



Nature-based experiences and health of cancer survivors



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ABSTRACT

Purpose: Although exposure to, and interaction with, natural environments are recognized as health-promoting, little is understood about the use of nature contact in treatment and rehabilitation for cancer survivors.

Methods: This narrative review summarizes the literature exploring the influence of nature-based experiences on survivor health. Key databases included CINAHL, EMBASE, Medline, Web of Science, PubMed, PsycArticles, ProQuest, and Cancerlit databases.

Results: Sixteen articles met inclusion criteria and were reviewed. Four major categories emerged: 1) Dragon boat racing may enhance breast cancer survivor quality of life, 2) Natural environment may counteract attentional fatigue in newly diagnosed breast cancer survivors, 3) Adventure programs provide a positive experience for children and adolescent survivors, fostering a sense of belonging and self-esteem, and 4) Therapeutic landscapes may decrease state-anxiety, improving survivor health.

Conclusions: This review contributes to a better understanding of the therapeutic effects of nature-based experiences on cancer survivor health, providing a point of entry for future study.

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1. Introduction

In 2012 there were an estimated 14.1 million cases of cancer experienced around the world; a number expected to increase to 24 million by 2035 [1]. Due to advances in technology, more aggressive medical treatments and earlier detection rates, the population of cancer survivors has grown steadily over the last 30 years. This increasing number of survivors, combined with an ageing population, comorbid conditions and prevalence of recurrence and secondary cancers, presents the need for continued survivorship research [2,3]. In earlier cancer research, the majority of studies explored the advancement of cancer treatment regimes. At this time, the increasing population of cancer survivors and a need to better understand the survivorship experience has inevitably highlighted a new research focus towards the physical, psychological and social concerns of surviving cancer [4].

Two key streams of research are highlighted given the rising number of survivors: firstly, experiences of a wide range of physical,

functional, psychological/emotional, social/family and spiritual transition throughout the survivorship continuum; as well as the development and evaluation of interventions to prevent and/or reduce adverse outcomes and improve all aspects of survivor health [3,5,6]. A number of interventions are available to improve psychosocial outcomes for cancer survivors, including cognitive-behavioural therapies, information and educational strategies, counselling, psychotherapy, support groups and complementary therapies. Although beneficial for psychosocial coping and adjustment, such interventions do not sufficiently address the physical challenges commonly reported to diminish survivor health-related quality of life (HRQOL) [7–9].

To address the psychosocial, as well as physical and functional concerns of survivors, a growing body of literature supports nature-based experiences as an effective strategy for improvement and promotion of health and well-being. Historically, nature has been featured as an essential component within health promotion models and health initiatives. Nature-based health promotion is founded in a strengths based proactive perspective of health promotion that supports activities and conditions to enable health through access to nature [10,11]. As a whole, recent research and systematic reviews provide growing evidence to support the benefits of activities in nature to promote broad health outcomes

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[12–15]. Research into the therapeutic and restorative benefits of contact with nature has generally looked at three main areas of contact: viewing nature [16–18], being in the presence of nearby nature [19], or active participation and involvement with nature [20–24].

Reflecting the goals of health promotion and the importance of physical activity (PA), research supports the benefits of performing PA in natural surroundings as being effective for improvement in mood, vitality, self-esteem and social connectedness [25–27]. These findings are directly implicated in the cancer survivorship continuum, as research strongly supports PA in helping survivors recover from side effects and treatment, as well as to restore general health and well-being [28]. Once recovered from the acute/general effects of treatment, PA is also intended to promote optimal health outcomes. Broader disease prevention and health promotion are of great importance considering all aspects of the rising number of survivors, the ageing population, chronic long-term and late treatment effects, diminishing HRQOL, and the prevalence of recurrence, secondary cancers and mortality [29].

Although PA, as well as exposure to and interaction with natural environments are recognized as health-promoting activities, little is understood about the specific use of nature contact in treatment and rehabilitation for individuals experiencing ill health and illness recovery. While research suggests a positive relationship between nature and health; its influence on cancer survivor HRQOL, inclusive of physical, emotional, social/family and spiritual well-being, and cancer-related fatigue, lacks empirical support.

