Clinical and Experimental Health Sciences

The Effects of Home-Based Walking on Cancer-Related Fatigue in Patients with Breast Cancer: A Systematic Review

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ABSTRACT

Objective: Home-based walking programs can be a good option for breast cancer patients with fatigue. However, studies on the effectiveness of home-based walking exercise programs have not fully defined proper exercise prescriptions that may be safe and beneficial for breast cancer patients, and their effects on fatigue are still controversial. This systematic review aimed to evaluate the effect of home-based walking on fatigue management in patients with breast cancer.

Method: In this study, electronic databases such as Scopus, Pubmed, Web of Science, Medline, Science Direct, and Ebsco Ultimate were searched. The randomized controlled studies published between January 2002 and February 2022 were included in the study. The data were summarized narratively.

Results: Patients in the studies consisted of young individuals. The majority of their cancer stages ranged from I to III. A significant part of them received chemotherapy. Home-based walking was found to have positive effects on cancer-related fatigue in women with breast cancer. Home-based walking prescriptions were provided to patients through face-to-face or telephone counseling or printed learning materials. It was determined that the exercise frequency, duration and intensity of home-based walking programs varied in the studies.

Conclusion: Home-based walking was found to have positive effects on cancer-related fatigue in women with breast cancer. Therefore, home-based walking can be a simple, cost-effective and safe approach to women with breast cancer. The heterogeneity in reporting procedures suggests that further high-quality and uniform studies should be conducted to reach a stronger consensus on the effects of home-based walking program on fatigue.
Keywords: Breast cancer, walking, fatigue, exercise, physical activity

1. INTRODUCTION

Breast cancer is one of the prominent malignancies that causes significant morbidity in women and places a serious burden on health systems globally (1). It is the most common type of cancer in women worldwide and is increasing day by day (2). According to Globocan 2022 data, approximately one in four women in Türkiye (n=25 249; 23.5%) are newly diagnosed individuals (3). However, mortality pattern has a slowing acceleration for breast cancer. Most of these women are expected to have a good prognosis following treatment. Cancer treatments have many side effects that negatively affect the quality of life. Fatigue is a common symptom and negatively affects activities of daily living. Moreover, persistent fatigue may adversely affect recurrence and survival in patients with breast cancer (4-6). Cancer-related fatigue is particularly high in breast cancer patients compared to other cancer cases, due to extensive anticancer therapy (7).

Despite of the increased number of pharmacological and non-pharmacological approaches recommended in the management of cancer-related fatigue, no “gold standard” treatment is yet available (8). However, exercise-based interventions are the most promising and recommended first-line therapy for cancer-related fatigue (8). These exercise interventions can be performed by under the guaidance of personal trainers or at home settings. However, supervised exercises may not provide time flexibility for patients. Moreover, it is very difficult for tired patients to attend these exercise sessions (9). At this point, home-based exercise programs may be a good option for breast cancer patients (10, 11). Since these exercise programs minimize the frequency of commuting hospital for patients, they also reduce commuting time and energy required for patients with fatigue. Thus, home-based walking programs offer cancer patients control and guidance beyond simple walking recommendations. They also help cancer patients overcome barriers to hospital commuting and attendant accessibility. Moreover, home-based walking

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programs are reliable, simple, convenient and inexpensive, requiring no special skills (9, 10, 12)

Although there are studies suggesting that home-based walking can be used in the management of fatigue in patients with cancer, its effects are still controversial (13). Many issues such as the effect(s), type, frequency and intensity of home-based walking still remain unclear (14). Therefore, this study aimed to evaluate the effect of home-based walking on fatigue management in patients with breast cancer.

2. METHODS

2.1. Research Strategy and Selection Criteria

The protocol for this systematic review was recorded in the PROSPERO registry (CRD420.223.35068). The Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) was used in this review. The PRISMA flowchart was created. In the study, the participant, intervention, comparator, and outcome framework were used to develop eligibility criteria as follows. The participants included adult patients with breast cancer, those diagnosed with breast cancer or breast cancer survivors (aged ≥18 years) receiving anticancer therapy, regardless of cancer stage and current treatment (P); intervention: only home-based walking exercise or home-based walking exercise combined with other exercises (I) those in the control group received only usual care or other types of exercise (C) and the outcome was to evaluate the effect of home-based walking on fatigue, using fatigue as a primary or secondary outcome included randomized controlled trials (O). However, studies with supervised exercise processes and group training for those in the intervention group were excluded from this study. Also, studies involving home-based walking exercises for those in the control group were also excluded to avoid contamination of the results.

