

**Original article**

**Symptom Experience and Quality of Life of Patients  
with Breast Cancer Receiving Chemotherapy in Bangladesh**

*Begum MSN<sup>1</sup>, Petpichetchian W<sup>2</sup>, Kitrungrote L<sup>3</sup>*

**Background:** The present study was aimed to the relationships between symptom severity and distress and quality of life (QoL) of patients receiving chemotherapy for breast cancer.

**Objectives and methodology:** A total number of 132 patients, attending both In-patient and Out-patient department and fulfilling the recruitment criteria were included in the study. A self-report questionnaire was used to collect data from the eligible participants by the primary investigator. The data were analyzed by using descriptive and inferential statistical tools.

**Results:** On average, the participants of the study experienced seventeen symptoms with moderate level. The level of QoL of the participants was at moderate level (M=2.02, SD=0.39). Among all the subscales, the physical well-being had the lowest score and social well-being had highest score. Symptom experience and quality of life showed significant negative correlation.

**Conclusion:** The patients with breast cancer would experience high symptoms during a 7-day period after receiving chemotherapy of the previous cycle. Nurses need to perform full measurement of multiple symptoms when care for breast cancer patients after the administration of chemotherapy.

**Keywords:** breast cancer; chemotherapy; symptom experience; QoL

*Bangladesh Journal of Medical Science Vol. 15 No. 02 April'16. Page : 201-206*

**Introduction:**

Breast cancer cases are not uncommon in Bangladesh. In a recent study it has been reported that there are about 30,000 new cases with breast cancer in Bangladesh every year<sup>1</sup>. The recent rise of breast cancer, however, attributed to combination of factors increased life expectancy, population growth and people seeking medical treatment for the problem. Chemotherapy appeared being used as a treatment modality to control the breast cancer disease<sup>2</sup>. Chemotherapy is being used as neo-adjuvant and adjuvant chemotherapy in order to lessen extensive surgery and to reduce the risk of recurrence. Though chemotherapy provides benefits, it has many side effects<sup>2</sup> including various unpleasant symptoms. Thirteen out of 28 symptoms were reported in more than 50% of patients with breast cancer undergoing chemotherapy regimen<sup>3</sup>. The most common symptoms reported were fatigue,

sleep disturbance, drowsiness, distress and sadness, hot flashes and sweats, and pain<sup>4,5</sup>. Suwisith and colleagues revealed that the participants stated mild to moderate level of symptom severity<sup>3</sup>.

Chemotherapy induced symptoms found to affect patients' quality of life (QoL). Akin et al demonstrated negative impact on QoL of the participants received different types of chemotherapy regimen<sup>6</sup>. Though numerous studies have been done on symptom experience and QoL worldwide, there are inadequate information on symptom experience and QoL of patients with breast cancer receiving chemotherapy in Bangladesh<sup>7,8</sup>. This study was carried out to explore the symptom experience and QoL of patients with breast cancer receiving chemotherapy because the deficit of studies in culture of Bangladesh.

**Materials and Methods:**

The study was conducted at National Institute of

1. Mosammat Shamsun Naher Begum, RN, MN, Faculty of Nursing, Medical/Surgical Nursing, PSU, Thailand
2. Dr. Wongchan Petpichetchian, RN, Asst. Professor, Faculty of Nursing, Department of Surgical Nursing, PSU, Thailand
3. Dr. Luppana Kitrungrote, RN, Asst. Professor, Faculty of Nursing, Department of Surgical Nursing, PSU, Thailand

**Corresponds to:** Mosammat Shamsun Naher Begum. MSN, Senior Staff Nurse, Chittagong Medical College & Hospital, Chittagong, Bangladesh. **E-mail:** shamsun\_naher2000@yahoo.com

Cancer Research and Hospital (NICRH), Bangladesh during 2013 to 2014. The instrument used in this study was a structured questionnaire including three parts: (1) The Demographic and Health-related Questionnaire; (2) The Chemotherapy Symptom Assessment Scale (C-SAS); and (3) the Functional Assessment of Cancer Therapy-Breast (FACT-B) (Version 4). The Demographic and Health-related Questionnaire included: personal information of participants (age, gender, living place, marital status, religion, education, occupation, monthly income); health and illness information of participants (chemotherapy cycle of the current one, functional status/ability to perform daily activity, duration of illness since breast cancer diagnosis, breast cancer stage, family history of breast cancer, the conventional treatment, chemo regimen, symptom prophylaxis, comorbid disease); and environmental information of participants (having family caregivers to provide support, economic support).

