

Effect of peer support intervention on quality of life among breast cancer patients on chemotherapy: intervention and control group study

Min Thu Naung¹, Alessio Panza^{1*}, Pramon Viwattanakulvanid¹, Yin Yin Htun²

¹College of Public Health Sciences, Chulalongkorn University, Bangkok, Thailand

²Shwe Yaung Hnin Si Cancer Foundation, Yangon, Myanmar

Corresponding author: Alessio Panza E-mail: alessio3108@hotmail.com

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ABSTRACT

The tragedy caused by having breast cancer can lead to many challenges for women. The physical and psychological reactions occurring after the diagnosis of breast cancer and during chemotherapy, can have a negative impact on the quality of life (QOL) of patients. This study was conducted to evaluate the effect of a peer support intervention on QOL of breast cancer patients in Yangon, Myanmar. An interventional study was conducted at Shwe Yaung Hnin Si Cancer Foundation clinic in Yangon in 2019. A total of 74 patients participated and were randomly assigned to an intervention or a control group. The intervention group received peer support during chemotherapy. QOL was assessed using the European Organisation for Research and Treatment of Cancer Quality of Life Questionnaire(s)-Core30 (EORTC QLQ-C30). Independent t-test, chi-square test and analysis of covariance test were used in data analysis. There was no significant difference between the intervention and control groups in socio-demographic characteristics, medical history, global health status/QOL, physical, emotional, cognitive and social functioning scores and symptoms scores, except for role functioning ($p=0.019$) at baseline. The intervention group had significantly higher mean scores in global health status/QOL (mean difference/md=10.8, $p=0.017$), physical functioning (md=7.6, $p<0.001$), role functioning (md=23, $p<0.001$), emotional functioning (md=15.9, $p<0.001$), cognitive functioning (md=10.1, $p=0.002$) and social functioning (md=17, $p=0.002$), and significantly lower mean scores in fatigue (md=-9.1, $p=0.009$), and nausea & vomiting (md=-9.3, $p=0.022$) than the control group. The results showed that peer support intervention was effective in improving QOL among female breast cancer patients by promoting global health status/QOL and functioning, and diminishing fatigue and nausea & vomiting symptoms. Therefore, peer support intervention should be considered for breast cancer patients to improve their physical and emotional wellbeing.

Key words: breast cancer, chemotherapy, peer group, quality of life

INTRODUCTION

Breast cancer is the most common gynecological malignancy worldwide¹. In 2018, over 2 million women were affected by breast cancer globally, in which 137,514 cases were from South-East Asia and 6,277 from Myanmar, while the deaths from it were 0.6 million globally, 50,935 in South-East Asia and 2,995 in Myanmar²⁻⁴. The incidence of breast cancer is increasing around the world, and almost half of it and 58% of deaths belong to low income countries¹.

Cancer and its treatment instantaneously create stigma, which is caused by fear of life-threatening disease and its consequences. Stigma leads to physical, psychological and social deterioration, and can also be a barrier to further health promotion⁵. Physical and psychological reactions after diagnosis and during chemotherapy have a negative effect not only on quality of life (QOL) of breast cancer patients⁶ but also on the work-life balance of their families⁷. In addition, cancer patients have to face higher out-of-pocket expenditures than some other chronic disease patients and therefore, they have to struggle to secure their jobs to cover those expenditures, which leads to compromise their QOL⁸.

Thus, QOL has become a priority concern for breast cancer patients. Evaluation of QOL is being considered as an important activity in assessing the quality of management and healthcare in oncology practice. It reveals the perception of patients regarding the impact of cancer diagnosis and its treatment on their day-to-day lives⁹. As improving QOL is associated with a reduction in mortality risk, recurrence risk¹⁰ and longer survival¹¹ in breast cancer patients, it is necessary to explore the QOL status and the possible approaches to promote it.

Intervention for improving QOL, including individual face-to-face support¹²,

or telephone support^{13,14}, or group support¹⁵⁻¹⁸ by the peer facilitators, were found to have positive impact on QOL of breast cancer patients. Experiences sharing from peer supporters, who are former breast cancer patients, enhances patients' adaptation in countering the disease and treatment process. Peer support programs also are effective in reducing stigma and intrusive thoughts, loneliness, hopelessness, social isolation, lack of interest in life and, thereby, are promoting adaptation and building a sense of belonging and empowerment among breast cancer patients. Moreover, peer support creates non-hierarchical, reciprocal bonding between women experiencing breast cancer¹⁹ and brings positive cognition, emotions, and behaviors. Additionally, it also reduces the consequences of devastating life events by providing emotional, informational, and instrumental support²⁰, resulting in reducing loneliness, relieving symptoms, as well as improving body image and sexual performance and attitude towards the future¹⁷. As most of published studies focused on a single-component peer support intervention on QOL of the breast cancer patients, this study explored the effectiveness of multi-components peer support intervention namely: peer individual counseling, peer telephone support, and peer group meetings.

In Myanmar, the patients usually received psychological and social support from their family members, friends, neighbors and health care workers. Moreover, there is a culture of previously treated patients helping and sharing their experience with newly diagnosed patients, to enhance adaptation and to provide information related to treatment process. Therefore, peer support activity is familiar to Myanmar people and was chosen for this particular study.

The literature review of Haddou Rahou²¹ found that different treatments resulted in different QOL scores among

breast cancer patients–combination treatment had the poorest QOL, while radiotherapy had better QOL than chemotherapy. Therefore, breast cancer patients receiving chemotherapy were chosen for this study.

