Neuroendocrine tumour (NET)	1 (5.3)
Date of diagnosis: n (%)	
< 5 years ago	12 (63.2)
5-10 years ago	4 (21.1)
11-20 years ago	2 (10.5)
>20 years ago	1 (5.3)

571 *Total comes to >100% as two people had been diagnosed with more than one type of cancer

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