A systematic literature review was conducted using the databases of Scopus, Pubmed, Web of Science, Medline, Science Direct and Ebsco Ultimate and the keywords of ((“breast neopl*” [MesH] OR tumor [MesH] OR “breast cancer” [MesH]) AND (step OR “home-based walking” [title/abstract] OR “home based walking” [title/abstract] OR pedometer* [title/abstract] OR accelerometer* [title/abstract] OR treadmill [title/abstract]) AND fatigue [MesH]). Due to word limit, a combination of the most mentioned keywords related to the subject such as [(“breast cancer”) AND (“home-based walking” OR “home based walking” OR pedometer) AND fatigue] was used for the Science Direct database. The review was conducted independently by two authors and their disagreements were resolved by a third independent researcher. The database searches were restricted to studies published in English between January 01, 2002 and February 21, 2022.

2.2. Selection Criteria

Table 1 summarizes the selection criteria.

Table 1. *Inclusion and exclusion criteria*

Inclusion Criteria	Exclusion Criteria
• Studies involving adult patients with breast cancer, those diagnosed with breast cancer and receiving anticancer treatment regardless of cancer stage and current treatment, or breast cancer survivors (≥18 years old) • Studies comparing any type of home-based walking with usual care/other types of exercise • Studies with interventions that included only home-based walking training or home walking training combined with other exercises. However, supervised exercises and group training were excluded. • Studies involving home-based walking exercises for those in the control group were excluded to avoid contamination of the results. • Studies using fatigue as a primary or secondary outcome • Randomized controlled studies • Studies published in English • Studies published between 2002-2022	• Studies involving cancer types other than breast cancer • Male patients • Gray Literature • Expert opinions • Qualitative studies • Animal experiments • Study protocols • Presentations • Studies whose full text could not be reached • Systematic reviews, quick review, meta-analysis • Studies not published in English • Studies with poor quality

2.3. Study Selection

Existing studies were screened by the authors for systematic review. Eligible or potentially eligible studies were independently retrieved by the authors for abstract and full-text review. Disagreements between them during the screening process were resolved through discussion and consensus. After the abstract review, studies that met the inclusion criteria were recorded and their full texts were accessed. This process was reported in the PRISMA flowchart (Figure 1).

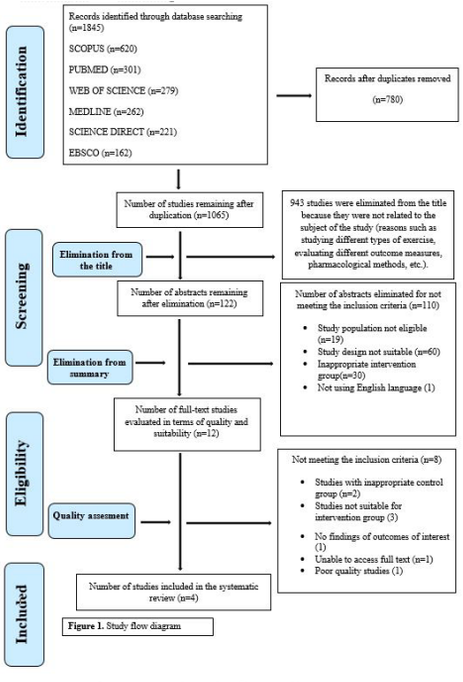

Figure 1. *Study flow diagram*

2.4. Data Extraction

The population, intervention, comparison and outcome (PICO) approach was used in the study. The authors independently extracted the data. Any disagreements between them were resolved through discussions or by an independent researcher outside the study. Data extraction included author and year of publication, country, purpose of study, cancer stage, available treatment, intervention and control groups, data collection tool, sample size, age/sex of participants, and results.

2.5. Study Evaluation and Risk of Bias Assessment

Quality assessments for each selected study were made by two independent researchers. Two researchers independently assigned an overall risk of bias to each trial using the Checklist for Randomized Controlled Trials, and in case of their disagreement, another researcher (H.CA.) was called to resolve the discrepancy. It was adapted into Turkish by Hür et al (15). Items in the tool generally aim to assess four types of bias in studies: performance, selection, detection, and attrition bias. After reading items in the tool and making a methodological evaluation of each item, their relation to the study is marked as "yes", "no", "uncertain" and " inappropriate". The answers of "inappropriate" and "uncertain/ inappropriate" are evaluated as 0 points. The JBI critical assessment probable score is between 0-13.