The factors that can hinder the effectiveness of peer support intervention are weak design, insufficient observation period, and inappropriate training program for support partners²². Culture plays a critical role in discussing sexual issues and body-image. Most Asian women, indeed, are not willing to talk about their sexual problems and considering it as shameful and unnecessary¹⁷. Results of the peer support group intervention can also be affected by the negative interactions of family and friends, and the presence of some inhibitory thoughts in breast cancer patients¹⁴.

A systematic search of literature was conducted in PubMed, the Myanmar Department of Medical Research, and University of Public Health databases, written in English language between 1999 and 2018, by using the keywords: breast cancer, counseling, peer counseling, peer group support, peer group meeting, peer telephone support, peer telephone counseling, quality of life, QOL, chemotherapy. Seven studies were found (one in South Korea, three in Iran and three in the USA), however, no similar study was previously conducted in Myanmar. Therefore, the aim of this study was to evaluate the effect of peer support intervention on QOL among female breast cancer patients on chemotherapy in a clinic in Yangon, Myanmar.

METHODS

Population, Sample Size Calculation and Sampling Method

An interventional study was conducted among female breast cancer

patients receiving free-of-charge intravenous (IV) adjuvant chemotherapy at Shwe Yaung Hnin Si Cancer Foundation clinic in Yangon, Myanmar.

The required sample size was 37 participants in both intervention group and control group to detect a 19 mean difference in global health status/QOL scores between intervention and control groups¹⁷, with 95% confidence interval and a power of 80%, and allowing potential drop-out of 20%. The total sample size was 74 participants. Sample size was calculated using G*Power software and the difference between two independent means. In an Iran study¹⁷, the data collection three months after baseline assessment, found a mean difference in global health status/QOL of 19 between intervention and control groups. Given the lack of similar results in Myanmar and the comparability of that study population with ours, we have used those mean scores for sample size calculation.

The inclusion criteria for participants were: (1) newly registered patient at the clinic for adjuvant chemotherapy, (2) 18 years and older, (3) having Eastern Cooperative Oncology Group (ECOG) performance status of 0 to 2, (4) having a personal mobile phone for communication, and (5) giving written informed consent. The exclusion criteria were: (1) recurrent breast cancer cases, (2) those receiving second or later cycles of chemotherapy, and (3) those receiving neoadjuvant chemotherapy. Participants were recruited by convenience sampling from January to August 2019 until the calculated sample size of 74 was acquired. Patients were randomly allocated into the intervention or control group by block randomization with a pre-determined size of four participants (two for intervention and two for control) in one block²³. Participants were also blinded with their group allocation. Chemotherapy was administered to the control group on Saturday and the intervention group on

Tuesday to reduce cross-contamination bias.

The intervention

Both the intervention and control groups received the clinic's usual services, including education session about chemotherapy, arm and shoulder exercise demonstration, drug prescription by a physician as necessary and phone contact number of the clinic.

The intervention group received additional peer support intervention. For peer support intervention, twelve peer counselors, who were all female breast cancer survivors with completed major treatments at least for one year without recurrence, were recruited voluntarily and underwent specific training for the intervention.

The training program for peer support intervention was conducted at the Myanmar Psychological Association. A clinical psychologist led the training as the principal trainer and the principal investigator as the co-trainer. The training program included lecture sessions using the handouts in Myanmar language, and practice sessions. The peer counselor trainees were equipped with 30-hour training for basic personal counseling, recommended by the textbook "*Basic Personal Counselling: A training manual for counsellors*"²⁴. Practice sessions were conducted after receiving the lecture on micro-skills regarding counseling (such as joining and listening, reflection of content, reflection of feelings etc.). The trainees also received the 10-hour training for telephone support and after that, practiced role-playing of telephone contacts. Another 10-hour training was carried out to learn specific ways to conduct peer group meetings successfully by using suggestions from "*Creating peer support groups in mental health and related areas*"²⁵ and then, one group practice session was conducted to improve their facilitation

skills. The researcher shared the information on side effects of chemotherapy, ways to counter them, healthy eating style and regular physical activity, based on the "*Education Booklet*" used in peer support discussions and developed by the principal investigator adapting authoritative, existing literature from the American Cancer Society, Society of Clinical Oncology, Brest Cancer Care UK, Mayo Clinic and others. The principal trainer assessed the competency of the trainees in all training practice sessions and provided relevant feedback.

The peer counselors supported participants in three ways; peer individual counseling, peer telephone support, and peer group meeting. In addition, participants of the intervention group received the Education Booklet mentioned above. The peer support intervention was delivered to the participants during the course of adjuvant chemotherapy.

Peer Individual Counseling: Peer individual counseling sessions were delivered to the participants of the intervention group by the trained peer counselors at the clinic. There were two counseling sessions for each participant during the intervention, on the day of the first cycle and the day of the sixth cycle before administering chemotherapy. Each counseling session took approximately one hour.

The counseling session started with the introduction of the peer counselor fostering a trusting and relaxed relationship with the participant which is vital for a successful outcome. The peer counselor, then continued the session using the micro-skills mentioned below to address the concerns and other issues raised by the participants²⁴;

1. **Joining and Listening:** The counselor listened to the participant's difficulties, problems and issues carefully to identify strategies that would enable the participant to become more self-confident

in taking decisions and finding her own solutions.

2. Reflection of Content (Paraphrasing): The counselor, using her own words summarized what the participant had said. In this way, the participant was reassured that the counselor listened to her and was ready to hear more if necessary.

3. Reflection of Feelings: The counselor acknowledged the participant's feelings to help a full expression of emotions and a sense of relief after such expression.

4. Reflection of Contents and Feelings: Sometimes, the counselor reflected content and feelings in a single and short communication when it was appropriate to combine these two types of reflection.