The CSAS was used to explore the symptom experience of patients with breast cancer receiving chemotherapy<sup>11</sup>. It was contained 24 symptoms related to chemotherapy. Symptom occurrence, symptom severity and symptom distress of each of 24 symptoms were rated during a 7-day period after receiving chemotherapy of the previous cycle on different rating scale. These were ranged yes (1) or no (0) for occurrence, mild (1) to severe (3) for symptom severity and not at all (1) to very much (4) for symptom distress. A higher score shows more symptom experience. The Cronbach's alpha reliability reported in a previous study 0.75<sup>12</sup> and in the current study to be 0.88.

The FACT-B was a well validated and widely used questionnaire used to measure QoL of patients with breast cancer<sup>13</sup>. It was composed of four well-beings of participants (physical, social/family, emotional and functional) included breast cancer-specific subscale. It was rated by 5-point Likert scale not at all (0) to very much (4). All items of the FACT-B were calculated by averaging all items in every subscale and total scores were multiplied. The higher scores of FACT-B indicated the better quality of life.

Purposively 130 breast cancer patients were recruited. Recruitment criterions were: (1) newly diagnosed with breast cancer; (2) age 18 years or older; (3) receive chemotherapy at least one cycle and is now on the second cycle or more; and (4) understand and speak Bengali language. The sample

was taken from an in-patient department (IPD) and an out-patient department (OPD) in that hospital. Calculated sample size was 123 taking correlation coefficient [ $r=0.25$  estimated from the previous study]<sup>9</sup> and power of the study as 0.80 and alpha of 0.05<sup>10</sup>.

Ethical approval was taken from Research Ethics Committee (REC), Faculty of Nursing, Prince of Songkla University, Thailand and the Ethics Committee (EC), NICRH, Dhaka, Bangladesh. The patients were under no pressure to consent for the study. Confidentiality and anonymity of participants were maintained.

Continuous and categorical variables were examined and described using descriptive statistics. Symptom experience (symptom severity and symptom distress) and QoL were examined by Pearson's Product-Moment correlation Coefficient analysis.

### **Results:**

Median age of the patients was 45 years (IQR=10) and range 24 to 70 years. More than half (53.1%) of the participants had no formal education. The majority (2/3<sup>rd</sup>) was Muslim and came from remote areas. They received chemotherapy at different cycle with various type of regimen. Half of the cases (51.5%) had Doxorubicin and cyclophosphamide (AC) regimen. The majority of patients (70.8%) had stage IV breast cancer disease. More than ninety percent (92.3%) of the patients had no family history of breast cancer.

#### *Symptom experience: Symptom occurrence*

On average 17 symptoms [ $17.32 \pm 2.01$  (mean  $\pm$  SD); 12-22 (range)] were reported by the participants in a 7-day period after receiving the chemotherapy of immediate previous cycle. The commonly found symptoms were feeling weak, feeling anxious/worried, changes to appetite or taste, feeling low or depressed, difficulty sleeping, feeling unusually tired, hair loss, mouth or throat problems, nausea, and skin or nails problems. These symptoms were reported in 88.5% - 100% of cases.

#### *Symptom severity*

The overall symptom severity was at a moderate level  $2.27 \pm 0.25$  (mean  $\pm$  SD). Feeling unusually tired (79.8%), anxious/worried (75.4%) and weak (75.4%) were ranked first and second during a 7-day period after receiving chemotherapy of the previous cycle.

#### *Symptom distress*

The overall distress was at a moderate level with a mean of  $2.88 \pm 0.41$  (mean  $\pm$  SD). The most distressing symptoms were reported by 52.3%

**Table I:** Overall level of severity and distress of patients with breast cancer receiving chemotherapy (n=130)

| Subscale | <i>M (SD)</i> | Min - Max | Skewness | Kurtosis | Level    |
|----------|---------------|-----------|----------|----------|----------|
| Severity | 2.27 (0.25)   | 2 – 3     | - 0.99   | - 1.14   | Moderate |
| Distress | 2.88 (0.41)   | 2 – 4     | - 2.00   | - 0.71   | Moderate |