The JBI Critical Appraisal Checklist for Randomized Controlled Trials was used in the review. In the quality evaluation by two independent researchers, all studies received a low score in the category of "blindly assigning participants into groups". Studies that received a score of 7 or more in the evaluation made by ignoring this category were included in the systematic review. In the quality evaluation, there was a statistically significant and very high agreement between the researchers ($p<.05$). Figure 2 shows the distribution of quality assessment scores of the four studies included in the systematic review. Table 2 presents the consensus table showing the quality scores assigned to the studies.

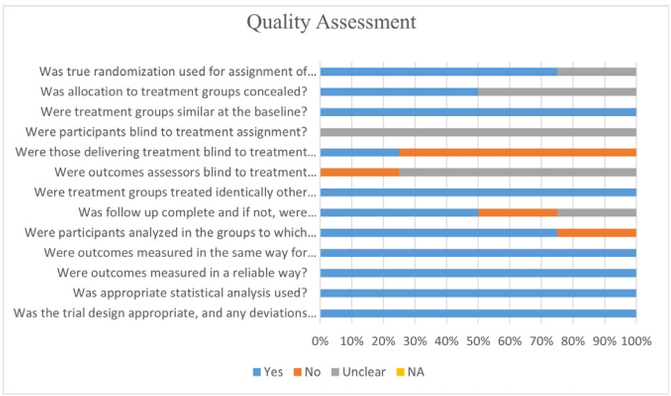

Figure 2. *Graph showing the distribution of scores from each domain according to the JBI Quality Assessment Tool for Randomized Controlled Studies for all studies evaluated as quality.*

Table 2. *Quality evaluation scores of independent evaluators*

	Methodological Quality Assessment			
Authors/Year/ Country	1. Evaluator	2. Evaluator	3. Evaluator*	The Evaluators' Decision
Payne et al (2008) ABD (16)	4/13	4/13	4/13	4/13
Baruth et al. (2015) Colombia (17)	6/13	7/13	7/13	7/13
Gokal et al. (2016) United Kingdom (18)	8/13	9/13	9/13	9/13
Yee et al. (2019) Australia (19)	7/13	8/13	8/13	8/13
Huang et al. (2019) Taiwan (20)	11/13	11/13	11/13	11/13

Quality assessment was carried out by two independent researchers. In order to resolve discrepancies, another researcher was consulted and a final decision was made. Studies with a score of 7 and above in the quality assessment were included.

2.6. Data Synthesis and Analysis

A narrative synthesis of the results of the studies included in our study was structured considering their study design, country of study, sample characteristics, cancer stage, available treatment, treatment/control group characteristics, and scales. The statistical analysis was performed using Microsoft Excel (Microsoft Corporation, 2016). Categorical variables were presented as number of participants (N) and percentage (%).

2.7. Ethical Considerations

An ethics committee approval was not required for the study. No funding source was used in this study.

3. RESULTS

A total of 1845 studies were obtained by searching six databases and using keywords. Of the studies, 780 were eliminated due to duplication. Then, an additional 110 studies, including those with irrelevant subject (n=943), those with unsuitable research design (n=60), those with unsuitable study population/sample (n=19), those with unsuitable intervention (n=30), and those published in languages other than English (n=1) were also eliminated. Full texts of the remaining 12 studies were reviewed for relevance and quality by two independent researchers. As a result, a total of seven studies were eliminated, including one without full text (n=1), one without proper results (n=1), one with unsuitable control group (n=2), and three with unsuitable intervention group (n=3). The remaining five studies were evaluated using the JBI Critical Appraisal Checklist for Randomized Controlled Trials and cone of them was eliminated as it received poor grade (n=1). Finally, four studies (n=4) with a score of seven or higher according to the quality assessment were included in this systematic review. Figure 1 shows the flowchart for selecting studies.