5. Use and Abuse of Questions: When necessary, the counselor asked open questions or closed questions for specific purposes such as inviting to talk freely, seeking general information, clarifying what was said, helping to be more specific, heightening awareness etc. The counselor didn't abuse questions by avoiding those ones that were likely to be intrusive, creating inequality, interrogating with judgmental attitude, satisfying the counselor's needs and disrupting the smooth flow of the counseling process.

6. Summarizing: The counselor summarized the important issues dealt with during the session to keep track of and confirm what was discussing.

7. Matching Language and Metaphor: The counselor matched the ways the patient sat and breathed, her talking pace and tone of voice. The counselor matched her language to that of the participant by choosing the relevant one among the three available 'psychological' languages: the 'seeing' language (when one thinks and experiences by visual imagery), the 'hearing' language (when one talks to

oneself mentally), and the 'feeling' language (when one expresses feelings). Finally, the counselor, in her feed-back, tried to use the same metaphors used first by the participant.

8. Creating Comfortable Closure: When closing a counseling session, the counselor gave some positive feedback.

Counseling is a method, using the above described micro skills, in helping people to make step-by-step, long-term changes, rather than to achieve short-term problem-solving. While using this method the participants feel overall better by finding more means of thinking about, replying to and handling their problems.

Peer Support by Telephone: Each peer supporter made two 30-minute phone calls to her assigned participant between each cycle of chemotherapy (total ten calls). The peer supporter contacted the participant three to five days before administration of chemotherapy. During the phone support session, the peer supporter actively listened to the participant's concerns, shared her own experiences, assisted in identifying a problem, and helped the participant in defining and prioritizing solutions. The peer supporter finally shared her experience on how to get fit for receiving chemotherapy, and on healthy eating as suggested in the Education Booklet.

The peer supporter made a call also three to five days after chemotherapy administration to provide emotional support, to discuss side effects suffered by the participant, and ways of controlling them as described in the Education Booklet or based on the peer supporter's own experience.

Moreover, the participant could contact the peer supporter whenever she needed assistance and was referred to health care professionals if necessary.

Peer Group Meeting: A total of five one-hour peer group meetings were

held with five to nine participants and were facilitated by two peer counselors at the clinic before administering chemotherapy. The contents of the peer groups meetings provided learning opportunity by group interaction (Table 1). The suggestions described in the Education Booklet were also discussed during these meetings.

Peer support groups are appreciated events and means that bring together persons affected by similar conditions so they can find out solutions to solve shared difficulties and feel reinforced by others who have had similar experiences and who may know the situation better. Peer support groups are facilitated by members, for members so the main concerns are directly based on their own requirements. Peer support groups also provide members more benefits than naturally occurring social support in the community. The benefits of peer support groups are extensive and can embrace the establishment of a secure atmosphere to talk freely and share feelings and opinions about their recent condition and difficulties; sharing of information and understandings and getting knowledge from others in similar circumstances can be

helpful to offer thoughts and explanations to solve difficulties the group members experience, to shape new interactions and linkages to decrease loneliness and to share about the existence of available community resources²⁵.

In this study, the facilitator encouraged the participants to share their story and their needs, to discuss the problem that they faced and the experiences throughout the period of therapy, to state the difficulties they encountered and how they managed these difficulties, and to share their opinion and potential means to deal with difficult circumstances. After identifying two to three challenges regarding the discussed topic, the facilitator encouraged participants to propose what they could do to deal with the identified challenges. After sharing their opinions, participants were asked to concur on some specific actions for responding to their difficult challenges during treatment. It was also beneficial for the participants to know how the other participants cope with their problems related to the disease and the treatment.

Table 1 Steps of Peer Group Meeting

Steps of Peer Group Meeting	
1	Arrangement The researcher defined the date and time for the peer group meeting according to the chemotherapeutic plan of the participants, and invited the facilitator and co-facilitator to the peer group meeting.
2	Greet People The facilitator greeted the group, introduced herself, explained the aim of the meeting and asked participants to introduce themselves.
3	Encourage Sharing Stories between Participants The facilitator explored the topic by asking open questions. She also encouraged everyone to share their story and their needs. The opening discussion of the facilitator was very useful to encourage the participants to express themselves describing their contributions and expectations to the meeting. The facilitator created a comfortable environment (e.g. telling the story of some personal events) for developing self-assurance among the participants. The facilitator encouraged the participants to discuss the problems that they faced, the experiences throughout the period of therapy, and state the difficulties that developed and how they managed these difficulties. The facilitator also encouraged the participants to discuss their opinions and potential means to deal with their difficult circumstances. The facilitator listened carefully without

Steps of Peer Group Meeting

disruption and keeping an unbiased approach, and did not try to alter the feelings of the participants.

4 Identified Need or Common Purpose

The conversation continued by discussing the requirement expressed by the participants who had the similar difficulties. By establishing common interest among the participants, they saw what to share and what to achieve for the meeting to be effective.

5 Possible Ways of Handling Challenging Situations

After identifying two to three challenges on the discussed topic, the facilitator encouraged participants to propose ways to deal with them. Participants were asked to focus on what they could perform during their daily life, rather than focusing on what they wished others (e.g. caregivers) could do for them. Participants were encouraged to state their opinions, ask questions and share their own experiences freely.

After participants had shared their views on the best decisions to the discussed topic, they were asked to concur on some specific actions identifying and their 'what', 'where' and 'by when'. The facilitator tried to engage everyone in the discussion in at least one action.