M, Mean; SD, Standard Deviation; Min, Minimum; Max, Maximum

**Table II:** The Quality of Life of Patients with Breast Cancer Receiving Chemotherapy (N = 130)

| Subscales | Min - Max | <i>M(SD)</i> | Skewness | Kurtosis | Level    |
|-----------|-----------|--------------|----------|----------|----------|
| PWB       | 0 – 3     | 1.17 (0.66)  | 3.57     | 1.12     | Low      |
| SWB       | 2 - 4     | 3.14 (0.66)  | -1.91    | -1.76    | High     |
| EWB       | 0 – 3     | 1.38 (0.61)  | 1.71     | 0.26     | Moderate |
| FWB       | 1 – 4     | 2.05 (0.65)  | 3.57     | -0.62    | Moderate |
| ACB       | 1 – 3     | 2.34 (0.45)  | -4.22    | 2.39     | Moderate |
| Total QoL | 1 – 3     | 2.02 (0.39)  | 2.10     | -0.22    | Moderate |

PWB, Physical Well-being; SWB, Social Well-being; EWB, Emotional Well-being; FWB, Functional Well-being; QoL, Quality of life; ACB, Additional concerns of breast cancer.

of the participants within the 7-day period after receiving chemotherapy. These were feeling unusual tired, feeling weak, changes to appetite or taste, feeling low or depressed, feeling anxious or worried, nausea, and difficulty in sleeping.

**Quality of life**

The overall mean score of QoL and each subscale were at a moderate level. Concerning the subscale score, the highest score was social well-being/relationships  $3.14 \pm 0.66$  (mean  $\pm$  SD), whereas the lowest scores in the physical well-being was  $1.17 \pm 0.66$  (mean  $\pm$  SD).

**Relationship among the variables**

Relationships among the variables include Physical Well-being, Social Well-being, Emotional Well-being, Functional Well-being, Breast Cancer-specific Subscale, Symptom Severity and Symptom Distress. The Pearson’s Product-Moment Correlation Coefficient was used to examine the relationship between symptom severity, symptom distress and QoL. The findings showed a significantly negative correlation among symptom severity and QoL ( $r = -0.48, p < 0.01$ ) and symptom distress and QoL ( $r = -0.50, p < 0.01$ ).

**Discussion:**

All the participants of the study who had received chemotherapy were of median age 45 years (IQR=10). Majority of them had received AC based chemotherapy following paclitaxel of those who were married and had no or less education. The results are congruent with a earlier study conducted in Israel. However, most of their study participants

(62.5%) were college graduates. They found a cluster of four symptoms: Pain, sleep disturbance, fatigue and depression to be at a high level (37.5%)<sup>5</sup>. The largest proportion of participants (70.8%) had metastasis breast cancer found throughout all the breast cancer cases, this finding is comparable with other studies<sup>1,14</sup>. Anderson et al stated that in the developing world have advanced stage disease at initial presentation<sup>14</sup>. The largest numbers of patients were found in Stage III+ because the majority of women had large tumors which were associated with regional adenopathy, tumors or lymph nodes and were identified due to underlying structures<sup>1</sup>.

**Symptom occurrence:** The occurrence of symptom was high with average 17 symptom (Min–Max = 12-22) in Bangladeshi breast cancer patients. The findings are congruent with a previous study, where five symptoms (lack of energy, worrying, difficulty sleeping, feeling drowsy, and sweats) observed highest occurrence among 23 reported symptoms<sup>15</sup>. Doxorubicin based chemotherapy regimen formed physical and psychological symptoms reported newly diagnosed breast cancer patients<sup>9</sup>.

Williams and Schreier showed that breast cancer patients who had CMF or AC based chemotherapy experienced the four symptoms (fatigue, nausea and vomiting, and taste change) most frequently<sup>16</sup>. Approximately 90% participants reported a number of symptoms who had completed primary treatment, received adjuvant chemotherapy and Stage I to Stage IV breast cancer diseases<sup>17</sup>. Those