Table 3. *Characteristics of the randomized controlled studies examined*

Author/Year/ Country	Study Purpose	Sample Size (HBW/CG)	Age (mean±SD)/ Sex	Cancer Stage	Treatment	Treatment Group	Control Group	Scales	Results
Baruth et al. (2015) Colombia (15)	To examine the effects of a 12-week home-based walking program on quality of life and fatigue in survivors of early-stage breast cancer. The secondary aim is to examine whether changes in these outcomes are associated with the changes in walking behavior.	20/12	HBW 57.4±6.1 CG 54.9±6.5 Female	I-III	None Completed adjuvant therapy within the last 12 months (Surgery/ Chemotherapy/ radiotherapy/ hormone therapy)	In week 1, participants were instructed to walk at a moderate intensity (RPE 10-11) for 20 minutes, 3 days a week (3 times/wk). If participants could do more than their initial fitness level, they were encouraged to do so. By week 8, participants were instructed to walk at a moderate to vigorous intensity (RPE 12-15) for 30 to 40 minutes 5 days a week and maintain this level of walking for the remainder of the study. A total of 12 weeks of intervention	Participants were asked to maintain their usual level of physical activity, 12 weeks	F A C T - Fatigue	Most participants in the walking intervention group had improved fatigue and quality of life outcomes. In contrast, fatigue and quality of life generally remained unchanged or worsened over time, with a few minor improvements for those in the control group. Participants in the walking intervention group experienced greater reductions in fatigue than those in the control group, and this effect was small to moderate. Changes in fatigue/QOL outcomes have generally been associated with changes in walking behavior, ranging from small to moderate effects. **FACT-Fatigue Score Change** **Baseline Week 12** HBW 14.5 10.0 CG 15.3 14.1
Gokal et al. (2016) United Kingdom (16)	To evaluate the effectiveness of a self-administered home-based moderate-intensity walking intervention on psychosocial health outcomes among breast cancer patients undergoing chemotherapy.	25/25	HBW 52.08± 11.7 CG 52.36±8.9 Female	I-III	Chemotherapy	Home-based, self-managed, moderate intensity walking, 5 times/wk, 30 minute,	Usual care,12 wk	FACT-F	Self-administered home-based intervention was found to have positive effects on fatigue. **FACT-F Score Change** **Pretest Posttest** **HBW** 32.16± 8.42 26.04±3.80 **CG** 34.24±9.48 33.60±7.29

** Calculated considering participants who are currently undergoing treatment. * HBW: Home Based Walking*

*** Calculated considering all participants. *CG: Control Group*

Table 3. *Characteristics of the randomized controlled studies examined (continued)*

Author/Year/ Country	Study Purpose	Sample Size (HBW/CG)	Age (mean±SD)/ Sex	Cancer Stage	Treatment	Treatment Group	Control Group	Scales	Results
Yee et al. (2019) Australia (17)	To determine the safety and feasibility of a physical activity program for patients with metastatic breast cancer and to investigate the effectiveness of this program.	8/6	HBW 60.1±12.7 CG 65.0±6.9 Female	IV	Hormone therapy/ chemotherapy/no current treatment	Unsupervised walking program, 10-15 minutes of brisk walking followed by 30-40 minutes of resistance training, 2 times a week, 8 weeks	Maintaining their usual level of physical activity, 8 weeks	FACIT-F ECOG Performance Scale (Scale scores of 0-2 were included in the study)	Compared to the mean change scores from baseline to post-intervention, positive trends were observed in favor of those in the exercise group compared to those in the control group. **FACIT-F** **Week 8 Week 16** HBW 5.60±3.20 6.10±3.60 CG – 1.80±3.90 0.8±5.70
Huang et al. (2019) Taiwan (18)	To examine the short – and long-term effects of a personalized, home-based brisk walking program in breast cancer patients undergoing chemotherapy.	81/78	HBW 48.32±7.90 CG 48.31±8.65 Female	I-III	Chemotherapy/ Radiotherapy/ hormone therapy/ Target therapy	Our tailored, home-based brisk walking program (30%-70%), 3 to 5 times a week, gradually increasing from 15–25 minutes/ session to 35–40 minutes/session, 12 weeks	Maintaining spontaneous exercise behaviors, 12 weeks	Brief Fatigue Inventory Karnofsky Performance Status scale (Average Karnofsky Performance Status of participants was 89.91 (SD = 5.16)	Fatigue levels increased over time in both the intervention and control groups after completing treatment. At the end of the 12-week exercise program, those in the exercise program experienced less fatigue than those in the control group, and this group difference was maintained throughout the entire study period. At the end of the exercise program, those who spent more time exercising before diagnosis experienced less fatigue than those who exercised less. In addition, patients' fatigue levels measured at various time points fluctuated, along with their physical performance, sleep disturbances, and depression. Overall fatigue levels increased significantly over time (P = 0.027), but this increase was more significant for those in the control group than those in the exercise group. The attenuating effect of exercise on time slope coefficient was not significant (P = 0.157).
Total		N:255 HBW:134 CG:121	%100 Female	**Stage I-III:%94.5 (n:241)	*Chemotherapy: %85..5 (n:189) **Being treated/ untreated: %13.3 (n:34)				