6 Concluding the Meeting

The facilitator concluded the session in a constructive way showing how beneficial was for the participants to know how other participants coped with the problems related to the disease and the treatment. This constructive conclusion helped developing hopefulness, inspiration, and self-assurance.

7 Refer participants for more information

Participants were referred to professional healthcare workers or healthcare centers for more information, assistance, and services.

Data Collection

Data collection was done twice: before the first cycle and after the sixth cycle of chemotherapy, using an interviewer-administered questionnaire in three sections: socio-demographic characteristics, medical history and QOL assessed using the European Organisation for Research and Treatment of Cancer Quality of Life Questionnaire(s)-Core30 (EORTC QLQ-C30 version 3.0) ²⁶.

The EORTC questionnaire consisted of 30 questions. First 28 questions were in four points Likert type scale as follow; not at all (1p), a little (2p), quite a bit (3p) and very much (4p), for assessing five categories of functioning, and nine categories of symptoms.

Regarding the five categories of functioning, physical functioning was assessed by 5 questions, emotional functioning by 4 questions, role, cognitive

and social functioning by 2 questions each. For symptoms, fatigue was assessed by 3 questions, nausea & vomiting and pain by 2 questions each, dyspnea, insomnia, appetite loss, constipation, diarrhoea and financial difficulties by 1 question each. The last 2 questions were for assessing global health status/QOL which were in seven points Likert type scale as follows; very poor (1p) to excellent (7p).

For scoring the questionnaire, the raw score (the mean of the scores in a given scale for each item) was calculated first, and then the standardized score (transformed into scores of 0-100 by linear transformation) was calculated ²⁶. For example, fatigue was assessed by 3 questions and the mean score was calculated first as the raw score, and then the raw score was transformed into the standardized score ranging from 0 to 100 by linear transformation. Therefore, the severity of fatigue was presented as a

standardized score. Higher scores for global health status/QOL and functioning represent better QOL or functioning, and higher scores for symptoms represented worsening of symptoms.

The EORTC QLQ-C30 questionnaire is a validated and reliable instrument^{27,28} for assessing QOL of cancer patients. Additionally, for this study, the questionnaire was reviewed by three Myanmar experts for content validity using item-objective congruence (IOC) index score of +1 to -1 (+1 = clearly measuring, 0 = unclear, and -1 = clearly not measuring). Each item having score of ≥ 0.5 was retained. Translation and back-translation of the questionnaire were done by two experts independently. Pilot testing inclusive of face validity was done among twelve female breast cancer patients with similar characteristics who were not included in this study. Regarding the internal consistency reliability of the questionnaire, the Cronbach's alpha score was 0.78 at baseline. It took about 30 minutes to complete the questionnaires.

Data Analysis

For data analysis, SPSS (version 22) was used. Socio-demographic characteristics, medical history, and QOL scores were described as mean, standard deviation, number and percentage. Independent t-test and chi-square test were used for comparing the characteristics and QOL scores of the participants between two groups at baseline.

After the intervention, significant effects of the intervention on QOL were analyzed by analysis of covariance (ANCOVA) to control the effects of covariates on the dependent variable. When ANCOVA was used, the scores at post-intervention were compared between two groups while adjusting the corresponding baseline score and baseline role functioning score as covariates. The baseline role functioning score was adjusted in the

analysis because it was significantly different between the two groups at baseline. Statistical significance was set at $p < 0.05$.

Ethical Considerations

The Cancer Foundation executive committee consented to conduct the study at the foundation clinic and, not having its own ERB, to submit the study protocol to the Institutional Review Board of the Defence Services Medical Research Centre, Myanmar, holding a valid (international non-US institutions) Federalwide Assurance (FWA) for the Protection of Human Subjects (USA). The study was approved (IRB/2018/34). Written informed consent was obtained from each participant before data collection was initiated.

RESULTS

A total of 74 female breast cancer patients participated in this study (37 in both intervention and control groups). Three participants in the intervention group were switched to oral treatment after the fourth cycle of I.V chemotherapy, leaving 34 participants completing six cycles. Two participants in the control group were transferred to the government hospital (one after the second cycle and one after the fifth cycle) due to deteriorating clinical conditions, leaving 35 participants (Figure 1). Post-intervention data collection was conducted after completing the sixth cycle of I.V chemotherapy and a total of 69 participants were available for analysis.

At Baseline Data Collection

The socio-demographic characteristics of the participants revealed no significant difference between intervention and control groups at the baseline as shown in (Table 2), which also presents cumulative data for all 74 participants. For the cumulative data, the mean BMI was 26.3 ± 4.7 , and mean age was 51.6 ± 9.5 .

The other most common characteristics were Bamar ethnicity (82.4%), married (43.2%), had 0-1 child (60.8%), attained higher level education (52.7%), unemployed (37.8%) and having social support from friends or neighbors (89.2%).

Regarding monthly family income, 36.5% of the participants had an income of 100,001-200,000 MMK (68-136 US\$) and all participants had a history of good family relationships.

