



## General and Supportive Care

## Health promotion and psychological interventions for adolescent and young adult cancer survivors: A systematic literature review

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## ABSTRACT

**Background:** The effects of cancer and treatment have severe and long lasting negative impacts on quality of life. Adolescents and Young Adults (AYA) have high survival rates but may not reach their full life potential because of these consequences. This review aims to identify, appraise and synthesise the effects of health promotion and psychological interventions for AYA after cancer treatment.

**Methods:** The review was undertaken using the preferred reporting items for systematic reviews and meta-analyses guidelines. Included studies were identified through a range of electronic databases through to May 2016. Studies were critically appraised using the Cochrane Risk of Bias tool.

**Results:** Seventeen studies, comprising a total of 2314 participants aged 13–39 years were included in this review. Participants in 15 studies were survivors of childhood cancer, with only two studies specifically recruiting survivors of cancer diagnosed during young adulthood. Ten studies were randomised controlled trials (RCTs); the remaining seven were before and after studies. The quality of studies was variable across all appraised domains; risk of bias was evident in regards to recruitment, measures of exposure and outcomes, confounding factors, attrition and lost-to follow-up. Studies evaluated a range of health promotion and psychological interventions to improve health related and process outcomes. Eleven studies reported modest positive outcomes, with psychological and physical activity interventions achieving greater success compared to general health promotion interventions.

**Conclusion:** This review highlights the lack of high-quality studies for optimising the health and well-being of AYA cancer survivors. No conclusive evidence favouring specific interventions were identified, although recommendations for future studies are made. Interventions delivered face-to-face and those that facilitate peer-to-peer support hold promise. Harnessing social media and technology to deliver interventions is likely to increase and these modes of delivery require further investigations.

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## Introduction

When active cancer treatment ends, patients describe feelings of contradiction and uncertainty about their future [1,2]. Survivorship is understood to be a process of living with, through and beyond a cancer diagnosis, and as such has been described as a process of liminality, or a series of passages one takes to move through life events [3]. The concept of liminality proposes the transitional phase between one passage and another- the liminal phase – is often associated with feelings of ambiguity and paradox, when one doesn't quite fit or belong to any group [4]. Thus patients who have completed treatment for cancer, may not return to their pre-

vious sense of self, nor quite see themselves as 'survivors' as the threat of the return of cancer remains prominent.

Adolescence and Young Adults (AYAs) who have completed treatment for cancer face additional challenges to their sense of self. The time period between childhood and adulthood, recognised variably as the years between 10 and 39 [5], is when important cognitive, psychosocial and emotional developments occur. Cognitively, the ability to think abstractly and to reflect upon ones one thoughts and ideas ensue [6]. Psychosocially, a sense of personal identity develops, peer group relationships become increasingly important along with independence from parents [7]. Emotionally, this time period can be characterised by feelings of anxiety and self-consciousness, and is recognised as a time when there may be less control over emotions [8]. The impact of a cancer diagnosis and subsequent treatment during this period is understood to pose further challenges to the developing individual. AYA patients

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report altered sense of identity; changed relationships; challenges to body image and sexuality; impacts on education and employment with financial consequences; concerns about cancer recurrence; a pre-occupation with death and dying, and generally a less positive outlook on life [9,10].

In Australia, disease-free five-year survival for AYAs aged 15–29 years has reached 88% [11]. However, survivors are at risk of long-term health problems; up to 70% report at least one chronic health problem and up to 40% have severe problems and need ongoing medical intervention or surveillance. This is significantly different to AYAs with no history of cancer. Compared with their counterparts, AYA cancer survivors have more disability, chronic disease, and poorer mental and physical health [12].

Evidence suggests modifiable risk behaviours, such as diet, smoking and alcohol intake, are associated with increased incidence of chronic health conditions and secondary malignancies [12]. As AYAs represent the future workforce, prospective parents and community members of a society, investing in their health needs is warranted. Indeed not meeting their health needs is likely to increase costs to the health and social welfare systems [13]. With increasing pressures on health budgets, there is a need to ensure interventions to address health needs are both effective and economical. Interventions in this population may be broadly categorised into those that promote health or those that address psychological issues. Health promotion interventions are defined as combinations of educational, organisational or environmental actions that support behaviour modification conducive to health [14]. Psychological interventions are defined as evidence-based formalised strategies that aim to alter self-re-informing processes and improve individuals outcomes [15].