An initial scoping exercise determined that the research literature was too heterogeneous to permit a systematic review as recommended by the Center for Reviews and Dissemination Guidelines [30]. For this reason, a narrative review was undertaken to allow for the inclusion of wide ranging nature interventions and to present a comprehensive summary of evidence relating to the topic under review. This review was guided by the ecological health promotion model emphasizing the importance of the complex pattern of relationships between individuals and their environments and health-promotion [31,32]. Before proceeding, a definition of nature and cancer survivor are put forward in order to clarify the meaning specific to this review. For purposes of this paper, nature is defined as outdoor natural ecosystems, such as trees, water and walking trails, found in everyday local contexts [33]. The National Cancer Institute (NCI) defines a survivor as one who remains alive and continues to function during and after overcoming a serious hardship or life-threatening disease. In cancer, a person is considered to be a survivor from the time of diagnosis until the end of life. The NCI currently defines the concept of survivorship as the physical, psychosocial, and economic issues of cancer, from diagnosis until the end of life. Survivorship focuses on the health and life of a person with cancer beyond the diagnosis and treatment phases. Survivorship includes issues related to the ability to get health care and follow-up treatment, late effects of treatment, second cancers, and HRQOL. Family members, friends, and caregivers are also part of the survivorship experience [34].

There is a lack of quality and quantity of evidence on the topic of nature and health of non-specific populations and specifically during cancer survivorship. In this, the first narrative review in the field, we provide an up to date summary of the published literature investigating the experience of nature-based interventions on the health and well-being of cancer survivors. Specifically the review was designed to explore:

1. What nature-based interventions are commonly participated in during cancer survivorship?
2. What is known about the health benefits of nature experiences for survivors?

3. How have the above questions been addressed in the literature and how might future studies best improve our understanding in this area?

2. Search methods

The literature review search strategy employed an extensive review of peer-reviewed journal articles using the following electronic databases: Physical Education Index, CINAHL, EMBASE, MEDLINE, PubMed, PsychINFO, ProQuest and Cancerlit. Terms searched individually, and in combination, included: cancer, survivor, nature, natural environment, recreation, health, health promotion, well-being, quality of life. Because a diversity of terms are used in the literature to refer to nature, the review was expanded to include publications containing other terms such as “nature assisted therapy” and “restorative environment.” Relevant articles were further reviewed to identify pertinent references. Inclusion criteria included: 1) English-language publications; 2) research that focused on the outcomes of cancer survivors engaging with nature; and 3) research published between 1990 and 2014. Publications were excluded if they were: 1) focused on animal assisted therapy; 2) published before 1990; and 3) not peer-reviewed. The intention with this narrative review was not to discuss and list every published report or article. Rather we aimed to reference representative publications that document and illustrate our summary observations after carefully reviewing the existing literature.

2.1. Search outcome

In total, 16 publications related to cancer survivor participation in nature-based interventions were reviewed. Most considered the influence of a nature experience on the health and well-being of adult breast cancer survivors (11 publications, participant ages between 50 and 79 years [36–46,51]) and adolescent and child survivors of unspecified cancers (4 publications, adolescent participant ages between 15 and 18 years [47,48], with some studies exploring childhood interventions ages between 5 and 15 years [49,50]). The majority of the studies used a qualitative approach, with fewer employing a quantitative design or presenting reviews of the literature. This was a pattern noted in the broader systematic review of nature interventions for health and well-being, where overall strength and volume of the evidence was similarly viewed as limited [13].

3. Results

Assembling the evidence from the included literature led to the identification of four major categories: 1) Dragon boat racing is a viable intervention for enhancing breast cancer survivor HRQOL; 2) Natural restorative environment may be effective in counteracting attentional fatigue in women with newly diagnosed breast cancer; 3) Adventure therapy and camping programs provide a positive experience for children and adolescents whereby developing connections, togetherness, rebuilding self-esteem, and creating memories; and 4) Therapeutic landscapes may be effective in decreasing state-anxiety and improving quality of life among female cancer survivors. Specific findings from each category of results are described in more detail to follow.

3.1. Dragon boat racing and breast cancer survivors

A nature-based activity that is rapidly growing in popularity amongst breast cancer survivors is the team-based activity of dragon boat racing. This nature-based activity has caught

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