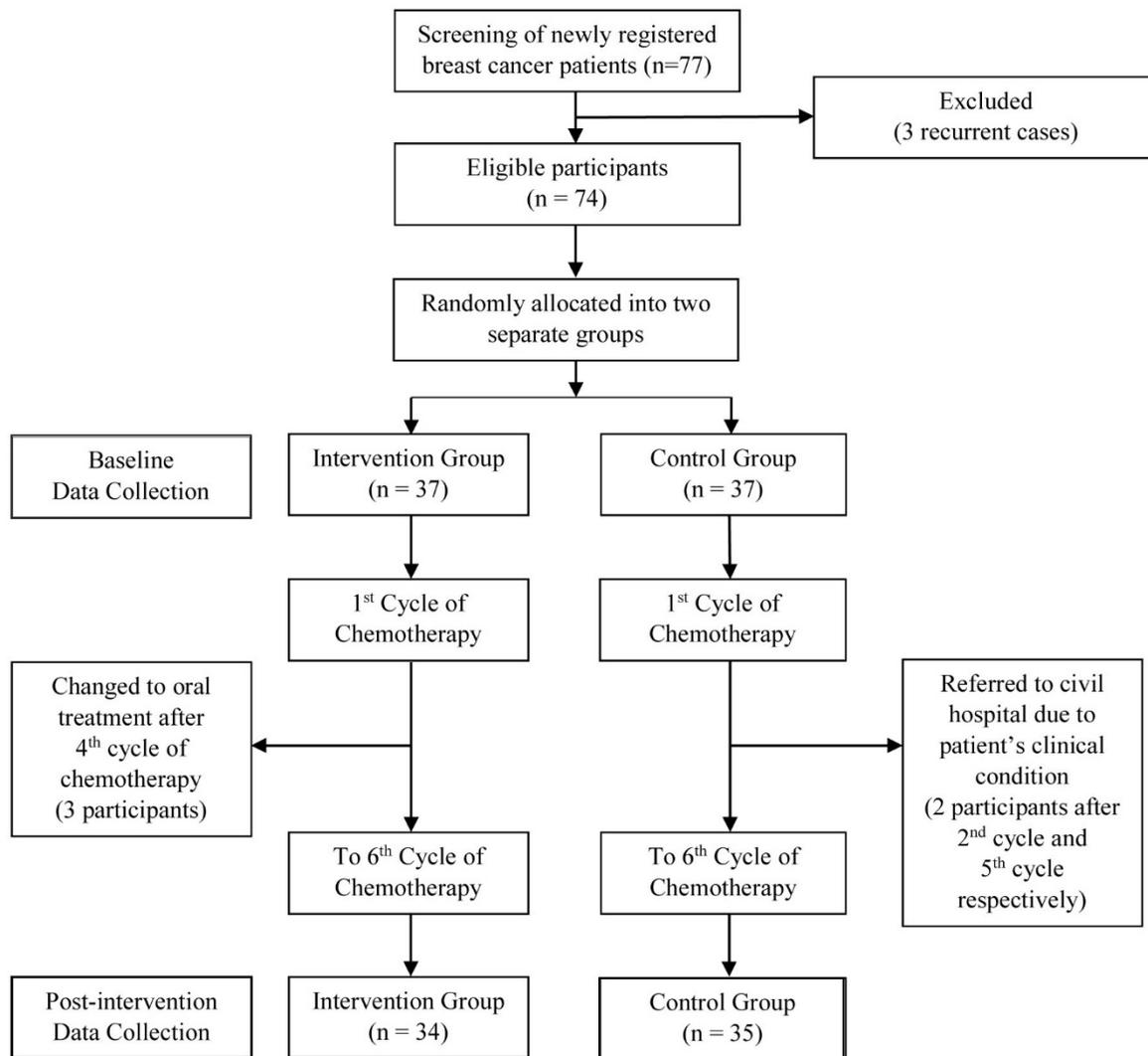


Figure 1 Flow chart of eligible participants for data collection and analysis

The participants' medical histories also showed that there were no significant differences between two groups at baseline (Table 3). A majority of the participants were post-menopausal women (55.4%), never-smoked (91.9%), non-drinkers (93.2%), without family history of breast

cancer (89.2%), hospitalized for one time to treat breast cancer (71.6%), and diagnosed with stage I-II of cancer (79.7%) without co-morbidity (62.2%). For all participants, the diagnosis was done within one year and surgery was the only treatment taken before data collection was completed.

Table 2 Comparison of socio-demographic characteristics of the intervention and control groups at baseline

Variables	Total (N=74)	Intervention (N=37)	Control (N=37)	p-value	
BMI (kg/m ²) (Mean ± SD)	26.3 ± 4.7	26.5 ± 4.8	26.2 ± 4.7	0.771 ^a	
Age (Years) (Mean ± SD)	51.6 ± 9.5	51.8 ± 9.9	51.4 ± 9.3	0.885 ^a	
Age Group [n (%)]					
Middle-aged Adults (36-55)	47 (63.5)	25 (67.6)	22 (59.5)	0.469 ^b	
Older Adults (> 55)	27 (36.5)	12 (32.4)	15 (40.5)		
Ethnicity					
Bamar	61 (82.4)	30 (81.1)	31 (83.8)	0.760 ^b	
Others	13 (17.6)	7 (18.9)	6 (16.2)		
Marital Status					
Single	23 (31.1)	12 (32.4)	11 (29.7)	0.601 ^b	
Married	32 (43.2)	14 (37.8)	18 (48.6)		
Widowed/Divorced	19 (25.7)	11 (29.7)	8 (21.6)		
Number of Children					
0-1	45 (60.8)	23 (62.2)	22 (59.5)	0.812 ^b	
2 or more	29 (39.2)	14 (37.8)	15 (40.5)		
Education					
Illiterate/Can read and write	3 (4.1)	1 (2.7)	2 (5.4)	0.495 ^b	
Primary School	18 (24.3)	7 (18.9)	11 (29.7)		
Middle School	14 (18.9)	9 (24.3)	5 (13.5)		
High School/College and above	39 (52.7)	20 (54.1)	19 (51.4)		
Employment					
Housewife	25 (33.8)	9 (24.3)	16 (43.2)	0.228 ^b	
Employed	21 (28.4)	12 (32.4)	9 (24.3)		
Unemployed	28 (37.8)	16 (43.2)	12 (32.4)		
Social Support					
Yes	66 (89.2)	34 (91.9)	32 (86.5)	0.711 ^c	
No	8 (10.8)	3 (8.1)	5 (13.5)		
Family Income					
MMK **	US \$ **				
≤ 100,000	≤ 68	13 (17.6)	6 (16.2)	7 (18.9)	0.544 ^b
100,001 – 200,000	68 - 136	27 (36.5)	11 (29.7)	16 (43.2)	
200,001 – 300,000	136 - 204	16 (21.6)	9 (24.3)	7 (18.9)	
> 300,000	> 204	18 (24.3)	11 (29.7)	7 (18.9)	