** Calculated considering participants who are currently undergoing treatment. * HBW: Home Based Walking*

*** Calculated considering all participants. *CG: Control Group*

3.1. Properties of Studies

Table 3 shows the properties of the four studies included in this study (properties of the study, properties of the participants, walking intervention, control groups, scales, and results).

3.2. Participants

Four studies included a total of 255 patients who met the inclusion criteria (intervention: 134; control: 121). The studies were conducted in the United Kingdom, Taiwan, Australia and Colombia. The mean age of the participants in the studies was 48 ~ 65 years. The majority of their cancer stages ranged from I to III. Most of them received chemotherapy. There were also patients who received some other treatments such as radiotherapy, target therapy, hormone therapy.

3.3. Interventions

The researchers/trainers provided participants with home-based walking prescriptions through face-to-face training/counseling, telephone counseling, and printed learning materials. Face-to-face counseling included several topics such as the concept and benefits of brisk walking, correct walking techniques and preparation process, goal setting and exercise safety. Telephone counseling was conducted for various reasons such as motivating participants and increasing their commitment to walking program during the intervention, monitoring participant safety and solving some possible difficulties and inconveniences that may occur during the exercise. Participants in the intervention group were given pedometers and exercise diaries/physical activity records to measure their daily step count, walking time, and perceived exertion, allow them to provide immediate feedback, encourage their self-monitoring, and motivate them. In three studies, the patients' heart rates were monitored during physical activity (18-20). In one study, patients optionally recorded their heart rate during activity in their exercise diaries (17). In only one study, patients did not use a physical activity monitoring tool, but followed up their perceived exertion using Borg's Rating of Perceived Exertion (18).

The interventions included only home-based walking or other exercises such as home-based walking and strength/resistance training. The intensity of home-based walking was mostly moderate. The arrangement of walking programs differed by the studies. Participants were advised to increase their walking time consistently in one study (18), and were asked to increase their steps at certain intensity (RPE 11-13) by 10% each week in another study (19). In addition, the frequency, duration and intensity of exercise were gradually increased together in the studies (17, 20). The home-based walking exercises were lasted between 10-40 minutes and performed 2-5 times a week for 8 to 12 weeks.

3.4. Control Groups

In two studies, participants in the control group were asked to maintain their usual level of physical activity and were not given any advice on exercise or physical activity (17, 19). In addition, those in the control group received only usual care (medical care only) in one study (21), and weekly phone calls to offset the therapist-contact effect in another study (20). During the phone calls, the nurse talked to patients about the management of chemotherapy-related side effects, but gave them no advice about physical activities (20).

3.5. Scales

In the studies evaluated the fatigue level using FACT-F, Brief Fatigue Inventory, FACIT-F, and FACT-Fatigue measurement tools.

4. DISCUSSION

This systematic review examined studies on the effect of home-based walking on fatigue management in breast cancer patients. A total of four articles written in English were included in the review. The studies evaluated the home-based walking programs' safety and feasibility, short – and long-term effects, effectiveness on psychosocial health outcomes, and effects on quality of life and fatigue among breast cancer patients (17-20).

Fatigue is one of the most widespread symptoms during and after cancer treatment and is a subjective experience for cancer patients (22). It is perceived as an inevitable consequence of the disease and its treatment that patients have to tolerate (23). Therefore, although it is considered a common problem, it is often not noticed and treated by healthcare professionals (21). While 17% of prostate cancer patients report fatigue, the prevalence of fatigue is approximately 33% in colorectal cancer survivors, reaching 40% in breast cancer patients (24).

