Exercise Interventions on Health-Related Quality of Life for Patients With Cancer During Active Treatment

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Objective

To assess the effectiveness of exercise interventions compared with usual care or other types of nonexercise interventions on health-related quality of life in patients with cancer during active treatment.

Type of Review

A meta-analysis of 56 trials comparing patients with cancer participating in exercise and nonexercise interventions.

Relevance to Nursing

Ensuring quality of life in patients with cancer is a key priority because the growing number of survivors experience many different disease-related physical, psychological, and social effects, as well as treatment-related symptoms. Health-related quality of life (HRQOL) has become increasingly important in relation to patient outcomes and is recognized as a patient-reported, multidimensional construct that contains major domains (e.g., physical function, psychological function, social function, economic function, spiritual well-being).

The measurement of HRQOL in patients with cancer can provide useful information to guide therapeutic and lifestyle interventions. Exercise interventions have been suggested to improve HRQOL for patients undergoing active treatment. Nurses play an active role in providing exercise interventions, so they must know whether exercise interventions are beneficial during active treatment.

Characteristics of the Evidence

The review included 54 randomized, controlled clinical trials, with a total of 4,826 participants. Participants were aged 18 years and older with cancer receiving active treatment regardless of age, gender, site, type, or stage of tumor, and type of treatment. Participants who were terminally ill or receiving hospice care and trials in which fewer than one-third of participants were undergoing active treatment for either the primary or a recurrent cancer were excluded. Thirty trials included patients with breast cancer, seven with prostate cancer, 12 with a range of cancer diagnoses, and the remaining seven trials included people with non-small cell lung cancer, acute myelogenous leukemia, and lymphoma.

The intervention of interest was exercise, defined as any physical activity causing an increase in energy expenditure designed to maintain or enhance health-related outcomes and involving a planned or structured movement of the body performed in a systematic manner in terms of frequency, intensity, and duration. Interventions could be initiated when treatment was scheduled (10 trials), when participants were undergoing active treatment (36 trials), or during and post-treatment (10 trials). Exercise programs differed across trials and included walking, cycling, resistance training, strength training, yoga, and Qigong.

Trials compared exercise interventions with no exercise, a different intervention (e.g., group psychotherapy), or usual care. The outcomes of interest were HRQOL and its domains, which were assessed using a wide range of measures at four follow-up intervals (i.e., at 12 weeks, between 12 weeks and six months, at six months, and more than six months).

All the included trials were at high risk for performance bias, and the majority of trials were at high risk for detection bias because of the inability to mask the exercise intervention from study participants. Meta-analysis was undertaken where possible.

Summary of Key Evidence

For overall HRQOL, exercise interventions showed a statistically significant improvement for HRQOL compared with controls at the 12-week follow-up (11 trials, standardized mean difference [SMD] = 0.47, 95% confidence intervals [CI] [0.16, 0.79]).

Exercise interventions had a positive impact on certain HRQOL domains compared with controls. Exercise interventions resulted in statistically significant improvements in physical functioning from baseline to the 12-week follow-up (eight trials, SMD = 0.69, 95% CI [0.16, 1.22]) and at the six-month follow-up (four trials, SMD = 0.28, 95% CI [0.00, 0.55]), or when comparing differences in follow-up scores at 12 weeks (18 trials, SMD = 0.28, 95% CI [0.11, 0.45]) or at six months (five trials, SMD = 0.29, 95% CI [0.07, 0.51]); role function from baseline to the 12-week follow-up (seven trials, SMD = 0.48, 95% CI [0.07, 0.91]), or when comparing differences in follow-up scores at 12 weeks (15 trials, SMD = 0.17, 95% CI [0.00, 0.34]) and at six months (five trials, SMD = 0.32, 95% CI [0.03, 0.61]); social functioning at...
the 12-week follow-up (five trials, SMD = 0.54, 95% CI [0.03, 1.05]) or when comparing differences in follow-up scores at 12 weeks (16 trials, SMD = 0.16, 95% CI [0.04, 0.27]) and at six months (five trials, SMD = 0.24, 95% CI [0.03, 0.44]). Exercise interventions resulted in a statistically significant decrease in fatigue from baseline to the 12-week follow-up (23 trials, SMD = -0.38, 95% CI [-0.57, -0.18]) or when comparing differences in follow-up scores at 12 weeks (12 trials, SMD = -0.73, 95% CI [-1.14, -0.31]).

Improvements also were demonstrated in favor of exercise interventions compared with controls for emotional well-being at the follow-up between 12 weeks and six months (five trials, SMD = 0.59, 95% CI [0.12, 1.07]) and in general health perspective when comparing differences in follow-up scores at the 12-week follow-up (six trials, SMD = 0.33, 95% CI [0.01, 0.64]). Exercise interventions resulted in a decrease in anxiety at the 12-week follow-up (12 trials, SMD = -0.46, 95% CI [-0.81, -0.11]) and at the six-month follow-up (three trials, SMD = -0.44, 95% CI [-0.71, -0.17]), in depression at the 12-week follow-up (15 trials, SMD = -0.55, 95% CI [-0.87, -0.22]) and at the six-month follow-up (four trials, SMD = -0.29, 95% CI [-0.48, -0.09]), and in sleep disturbances at the 12-week follow-up (12 trials, SMD = -0.4, 95% CI [-0.67, -0.14]) when compared with controls.

No significant differences were found for the HRQOL domains such as body image (three trials), cognitive function (10 trials), pain (11 trials), and spirituality (three trials) when interventions were compared with controls.

Best Practice Recommendations

The review concluded that exercise interventions may have beneficial effects at varying follow-up periods on overall HRQOL and in certain HRQOL domains in adults with cancer receiving treatment when compared to usual care or other types of nonexercise interventions. However, the results should be interpreted with caution because of the heterogeneity associated with the exercise programs tested, the measurements used to assess HRQOL and its domains, the risk of bias in many trials, and a lack of understanding about important elements (e.g., mode, intensity, frequency, duration) of exercise programs.

Research Recommendations

Future research should focus on whether the positive effects of an exercise intervention can be maintained beyond the active intervention period, and whether particular types of exercise are suited to types of cancer or treatments for optimal effects on HRQOL and its domains. Trials should be larger and include qualitative research components. Using the Patient-Reported Outcomes Measurement Information System may assist in the measurement of HRQOL and its domains and in comparisons between trials.

Reference


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