a = Independent *t* test, *b* = Chi square, *c* = Fisher's exact test

** 100,000 MMK = 68 US \$ (at December 2019, bank exchange rate of 1 US \$ = 1468.55 MMK)

Table 3 Comparison of medical history of the intervention and control groups at baseline

Variables	Total (N=74)	Intervention (N=37)	Control (N=37)	p-value
Menopausal Status [n (%)]				
Pre-menopause	33 (44.6)	16 (43.2)	17 (45.9)	0.815 ^b
Post-menopause	41 (55.4)	21 (56.8)	20 (54.1)	
Smoking				
Never-smoked	68 (91.9)	36 (97.3)	32 (86.5)	0.198 ^b
Ex-smoker	4 (5.4)	1 (2.7)	3 (8.1)	
Occasional/Daily Smoker	2 (2.8)	0 (0)	2 (5.4)	
Alcohol Consumption				
Non-drinker	69 (93.2)	36 (97.3)	33 (89.2)	0.358 ^c
Ex-drinker	5 (6.8)	1 (2.7)	4 (10.8)	
Family History of Breast Cancer				
Yes	8 (10.8)	3 (8.1)	5 (13.5)	0.711 ^c
No	66 (89.2)	34 (91.9)	32 (86.5)	
Number of Hospitalizations				
1	53 (71.6)	22 (59.5)	31 (83.8)	0.055 ^b
2	19 (25.7)	14 (37.8)	5 (13.5)	
3 or more	2 (2.7)	1 (2.7)	1 (2.7)	
Clinical Staging				
Stage I-II	59 (79.7)	29 (78.4)	30 (81.1)	0.772 ^b
Stage III-IV	15 (20.3)	8 (21.6)	7 (18.9)	
Co-morbidity				
0	46 (62.2)	26 (70.3)	20 (54.1)	0.226 ^b
1	23 (31.1)	10 (27.0)	13 (35.1)	
2 or more	5 (6.8)	1 (2.7)	4 (10.8)	

a = Independent t test, b = Chi square, c = Fisher's exact test

Table 4 Comparison of the mean scores of QOL of the intervention and control groups at baseline

Variables	Total (N=74) (Mean ± SD)	Intervention (N=37) (Mean ± SD)	Control (N=37) (Mean ± SD)	p-value ^a
Global Health Status/QOL				
Global Health Status/QOL	61.8 ± 20.1	64.1 ± 18.7	59.4 ± 21.4	0.315
Functioning				
Physical Functioning	80.4 ± 15.2	81.7 ± 15.2	79.0 ± 15.2	0.449
Role Functioning	66.4 ± 29.2	74.3 ± 22.7	58.5 ± 33.0	0.019
Emotional Functioning	73.3 ± 20.9	75.6 ± 18.6	70.9 ± 23.0	0.335
Cognitive Functioning	83.5 ± 19.7	86.0 ± 20.2	81.0 ± 19.3	0.285
Social Functioning	80.4 ± 21.7	83.3 ± 18.8	77.4 ± 24.2	0.251
Symptoms				
Fatigue	22.8 ± 18.0	21.0 ± 15.6	24.6 ± 20.1	0.393
Nausea and Vomiting	4.7 ± 11.2	3.6 ± 7.9	5.8 ± 13.7	0.392
Pain	18.4 ± 25.3	13.0 ± 20.0	23.8 ± 29.0	0.066
Dyspnea	11.2 ± 21.5	11.7 ± 21.1	10.8 ± 22.2	0.859

Variables	Total (N=74) (Mean ± SD)	Intervention (N=37) (Mean ± SD)	Control (N=37) (Mean ± SD)	p-value ^a
Insomnia	29.2 ± 30.6	23.4 ± 28.1	35.1 ± 32.3	0.101
Appetite Loss	15.3 ± 24.1	11.7 ± 21.1	18.9 ± 26.6	0.202
Constipation	18.4 ± 24.1	16.2 ± 23.0	20.7 ± 25.2	0.426
Diarrhea	0.9 ± 5.4	0.9 ± 5.4	0.9 ± 5.4	1.000
Financial Difficulties	57.6 ± 32.7	58.5 ± 31.8	56.7 ± 34.1	0.815

a = Independent *t* test.

Among QOL scores, there was no significant difference in mean scores of global health status/QOL, physical functioning, emotional functioning, cognitive functioning and social functioning between the two groups at baseline data collection (Table 4). The only significant difference ($p = 0.019$) was the mean scores of role functioning where the score of the intervention group was higher than that of the control group. Regarding the symptoms, there was no significant difference between both groups at baseline.