Despite promising evidence of the efficacy of different forms of exercise in many studies, patients are often reluctant to participate in exercise programs because they believe that treatment-related side effects will worsen by exercises (25,26). Misguided perceptions of risk and safety concerns are commonly reported by patients as barriers to physical activity. These barriers can be attributed to a lack of inconsistent, vague or reliable information on physical activity provided by health professionals (25, 27). However, Huang et al. reported that home-based brisk walking program had a positive effect on reducing fatigue during chemotherapy (20). This result shows that exercise interventions are possible during cancer treatment and can be initiated early to help patients establish long-term healthy behaviors in breast cancer survivor (20). In addition, the COVID-19 pandemic has adversely affected the lifestyle behaviors of breast cancer patients and created a sedentary environment in which it has become difficult to comply with physical activity guidelines (28). Home-based exercise prescriptions, perhaps with remote support, can positively affect cancer-related fatigue in breast cancer patients (29, 30). The main results of our systematic review suggest that home-based walking programs have positive effects on cancer-related fatigue (17-20).

It is very important to know the demographic, disease and treatment properties that make breast cancer patients more likely to develop severe fatigue during and after treatment (31). However, results regarding their demographic variables and fatigue levels are controversial in the literature (32, 33). Studies have confirmed the high prevalence of fatigue in breast cancer patients in all individuals, young and old (31, 34). But several studies report that younger women experience more fatigue (35, 36). Young women may be more vulnerable to the disease and may have fewer resources to manage a diagnosis of breast cancer that is extremely complex and threatening in many ways (physical, survival, future etc.) (37). This explains why the participants were selected from this target group in studies about the effect of home-based walking on fatigue. In this context, age may be a determining sociodemographic factor. Therefore, health professionals should prepare young people for the effects of breast cancer in the best way possible.

A meta-analysis revealed that one in four cancer patients suffers from severe fatigue, and that higher disease stage and type of treatment received are important risk factors (38). Breast cancer patients with stage II or III who are undergoing chemotherapy and those who have had surgery, radiotherapy, chemotherapy and/or hormone therapy are at higher risk. Hormone and targeted therapy are not significant risk factors (38). The fact that a significant part of the population selected in the studies included in our review received chemotherapy compared to other treatment modalities supports these data.

Studies have shown that women with breast cancer undergo various exercise programs to reduce unpleasant symptoms and improve cardiopulmonary function and body composition. These studies included patients receiving different types of treatment at various stages of breast cancer (39, 40). Types of the exercise interventions (home-centered/supervised) and approaches used to measure exercise outcomes differed in these studies. Their results are not particularly helpful for healthcare professionals in providing clear recommendations on exercise to patients (26). New studies are needed in this area.

Previous studies have not fully identified the safe and beneficial exercise prescriptions for women with breast cancer (41, 42). Therefore, it is very important to determine a safe and feasible home-based walking program and evaluate its effectiveness in this population. Our systematic review shows that there are differences in exercise prescriptions across four studies (17-20). Gokal et al. have recommended that participants begin the 12-week program by completing a 10-minute walk, then steadily increase the walking time to 30 minutes five times a week. In this process, the perceived effort in the intervention group was monitored using Borg's Rating of Perceived Exertion (18). In another study, the exercise intensity was set to moderate in the walking program, and the heart rate reserve was gradually increased from 30% to 70% over a 12-week period. In this process, the exercise intensity was monitored using a sports pulse ring. In the same period, the exercise frequency (3-5 times a week) and duration (15-25 minutes/session to 35-40 minutes/session) were gradually increased (20). Yee et al., followed the eight-week walking program using a pedometer and Borg's Rating of Perceived Exertion, and targeted the exercise intensity as RPE 11-13 (19). In another study (2015), the participants were requested to maintain 20-minute walk with moderate-intensity (RPE 10-11) three days a week in the first week and 30-40 minute walk with moderate-to-vigorous intensity (RPE 12-15) five days a week until the 8th week (17). It is noteworthy that the studies used objective (heart rate, etc.) or self-reported (Borg's Rating of Perceived Exertion) measurements to monitor exercise intensity during the intervention. Studies have shown that home-based walking has a positive effect on fatigue regardless of exercise frequency, duration, and intensity (17-20). Therefore, there is a need for further, well-methodized, home-based walking intervention studies in different patient groups to examine demographic, disease/medical and/or social determinants for a successful exercise program among these patients.