**Table III:** Correlation of Symptom Severity, Symptom Distress, Physical Well-Being, Social Well-Being, Emotional Well-Being, Functional Well-Being, Additional concerns of breast cancer, and QoL (N=130)

|                  | Symptom Severity | Symptom Distress | Total QoL | PWB   | SWB   | EWB    | FWB  | ACB |
|------------------|------------------|------------------|-----------|-------|-------|--------|------|-----|
| Symptom Severity | 1                |                  |           |       |       |        |      |     |
| Symptom Distress | .86**            | 1                |           |       |       |        |      |     |
| Total QoL        | -.48**           | -.50**           | 1         |       |       |        |      |     |
| PWB              | -.40**           | -.40**           | .74**     | 1     |       |        |      |     |
| SWB              | -.30**           | -.31**           | .58**     | .19*  | 1     |        |      |     |
| EWB              | -.20**           | -.28**           | .70**     | .41** | .16** | 1      |      |     |
| FWB              | -.48**           | -.52**           | .70**     | .37** | .41** | .31**  | 1    |     |
| ACB              | -.08             | .019             | .48**     | .38** | -.02  | -.39** |      | 1   |
|                  |                  |                  |           |       |       |        | 0.18 |     |

Note. \*\* $p < .01$ , \* $p < .05$

symptoms usually contributed to patients QoL. Fatigue, nausea/vomiting, insomnia, appetite loss and systemic therapy side effects dominated to decrease sexual functioning and sexual enjoyment. These symptoms were shown in participants who currently receive chemotherapy<sup>18</sup>.

**Symptom severity:** The overall, symptom severity level in this study was at a moderate level, and it is congruent with a previous study<sup>1</sup>. Symptom severity is calculated by observing number of participants (%) according to level of symptom severity. The highest number of participants rated the following three symptoms as “severe”: feeling unusually tired, feeling anxious or worried, and feeling weak (Mdn = 3). Feeling unusually tired and feeling weak considered to be “fatigue.” This is consistent with a study conducted by Huang et al. who found that the severity score was high in fatigue<sup>19</sup>. For psychological symptoms: feeling anxious/worried as well as feeling low or depressed, nearly 80% of participants who reported these symptoms rated them as severe with a previous study<sup>15</sup>. The researchers showed that three symptoms i.e., hair loss, problems with sexual interest, and “I don’t look like myself” cause the highest severity that were associated to change in body image reported by patients with breast cancer who received chemotherapy prior to radiotherapy.

The lowest severity of symptoms was composed of nausea or vomiting before treatment. The reason might be their long journey by public transport

in order to take chemotherapy. This finding was not congruent with previous study<sup>20</sup>. They found that the African Americans reported less severe symptom on fatigue and treatment side effects than European Americans.

**Symptom distress:** Symptom distress was found in the present study through symptoms analyzed from a 7-day period after receiving chemotherapy from the previous cycle. The highest distressing symptom was found feeling unusually tired in the current study which is nature of fatigue. Hofman et al. found that cancer-related fatigue notably was associated with psychological distress and it can be a barrier of patient’s ability to work<sup>21</sup>. Breen et al. reported that the most distress come from physical symptoms<sup>22</sup>. These were pain, constipation, and nausea. However, their regression analysis results pointed out that symptom distress for the malaise, nutritional and gastrointestinal factors were independent predictors of depression.

Overall, the distress scores were ranked at a moderate (2.88, SD = 0.41) level. These similarities found with Knobf study’s where the study participants reported symptom distress moderate to high level<sup>23</sup>. The other study found symptom distress scores were mild to moderate level reported by the participants with breast cancer who received adjuvant chemotherapy<sup>24</sup>.

**The level of QoL of patients with breast cancer receiving chemotherapy:** Moderate level QoL found in patients with breast cancer while highest

score ( $M = 3.14$ ,  $SD = 0.66$ ) in social well-being/relationships and lowest score ( $M = 1.17$ ,  $SD = 0.66$ ) in physical well-being, in Bangladesh. Social well-being is found to be better in patients who had more family supports. This finding is consistent with a study<sup>18</sup>. In early stage (II) breast cancer patients found better social functioning while they had hormone therapy or chemotherapy in their study. In addition, the participants of this study who reported highest social relationship in the social well-being domain had higher social support. This was consistent with a previous study<sup>20</sup>. The researchers suggested that the emotional well-being is associated with social support. Social support may not help to improve physical symptom, however it can help patients with breast cancer to cope better with their illness.