Table 5 Comparison of the mean scores of QOL between the intervention and control groups at post-intervention

Variables	Intervention	Control	F value	Mean Difference (95% CI)	p-value
Global Health Status/QOL	64.1 ± 18.7	59.4 ± 21.4	5.991	10.8	0.017
Baseline	76.9 ± 18.3	64.2 ± 19.2		(2.0 – 19.7)	
Post-intervention					
Physical Functioning					
Baseline	81.7 ± 15.2	79.0 ± 15.2	14.168	7.6	< 0.001
Post-intervention	85.4 ± 9.0	76.5 ± 8.4		(3.5 – 11.7)	
Role Functioning					
Baseline	74.3 ± 22.7	58.5 ± 33.0	18.081	23.0	< 0.001
Post-intervention	83.3 ± 17.4	56.6 ± 27.1		(12.2 – 33.9)	
Emotional Functioning					
Baseline	75.6 ± 18.6	70.9 ± 23.0	16.707	15.9	< 0.001
Post-intervention	82.8 ± 18.7	64.9 ± 19.3		(8.1 – 23.7)	
Cognitive Functioning					
Baseline	86.0 ± 20.2	81.0 ± 19.3	10.977	10.1	0.002
Post-intervention	87.7 ± 14.3	78.0 ± 15.0		(4.0 – 16.2)	
Social Functioning					
Baseline	83.3 ± 18.8	77.4 ± 24.2	10.322	17.0	0.002
Post-intervention	82.8 ± 18.1	64.7 ± 27.9		(6.4 – 27.6)	
Fatigue					
Baseline	21.0 ± 15.6	24.6 ± 20.1	7.193	-9.1	0.009
Post-intervention	16.0 ± 15.0	25.3 ± 13.0		(-15.9 – -2.3)	
Nausea & Vomiting					
Baseline	3.6 ± 7.9	5.8 ± 13.7	5.550	-9.3	0.022
Post-intervention	4.9 ± 13.3	14.2 ± 17.6		(-17.2 – -1.4)	

Pain

Variables	Intervention	Control	F value	Mean Difference (95% CI)	p-value
Baseline	13.0 ± 20.0	23.8 ± 29.0	2.653	-6.5	0.108
Post-intervention	9.8 ± 13.6	20.9 ± 23.3		(-14.4 – 1.4)	
Dyspnea					
Baseline	11.7 ± 21.1	10.8 ± 22.2	3.268	-8.3	0.075
Post-intervention	5.8 ± 12.8	15.2 ± 23.3		(-17.5 – 0.8)	
Insomnia					
Baseline	23.4 ± 28.1	35.1 ± 32.3	2.664	-9.0	0.107
Post-intervention	20.5 ± 23.2	33.3 ± 26.8		(-20.2 – 2.0)	
Appetite Loss					
Baseline	11.7 ± 21.1	18.9 ± 26.6	0.208	-2.8	0.650
Post-intervention	14.7 ± 26.1	19.9 ± 24.5		(-15.3 – 9.6)	
Constipation					
Baseline	16.2 ± 23.0	20.7 ± 25.2	1.698	-6.7	0.197
Post-intervention	10.7 ± 19.6	20.9 ± 28.1		(-17.0 – 3.5)	
Diarrhea					
Baseline	0.9 ± 5.4	0.9 ± 5.4	0.397	-1.3	0.531
Post-intervention	1.9 ± 7.9	2.8 ± 9.4		(-5.7 – 2.9)	
Financial Difficulties					
Baseline	58.5 ± 31.8	56.7 ± 34.1	2.794	-12.4	0.099
Post-intervention	38.2 ± 31.9	49.5 ± 30.6		(-27.3 – 2.4)	

At Post-intervention Data Collection

The ANCOVA results (Table 5) showed that after the intervention, the intervention group had significantly higher mean scores in global health status/QOL (mean difference = 10.8, $p = 0.017$), physical functioning (mean difference = 7.6, $p < 0.001$), role functioning (mean difference = 23.0, $p < 0.001$), emotional functioning (mean difference = 15.9, $p < 0.001$), cognitive functioning (mean difference = 10.1, $p = 0.002$) and social functioning (mean difference = 17.0, $p = 0.002$) than the control group. In addition, the intervention group had significantly lower mean scores in fatigue (mean difference = -9.1, $p = 0.009$), and nausea & vomiting (mean difference = -9.3, $p = 0.022$) than the control group. There were no significant differences in mean scores for the other symptoms between these two groups.

DISCUSSION

The effect of the peer support intervention on global health status/QOL of the participants was significantly improved after the intervention compared to the control group.

Similarly, in three recent studies, conducted among 100 Iranian¹⁷, 151 American¹² and 104 American¹³ female breast cancer patients after completion of combined therapies in 2010, 2015 and 2016 respectively, showed that peer-led education intervention was effective in improving their global health status/QOL. Thus, the findings of this study supported the results of previous studies on the effectiveness of peer support intervention in promoting the overall QOL of breast cancer patients in Myanmar.

A study conducted in South Korea in 2002¹⁵ among which 55 breast cancer patients (28 in intervention group and 27 in control group) revealed similar results. The intervention program included psychology-

based education once per week for 10 weeks by specialists, exercise twice per week for 10 weeks (group and home-based), and peer support group activity once per week for 10 weeks. The participants' QOL were assessed before and after these interventions and showed significant improvement in the intervention group only.

In this present study, the global health status/QOL of the control group was also marginally increased after chemotherapy without any intervention. It was a very stressful period for the patients because they were recently diagnosed with breast cancer, they felt worried about the disease and they also suffered with side effects of chemotherapy. When the chemotherapy was completed, the patients felt relief, resulting in improvement in their global health status/QOL in the control group even without intervention.

The effect of the intervention on the five functioning scales showed significant improvements in physical, role, emotional and cognitive functioning of the intervention group only and the intervention was effective in maintaining the already higher social functioning in the intervention group.