There are several approaches regarding how to develop or adapt clinical-based programs during the COVID-19 pandemic, including unsupervised, self-directed and supervised exercises (43). Similar to those in the literature, all four articles included in our systematic review provided training to participants through walking prescriptions, face-to-face training/counseling, telephone counseling and printed learning materials (17-20). The superior effect of supervised exercise programs over unsupervised ones may be that they provide participants with real-time, face-to-face environment. Supervised exercise programs ensure to select, prescribe and follow appropriate exercises, technique and intensities in order to achieve the desired physiological adaptations in patients (44). These programs are particularly important for cancer patients during and after treatment, as their physical and mental health status may change daily due to acute side effects of the disease (45,46). Because, understanding how to prescribe exercises, adapting their prescription according to daily changes or injuries, and interpreting the data obtained from relevant technologies are important in achieving the targeted outcomes (43). From this point of view, it can be said that patients may not get all the potential benefits of exercises in an unsupervised exercise program because they are not supervised by an exercise specialist (47). In the context, it is not surprising that studies have used counseling and additional materials in home-based walking programs to regulate exercise prescriptions and ensure participant safety (10, 17-20).

In our systematic review, no serious adverse effects of the home-based walking program were reported by participants in the intervention group in two studies (19, 20), while there was no report on the subject in one study (18). In contrast, another study reported a small to moderate adverse effect on arm use for those in the intervention group. However, since no measurement of arm strength or function was taken during the study, the underlying cause could not be determined in the study (17).

Adherence to intervention is important in the feasibility of physical activity programs. Despite the positive effects of home-based walking on fatigue, low compliance rates may have alleviated its effectiveness. Studies have found a wide range of variety in the adherence to intervention (18-20). Low rates of adherence to intervention indicate the need for strategies to promote compliance with home-based walking programs in the absence of an instructor. While a successful increase in walking volume is generally not achieved, it is encouraging that participants mostly adapt to moderate-intensity walking (19). These data are especially important in showing that they were able to reach the desired intensity levels without the need for any instructor or supervisor.

Recently, there is an increased interest in the self-directed, home-based exercise interventions in exercise oncology paradigm. In addition, the ever-evolving technology industry, exercise equipment, smartphones and watches, tablets and websites allow instant access to workouts, tracking and analysis of personal fitness and activity levels (43). At this point, the number of studies with high evidence value for home-based walking programs in breast cancer patients will increase in the forthcoming days.

4.1. Limitations

Our systematic review provides preliminary evidence for the benefits of home-based walking program among breast cancer patients. However, there are a few other limitations besides the inclusion of only English-language articles in the study. First, the sample consisted predominantly of young individuals, limiting its applicability to other age groups. Second, most of the included studies had low sample sizes, with one study even having less than 10 participants in the experimental group (19). In this context, a limited sample size may reduce the likelihood of reflecting a real effect. The third limitation is the small number of relevant randomised controlled trials and their variability in reporting outcome measures (fatigue, depression data, etc.), intervention procedures and measurement tools. This variability highlights the need to conduct more clinical studies in a more uniform manner to reach a stronger consensus on the effects of a home-based walking program on fatigue in women with breast cancer. However, depending on the treatment received, the effectiveness of the intervention may vary in women with breast cancer. In this context, it is recommended to examine the effectiveness of the intervention in women in different treatment processes. Additionally, further research with larger sample sizes and other cancer types is needed to confirm the preliminary findings from this study.

5. CONCLUSION

Outcomes of the home-based walking program are promising for women with breast cancer as it is a low-cost, unsupervised and simple intervention. Therefore, promoting walking can be a cost-effective and safe approach with meaningful benefits for women with breast cancer. As studies have shown, a home-based walking program combined with short face-to-face or telephone counseling or printed learning materials can result in clinically significant improvements in cancer patients. In particular, unlike previous home-based interventions, interventions that use printed learning materials, do not require additional phone calls or counseling with healthcare professionals, and do not impose an additional burden on healthcare staff can contribute to the current literature.

Physical exercise has numerous known benefits for breast cancer patients. As infection rates continue to increase due to COVID-19 variants, it is extremely important to encourage breast cancer patients to do physical exercises such as walking. Certain risks associated with inactivity, especially when combined with the risk of COVID-19 infection, can have unintended consequences in breast cancer patients. It is therefore important to support breast cancer patients/survivors to start and continue exercising even after the pandemic. There is a need to maintain and develop high-quality research in exercise oncology in this regard. These results have important implications: the main goal in public health interventions is to reach large numbers of people and implement effective programs that benefit them (breast cancer patients/survivors). In this context, our study is considered to increase the awareness of home-based walking program in breast cancer patients and be a reference for clinical practices.

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