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Lifestyle interventions to improve the quality of life of men with prostate cancer: A systematic review of randomized controlled trials

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ABSTRACT

Improving quality of life is a key issue for patients with prostate cancer (PCa). Lifestyle interventions could positively impact the quality of life of patients. However, there is no clear-cut understanding of the role of diet, exercise and risky behaviour reduction in improving the quality of life of men with PCa. The aim of this review was to systematically summarize randomized controlled trials on lifestyle in PCa patients with quality of life as main outcome.

17 trials were included. Most of them referred to exercise interventions (71%) and involved men undergoing androgen deprivation therapy (47%). Exercise studies yielded the greater amount of positive results on quality of life outcomes (67%), followed by dietary interventions (50%) and combined lifestyle interventions (33%). In particular, supervised exercise programs with resistance training sessions were

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the ones producing greater convincing evidence for benefits on quality of life. Further studies with high methodological quality providing adequate information to develop evidence-based, personalized lifestyle interventions that can effectively ameliorate PCa-related quality of life are needed.

1. Introduction

Prostate cancer (PCa) is one of the "big four" most common cancers occurring worldwide (International Agency for Research on Cancer, WHO, 2014). In Europe, PCa incidence rates are among the highest, largely due to the widespread practice of prostate specific antigen testing (Ferlay et al., 2015), and are expected to rise worldwide within the next decades (International Agency for Research on Cancer, WHO, 2014). Health trajectories of PCa patients differ substantially based on disease clinical features. Most of the times, patients become long-term survivors. As such, they develop over time multiple medical and psychological needs, also consequent to ageing-related issues, that can lead to physical morbidity, poor symptom control, high perceived fatigue, and low quality of life outcomes (Davis et al., 2014). Consequently, the quality of life issues have been recognized as highly important and have become one of the most relevant aspects to consider (Penson et al., 2003; Bellardita et al., 2013). Lifestyle changes have received great attention in the last years, as they can make the difference for preventing health complaints and improving the quality of life of patients (Ornish et al., 2005; Mosher et al., 2009; Bourke et al., 2015; Magné et al., 2011). Maintaining a healthy weight, reducing alcohol and tobacco, taking regular physical activity are all actions that are able to impact on patients' overall health and wellness (Ornish et al., 2005; Mosher et al., 2009). Intervention programs for lifestyle change have proved to have beneficial effects on the quality of life of patients with different cancers (Ferrer et al., 2011; Mishra et al., 2014), and also on mortality rates of healthy subjects (Farahmand et al., 2009). In particular, different studies particularly focused on women treated for breast cancer and provided consistent evidences for a benefit of healthy lifestyles in this population (Magné et al., 2011; Daley et al., 2007; Kellen et al., 2009; Spark et al., 2013). Looking at PCa patients, although different descriptive studies highlighted the importance of healthy lifestyles for improving the quality of life of PCa patients (Ornish et al., 2005; Blanchard et al., 2008; Thorsen et al., 2008), solutions to effectively engage men with PCa in regular healthy habits are still warranted (Blanchard et al., 2008). Increasing age, time since diagnosis, treatment side effects and comorbid conditions can prevent engagement in healthy lifestyles. Furthermore, literature reported a strong gender-based dimension to lifestyle choices, with men being more likely to engage in risky behaviours than women (Von Bothmer and Fridlund, 2005). Considering these assumptions, lifestyle studies on PCa patients deserve a particular attention and reviews of scientific literature are warranted. Reviews are warranted to provide adequate information to develop evidence-based interventions effective in improving the quality of life of patients. However, literature reviews in the field mostly focused on patients not specifically affected by PCa (Fong et al., 2012) or only considered singular lifestyle aspects (Fong et al., 2012; Hasenoehrl et al., 2015; Ma and Chapman, 2009; Keogh and MacLeod, 2012; Gardner et al., 2014; Baumann et al., 2012). The few reviews broadly considering interventions for lifestyle for PCa patients examined the effects of such interventions on the disease course (Hackshaw-McGeagh et al., 2015; Mohamad et al., 2015), and not on quality of life outcomes. To the best of our knowledge, there are no literature reviews examining the impact of high-quality (randomized controlled trials) lifestyle interventions on quality of life outcomes of patients with PCa.

Following these premises, the purpose of the present study was to systematically review studies on lifestyle interventions aimed at improving quality of life of men with PCa.

2. Methods

2.1. Literature search

PubMed, CINAHL, Scopus, and PsycINFO databases were systematically searched the 13th of October 2015 for peer-reviewed relevant articles using the following combination of terms: (exercise OR physical activity OR weight loss OR diet* OR nutrition OR alcohol OR lifestyle OR smok*) AND "prostate cancer". The set of databases for literature search was selected after discussion among the authors to cover psychological, medical, and nursing literature fields. Scopus was included for its broad literature coverage. Literature search was not restricted to language or year of publication. Reference lists of relevant review articles were also manually searched to include additional studies.

2.2. Inclusion and exclusion criteria

To be eligible, studies had to be randomized controlled trials (RCTs) on lifestyle in PCa patients with quality of life outcomes measures. Lifestyle interventions were defined as intervention that included any dietary, exercise or behavioural component (e.g., smoking cessation, alcohol reduction) (Moran et al., 2011). To be considered for this review, trials needed to report a quality of life previously validated and published indicator as an outcome measure. Studies principally working with PCa patients and additionally including familiars, caregivers, or spouses were considered eligible. Commentaries, replies to other articles and other related documents were excluded.

2.3. Data extraction

Data extraction followed three subsequent steps of revisions following the PRISMA statements (see Fig. 1) (Moher et al., 2009). One researcher (JM) performed study selection and data extraction of all publications. A second researcher (LB) was consulted in case of uncertainty. 10% of the publications was screened twice by two researchers (JM and SV) in order to maximize inter-rater agreement and ensure a solid categorization procedure (Broekhuizen et al., 2015). Disagreements were solved through discussion.

In the first step, titles of search results were screened. In the second step, articles were screened at abstract level. At this stage, relevant literature reviews were analyzed at full text level to extract relevant articles. From this supplementary search, 1 article not included in our database was retrieved (Park et al., 2012).

In the third step, the remaining articles were screened at full-text level. In particular, full-texts were analyzed to exclude protocol articles, studies with on-going results, or not RCTs (n = 2). Multiple publications reporting data of the same intervention were further screened and data were only extracted once. In details, two studies of Carmody et al. (2008, 2012) with the same study design