

# A Dance Program to Manage A Fatigue-Sleep Disturbance-Depression Symptom Cluster among Breast Cancer Patients Receiving Adjuvant Chemotherapy: A Feasibility Study

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## ABSTRACT

**Objective:** Fatigue, sleep disturbance, and depression (FSD) are highly prevalent among breast cancer (BC) patients undergoing adjuvant chemotherapy, constituting a common symptom cluster (i.e., FSD cluster). Exercise is effective in relieving fatigue, alleviating sleep disturbance, and improving the quality of life (QoL) during adjuvant chemotherapy among these women. Therefore, this study aimed to assess the feasibility and acceptability of a dance program with social support elements for managing this symptom cluster. **Methods:** A prospective randomized controlled design combined with a semi-structured interview was utilized. Twenty consented eligible participants were randomly assigned to a dance group or an attention control group after baseline assessment but before chemotherapy. The feasibility of recruitment, retention, intervention, and data collection procedures and the acceptability of exercise modality, hospital-based instruction, and home-based practice were collected by retrieving information from research documents and

interviews by the principal investigator 4 weeks after the start of intervention. **Results:** The recruitment and retention rates were 86.96% and 100.00%, respectively. Participants took about 30–40 min to complete the questionnaire. All the items were comprehensible. The baseline characteristics were comparable between groups, indicating that randomization was successful. The implementation procedure progressed smoothly. Dancing was considered interesting and easy, and participants would like to practice at home. Only minor adjustments would be needed for future studies. **Conclusions:** This study demonstrated that the proposed dance program was feasible and acceptable for BC patients in hospital and home settings. A full-scale study is warranted to examine its effects on managing the FSD cluster and promoting QoL.

**Key words:** Breast cancer, chemotherapy, dance, depression, fatigue, feasibility study, sleep, symptom cluster

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## Introduction

Curative treatments prolong cancer patient's survivorship; however, many subsequent side effects were induced. Fatigue, sleep disturbance, and depression (FSD) are highly prevalent among breast cancer (BC) patients undergoing adjuvant chemotherapy, constituting a common symptom cluster (i.e., FSD cluster).<sup>[1]</sup> These three symptoms cause a synergistic impact, and patients experiencing the FSD cluster have a remarkably impaired quality of life (QoL). Exercise has a potential for positively influencing the FSD cluster, and its effects on relieving fatigue, alleviating sleep disturbance, and improving the QoL of BC patients are promising during adjuvant chemotherapy; however, exercise has no effect on depression.<sup>[2]</sup> Exercise modality should be reconsidered, and a complex intervention, including several active ingredients, should be used to improve the feasibility and effects of exercise on symptom cluster management. Therefore, a dance program incorporating exercise with social support components was developed. In Mainland China, group dancing is an attractive exercise among middle-aged women who are coincidentally at a risk of having BC.<sup>[3]</sup> Engaging in a dance group and communicating with others with a similar diagnosis and experience can gain mutual support and reduce the feelings of isolation.<sup>[4,5]</sup> However, its effects have not been tested.

This study aimed to assess the feasibility and acceptability of a dance program for BC patients undergoing adjuvant chemotherapy. Specific objectives were to evaluate the feasibility of recruitment, retention, intervention, and data collection procedures; to examine the acceptability of exercise modality, hospital-based instruction, and home-based practice; and to report any adverse events.

## Methods

### Study design

This study utilized a prospective, single-blinded, two-armed randomized controlled design. Semi-structured interviews were adopted to collect supplementary information regarding the acceptability of this dance program.

### Selection of participants

Potential participants were newly diagnosed adult patients who suffered from nonmetastatic BC and underwent breast surgery. They were scheduled to receive adjuvant chemotherapy and had a smartphone to receive videos and messages. Patients who had other cancer diagnoses, mental disorders, and contraindications to exercise and were participating in another exercise program were excluded. With its feasibility and acceptability testing purposes, a sample size of 20 participants was determined

and conveniently recruited from two university-affiliated hospitals in Xi'an, China. Consented participants were invited to complete the baseline assessment and randomly allocated to two groups by using opaque-sealed envelopes.

### Intervention

This dance program included the hospital-based instruction and home-based practice, which synchronized with participants' treatment (21 days for one cycle of chemotherapy). For every cycle of treatment, patients stayed in the hospital for around 5 days to receive intravenous chemotherapy, and they were discharged until the next treatment.

The instruction sessions were arranged during participants' hospitalization with no more than 120 min/session and before the day they received chemotherapy. The qualified interveners taught the participants about the dance, warm-up/cool-down exercises, and self-monitoring skills on a small-group basis during the first session. The remaining sessions focused on skill enhancement to facilitate participants' successive home-based practice. During each chemotherapy interval, participants were required to practice the dance at home in a moderate intensity with a dosage of 150 min/week. Standard teaching videos facilitated their home-based practice, and an exercise logbook was used to record their performance and adverse events. Weekly telephone calls were provided to supervise and encourage their adherence, and a WeChat group was set to keep a constant social interaction with other participants and research personnel by sharing their dancing experience after discharge.