Similarly, the previously cited studies in Iran¹⁷ and in the USA¹² reported significant improvements in functioning after the interventions. When the contexts between the cited studies and the current study were compared, the mean age of the USA participants and of this study were similar, 50.5 ± 10.9 years and 51.6 ± 9.5 years respectively, although age had significant association with QOL in other studies^{29, 30} of breast cancer patients. In the USA study, participants were Mexicans and Americans, while the majority were Bamar in this study. QOL of breast cancer patients was associated with patients' ethnicity³¹, and therefore, this association should be acknowledged. Moreover, the literature review of Haddou Rahou²¹ found that

different treatments resulted in different QOL scores among breast cancer patients – combination treatment had the poorest QOL, while radiotherapy had better QOL than chemotherapy. In the USA study, participants received various types of treatment; chemotherapy with radiation, only radiation, only chemotherapy, or no treatment. In this study, participants completed only surgery and the intervention program was conducted during chemotherapy. Therefore, the different treatments between studies could have major effect on QOL of breast cancer patients.

In contrast, a study conducted among 245 breast cancer patients in the USA¹⁶ and among 61 in Iran¹⁸ found that peer support meetings had no significant improvement in QOL. The main difference between those studies and this one was the duration of the intervention – the USA study lasted 2 months, the Iran study 3 months, and this study 5 months – which could be the underlying reason for having discordant results. A study conducted among 80 breast cancer patients in Iran in 2017³² also suggested that a different duration of intervention could lead to different results.

Regarding the symptoms that the patients suffered during the course of chemotherapy, this study found that fatigue, and nausea & vomiting of the intervention group were significantly lower than those of the control group after the intervention. The other symptom scores in the intervention group were lower than in the control group after the intervention but not of statistical significant difference.

There were conflicting results between the Iran study¹⁷ and this study as the Iran intervention group had significantly lower fatigue, pain, insomnia, and appetite loss symptoms than the control group. The health education section of the Iran study included information on cancer, breast cancer, diagnosis, treatment,

complications, self-care, relaxation techniques and adaptation to the illness, which were different from this study. These differences could be the reasons for the conflicting results.

Another study in Iran¹⁸ found that there was no significant difference in pain scores between the two groups after the intervention. The use of different QOL assessment tools among breast cancer studies, makes it difficult to compare the different outcome among studies. Cho O et al, 2006¹⁵ used a South Korean developed QOL questionnaire, Tehrani, A. M., 2011¹⁸ used the SF-36 questionnaire, and Sharif, F., 2010¹⁷ used the EORTC QLQ-C30 questionnaire.,.

In this study, peer supporters encouraged the patients to do regular physical activities such as walking in their house, doing light household chores as much as they could, and pursuing their hobbies or leisure time activities. In addition, the patients also received an Education Booklet in which regular physical activity was advised. These activities could be the reason for improvements in physical functioning and role functioning of the participants of the intervention group.

The studies of the Sharif F et al, 2010¹⁷ and Montazeri A et al, 2001²⁰ suggested that participating in a peer support group brings positive cognition, emotions, and behaviors and reduces the consequences of devastating life events²⁰, resulting in reducing loneliness, relieving symptoms, as well as improving attitude towards the future¹⁷. In this study, peer supporters delivered emotional support by sharing their experience during and after the treatment period. The participants also contacted the peer supporters or the other patients whenever they needed help, support or suggestions. By doing so, they felt that they were not alone to face the stressful life event, and they felt relief.

Fatigue, nausea and vomiting were the common symptoms that the patients suffered as the side effects of chemotherapy. In this study, the participants of the intervention group received the Education Booklet describing the side effects of chemotherapy and their management, advice on healthy eating and regular physical activity. Therefore, they gained the knowledge about the possible ways to manage these difficult side effects more effectively. They also had the chance to discuss about the management of these side effects with the peer counselors during the telephone contacts as well as in the group meetings.

By improving the QOL, the mortality risk and recurrence risk could be reduced¹⁰, and survival rate could be extended¹¹ in breast cancer patients. Therefore, it is important to find out the possible approaches to promote QOL of the breast cancer patients in future similar studies.

The peer support intervention program for cancer patients could be adopted widely in Myanmar as well as in the other countries with a similar context. Moreover, this kind of inexpensive intervention program could be adapted for the treatment other chronic non-communicable diseases such as diabetes, hypertension and other cardiomyopathies.

This study had some limitations, firstly, the intervention had a time limitation (about 5 months) so that long-term intervention might have revealed different results. Secondly, a package of peer support intervention (including individual counseling, telephone support, and group meeting) was delivered directly to the participants, thus, it was not possible to measure the effect of an individual component on QOL changes. In addition, peer counselors were not involved in the planning stage so, their suggestions or options on this intervention were not

included. Lastly, at post-intervention, the mean difference in QOL scores between intervention and control groups were mostly smaller than 19, and therefore, it could be an under-powered study.

A difficulty that emerged during the intervention period was that although two peer counselors were assigned to facilitate their own, fixed peer group meeting, they had sometimes to be replaced with another counselor when the assigned counselors could not attend for personal circumstances. This could also have significant effect to the study outcomes.

RECOMMENDATIONS

To evaluate the sustainability of the effect of the intervention program, follow-up assessment should be done at longer intervals (such as six months or one year) after the intervention program begins.

A multi-arm clinical trial design that compare our three experimental interventions to a common control group should be conducted to find out the effect of each intervention on the study outcomes.

Peer counselors should be involved in the beginning, at planning of the intervention, to get their opinion on all aspects of the intervention.

Finally, in future peer support interventions, the constant availability of the peer supporters should be managed cautiously and with full support of the study team.

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