A number of reviews have synthesised either health promotion or psychological interventions for AYAs with cancer. A review examining the long-term and life-long psychological impacts of cancer in this population reported complex, challenging and nuanced problems and highlighted the need for specific interventions targeting finances, relationships, education, goals, body image and physical well-being [16]. Walker et al. undertook a critical review of psychosocial interventions finding the availability of psychosocial interventions were increasing and although higher quality studies are needed, results suggest interventions are beneficial [17]. Pugh et al. completed a systematic review of health behaviour change interventions and concluded further work is required to evaluate how to best promote health change behaviour in young people [18]. Wurz et al. completed a systematic review of two controlled trials regarding the effects of physical activity on health related quality of life for adolescent cancer survivors; the authors found physical activity was safe, feasible and showed promise for improving health and quality of life [19]. To date, no systematic review has collated high level evidence (i.e. randomised controlled trials, controlled trials) of all health behaviour and psychological interventions for AYAs with cancer to identify the attributes associated with positive changes. Therefore, the aim of this systematic review was to identify, appraise and synthesise the effects and attributes of health behaviour and psychological interventions on health-related or process outcomes for AYA cancer survivors. Health related outcomes of interest included quality of life, symptom burden, unmet needs, rates of hospitalisation, or screening for new cancers. Process outcomes of interest included patient behavioural uptake, quality of care, training and education, satisfaction, costs and resource utilisation.

## Methods

Randomised controlled trials (RCTs); quasi RCTs; controlled before and after studies, and before and after studies that exam-

ined the effects of health promotion and psychological interventions for AYA cancer survivors were included. The protocol for this review was registered with PROSPERO ref 42016036470.

### Search strategy

The search terms were devised by the study authors in consultation with a medical research librarian. Searches included combinations of the terms: (physical interventions, psychological intervention, physical therapy, psychological therapy, physical treatment, psychological treatment) AND (follow up, end of treatment, survivorship, cancer survivor) AND (cancer, neoplasm, oncology) AND (adolescent, teenager, young adult, youth, minor) AND (quality of life, value of life, quality assurance, distress, anxiety, outcome assessment, health outcome, healthcare economics). Databases searched included: Medline; CINAHL; Web of Science; PsycINFO; EMBASE and Cochrane CENTRAL. These databases were searched up to May 2016. Authors of studies were contacted for further information if required. Hand searching of referenced articles was also undertaken. Searches were restricted to humans and the English language. Studies were excluded if full text were not available.

### Selection criteria

The population of interest for this review were adolescents and young adults, aged 15–25 years, who have completed treatment for cancer. We aimed to include studies where participants were potentially diagnosed during adolescences or young adulthood. The age range of 15–25 years was chosen as in Australia, AYA cancer services are limited to this group. Studies with participants beyond this age range were included if their study population included a substantial (25%) proportion of participants in this age range at the time of cancer diagnosis, or time of study. Articles were included if they reported any health promotion or psychological intervention or therapy during survivorship. All studies were required to have a comparator group or comparator measure. Outcomes of interests included any health-related outcomes (e.g. quality of life, symptom burden, unmet needs, rates of hospitalisation, screening for new cancers) or process outcomes (e.g. patient behavioural uptake; quality of care; training and education; satisfaction; costs and resource utilisation). Secondary outcomes included attributes of, and resources required, for the intervention, as well as benefits and shortfalls. The study setting could be primary, secondary or tertiary level health facilities, or interventions delivered in community settings.

### Data collection

All titles and abstracts were screened for eligibility independently by both authors (NB, RC). Full text articles were reviewed independently by the same two authors against the inclusion and exclusion criteria. Discrepancies were resolved by discussion. A summary of the selection process is presented in Fig. 1. Data extraction were completed using pre-defined data extraction forms and included details regarding: authors; publication year; country; study design; study aim; characteristics of participants; content and intensity of the interventions; sample size; response rate; outcome measures; resources required; findings, and the level of evidence of the study (see Box 1) [20]. The quality of all studies was appraised using the Cochrane Risk of Bias tool. As per the Cochrane handbook, non-randomised trials were also appraised for risk of selection bias and other potential confounding factors [15]. The Risk of Bias tool examines seven categories relating to the design, conduct, analysis and presentation of factors that may cause the effect of an intervention to be over or under-

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