**Relationships with symptom experience and quality of life:** Moderate level of QoL among the study patients were inversely correlated with symptom severity and symptom distress. These findings were partial complied with Sarenmalm and colleagues study<sup>25</sup>. They advocated that strong correlation showed in high prevalent symptoms and overall symptom distress, and several domains of QoL. Higher symptoms severity and distress were shown among patients with the worse physical and emotional well-being<sup>19</sup>. In addition, the participants have many social relationships, but they were not trained-up. Thus, participants in this study had inadequate social support, and experienced at a moderate level of symptom and were more likely to have a poorer QoL. These findings are consistent with a previous study<sup>26</sup>.

Moreover, symptom distress was found to have the highest influence on QoL with correlation coefficients on total effect ( $r$ ) of  $-.50$ .

The findings of the study indicated that the patients with breast cancer receiving chemotherapy can obtain QoL through symptom experience. Symptom experience, mainly symptom distress, comes across to direct affect patient's QoL typically. In addition, the symptom severity of mood swings and irritability were the symptoms most strongly associated with a decrease in QoL<sup>27</sup>. One reviewed study found that the symptom distress of hair loss has been reported to be associated with lower QoL<sup>28</sup>. Similarly, the two domains of SMM are interrelated<sup>29</sup>.

#### **Conclusions:**

The results of the current study provided baseline evidence on the symptom occurrence, severity and distress of patients with breast cancer receiving chemotherapy. Findings suggest that nurses need to perform full measurement of multiple symptoms in breast cancer patients after the administration of chemotherapy. In addition, the data on occurrence, severity, and distress for the most frequent symptoms in this study. These are necessary for further investigation. It is assumed that this information would be key to design an interventional study to circumvent the symptoms experienced by the patients after following the chemotherapy. Reducing symptom severity and symptom distress is important to improve the QoL of patients with breast cancer receiving chemotherapy.

#### **Acknowledgement:**

The authors thank the patients for their consent to participate in the study and wish to acknowledge for every the support from the Ministry of Health and Family Welfare, the Directorate of Nursing Services, Government of Bangladesh, and Graduate School, PSU for partial financial to support to conduct the study.

**Conflict of interest:** None declared

#### **References:**

1. Story HL, Love RR, Salim R, Roberto AJ, Krieger L, Ginsburg OM. Improving outcomes from breast cancer in a low-income country: Lessons from Bangladesh. *Int J Breast Cancer* 2012;**423562**: 9. <http://dx.doi.org/10.1155/2012/423562>
2. American Cancer Society (ACS). Breast cancer facts & figures. Retrieved from <http://www.cancer.org>, 2011
3. Suwisith N, Hanucharunkul S, Dodd M, Vorapongsathorn T, Pongthavorakamol K, Asavametha N. Symptom clusters and functional status of women with breast cancer. *Thai J Nurs Res* 2008;**12**:153 - 164.
4. Prigozin A, Uziely B, Musgrave CF. The relationship between symptom severity and symptom interference, education, age, marital status, and type of chemotherapy treatment in Israeli women with early stage breast cancer. *Oncol Nurs Forum* 2010;**37**:411 - 418. <http://dx.doi.org/10.1188/10.ONF.E411-E418>
5. Golan-Vered Y, Pud D. Chemotherapy-induced neuropathic pain and its relation to cluster symptoms in breast cancer patients treated with paclitaxel. *Pain Pract* 2013;**13**:46 - 52. <http://dx.doi.org/10.1111/j.1533-2500.2012.00554.x>
6. Akin S, Can G, Durna Z, Aydinler A. The quality of life and self-efficacy of Turkish breast cancer patients undergoing chemotherapy. *EJON* 2008;**12**: 449 - 456.