Participants in the control group received paralleled general health consultation during hospitalization, focusing on general knowledge and frequently asked questions for attention purposes. Weekly telephone calls were also provided to serve as reminders for blood test and the next hospitalization.

### Statistical analysis

The feasibility and acceptability indicators were collected by retrieving information from research documents and interviews by the principal investigator 4 weeks after the start of intervention. Descriptive statistics and between-group comparison were used for quantitative data, and descriptive analysis was conducted for qualitative data.

### Ethical approval

The study was approved by the institutional research boards of the university and the respective hospitals (Approval No. 2018.340-T and 2018-471). All procedures complied with the Declaration of Helsinki.<sup>[6]</sup> Identity of all participants was anonymized in research records and reports to protect confidentiality.

**Table 1: The results of the satisfaction evaluation regarding the dance program (n= 10)**

Items	Mean (SD)	Median (IQR)
Q1. Does the instructor prepare well before starting the dancing class?	9.70 (0.67)	10 (10-10)
Q2. Does the instructor clearly teach the dance movements?	9.90 (0.32)	10 (10-10)
Q3. Does this dance easy to learn?	9.00 (1.05)	9 (8-10)
Q4. Does this type of exercise (dancing) interesting?	9.40 (1.35)	10 (10-10)
Q5. Will you adhere to dancing at home?	8.60 (1.35)	8 (8-10)
Q6. In general, do you satisfy with the dance program?	9.60 (0.52)	10 (9-10)

Each question was rated on an 11-point scale that ranged from 0 to 10. SD: Standard deviation; IQR: Interquartile range

## Results and Discussion

Twenty recruited participants had a mean age of  $44.75 \pm 8.07$  years. Most of them were married (95.00%), diagnosed with stages I–II BC (70.00%), and subjected to mastectomy (85.00%).

The recruitment and retention rates were 86.96% and 100.00%, respectively. Refusal reasons included the lack of interest and not being in a mood. The questionnaires were comprehensible and completed for approximately 30–40 min. The baseline characteristics were comparable between groups, indicating the successful randomization. The first dancing class progressed for approximately 120 min to teach the dance, warm-up/cool-down exercises, and relevant self-monitoring skills as planned. The adherence rate to the home-based practice was 60.00% with a practicing mean time of  $149.13 \pm 27.24$  min/week. Participants became increasingly proficient regarding the dancing skills in the subsequent reinforcement classes, which usually lasted about 60 min. Participants in the intervention group claimed that dancing was interesting, the movements were easy to learn, and they would like to practice at home [Table 1]. No adverse event was reported. For control group, each consultation took approximately 20 min, and participants recognized that the provided information was useful. Generally, participants were satisfied with the received corresponding interventions.

Minor adjustments should be made to facilitate the future main study. Participants should be informed that the impaired shoulder function may prevent some movements, while consistent practice will gain improvements in dancing skills. The dance class should be flexibly arranged to prevent absenteeism. An additional standard teaching video showing the back view should be provided. Interveners should be prepared to help participants overcome barriers that may prevent their home-based practice. Strategies such as collecting information from individuals and persuading them to arouse a group discussion should be used to motivate them to share their experience via the WeChat group.

## Conclusions

The implementation procedure progressed smoothly, and this dance program was welcomed by the target population. This study demonstrated that the dance program is feasible and acceptable for BC patients in hospital and home settings. It can be applied to a full-scale randomized controlled trial to examine its effects on managing the common FSD cluster and promoting the QoL.

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Nil.

### Conflicts of interest

The corresponding author, Prof. Winnie W.K. So, is the Editor-in-Chief of the journal.

## References

1. He X, So WK, Choi KC, Li L, Zhao W, Zhang M. Symptom cluster of fatigue, sleep disturbance and depression and its impact on quality of life among Chinese breast cancer patients undergoing adjuvant chemotherapy: A cross-sectional study. *Ann Oncol* 2019;30:v840.
2. He X, Bai Y, So WK. The effectiveness of exercise on fatigue, sleep disturbance, depression symptom cluster and quality of life in breast cancer patients undergoing adjuvant chemotherapy: A systematic review and meta-analysis. *Hong Kong: First Cochrane Hong Kong Symposium*; 2019.
3. Qiu N. A review of the research on the issue of urban square dance in China. *J Harbin Sport Univ* 2016;34:10-4.
4. Christensen U, Schmidt L, Budtz-Jørgensen E, Avlund K. Group cohesion and social support in exercise classes: Results from a danish intervention study. *Health Educ Behav* 2006;33:677-89.
5. Sandel SL, Judge JO, Landry N, Faria L, Ouellette R, Majczak M, *et al.* Dance and movement program improves quality-of-life measures in breast cancer survivors. *Cancer Nurs* 2005;28:301-9.
6. World Medical Association. World Medical Association Declaration of Helsinki: Ethical principles for medical research involving human subjects. *JAMA* 2013;310:2191.