- <http://dx.doi.org/10.1016/j.ejon.2008.07.006>
7. Chowdhury S, Sultana S. Awareness on breast cancer among the women of reproductive age. *JFRH* 2011;**5**:4.
  8. International Breast Cancer Research Foundation (IBCRF). Clinical practice guidelines: A program of amader gram cancer care & research center. Retrieved from [www.agbreastcare.org](http://www.agbreastcare.org), 2012
  9. Byar KL, Berger AM, Bakken SL, Cetak MA. Impact of adjuvant breast cancer chemotherapy on fatigue, other symptoms, and quality of life. *Oncol Nurs Forum* 2006;**33**:18 - 26. <http://dx.doi.org/10.1188/06.ONF.E18-E2610>. Polit DF, Beck CT. Inferential statistics. Nursing research (9th ed). Philadelphia, PA: Lippincott Williams & Wilkins, 2012; 404 - 425
  11. Brown V, Sitzia J, Richardson A, Hughes J, Hannon H, Oakley C. The development of the chemotherapy symptom assessment scale (C-SAS): A scale for the routine clinical assessment of the symptom experiences of 109 patients receiving cytotoxic chemotherapy. *Int J Nurs Stud* 2001;**38**:497 - 510. [http://dx.doi.org/10.1016/S0020-7489\(00\)00106-1](http://dx.doi.org/10.1016/S0020-7489(00)00106-1)
  12. Pinar G, Pinar T, Ayhan A. The strain and hopelessness in family caregivers of patients with gynecologic cancer receiving chemotherapy. *Int J Hematol Oncol* 2012;**24**:3.
  13. Brady MJ, Cella DF, Mo F, Bonomi AE, Tulsy DS, Lloyd SR, et al. Reliability and validity of the functional assessment of cancer therapy-breast quality of life instrument. *JCO* 1997;**15**:974 - 986.
  14. Anderson BO, Yip C-H, Ramsey SD, Bengoa R, Braun S, Fitch M et al. Breast cancer in limited-resource countries: Health care systems and public policy. *Breast J* 2006;**12**:54 - 69. <http://dx.doi.org/10.1111/j.1075-122X.2006.00203.x>
  15. Hofso K, Miaskowski C, Bjordal K, Cooper BA, Rustøen T. Previous chemotherapy influences the symptom experience and quality of life of women with breast cancer prior to radiation therapy. *Cancer Nurs* 2012;**35**:167 - 177. <http://dx.doi.org/10.1097/NCC.0b013e31821f5eb5>
  16. Williams SA, Schreier AM. The Effect of Education in Managing Side Effects in Women Receiving Chemotherapy for Treatment of Breast Cancer. *Oncol Nurs Forum* 2004;**31**:16 - 23. <http://dx.doi.org/10.1188/04.ONF.E16-E23>
  17. Bender CM, Ergun F S, Rosenzweig MQ, Cohen SM, Sereika SM. Symptom clusters in breast cancer across 3 phases of the disease. *Cancer Nurs* 2005;**28**:3. <http://dx.doi.org/10.1097/00002820-200505000-00011>
  18. Gokgoz S, Sadikoglu G, Paksoy E, Guneytepe U, Ozcakar A, Bayram N. Health related quality of life among breast cancer patients: a study from Turkey. *GJHS* 2011;**3**:2. <http://dx.doi.org/10.5539/gjhs.v3n2p140>
  19. Huang S-M, Tai C-J, Lin K-C, Tai C-J, Tseng L-M, Chien L-Y. A comparative study of symptoms and quality of life among patients with breast cancer receiving target, chemotherapy, or combined therapy. *Cancer Nurs* 2013;**36**:317-325. <http://dx.doi.org/10.1097/NCC.0b013e318268f86d>
  20. Rao D, Debb S, Blitz D, Choi SW, Cella D. Racial/ethnic differences in the health-related quality of life of cancer patients. *J Pain Symptom Manage* 2008;**36**:488-496. <http://dx.doi.org/10.1016/j.jpainsymman.2007.11.012>
  21. Hofman M, Ryan JL, Figueroa-Moseley CD, Jean-Pierre P, Morrow GR. Cancer-related fatigue: The scale of the problem. *Oncologist* 2007;**12**:4-10. <http://dx.doi.org/10.1634/theoncologist.12-S1-4>
  22. Breen SJ, Baravelli CM, Schofield PE, Jefford M, Yates PM, Aranda SK. Is symptom burden a predictor of anxiety and depression in patients with cancer about to commence chemotherapy? *The Med J Aust* 2009;**190**:99 - 104.
  23. Knobf TM. The menopausal symptom experience in young mid-life women with breast cancer. *Cancer Nurs* 2001;**24**:201 - 211. <http://dx.doi.org/10.1097/00002820-200106000-00006>
  24. Phligbua W, Pongthavornkamol K, Knobf TM, Junda T, Viwatwongkasem C, Srimuninnimit V. Symptom clusters and quality of life in women with breast cancer receiving adjuvant chemotherapy. *PRIJNR* 2013;**17**:249 - 267.
  25. Sarenmalm EK, Ohlen J, Jonsson T, Gaston-Johansson F. Coping with recurrent breast cancer: Predictors of distressing symptoms and health-related quality of life. *J Pain Symptom Manage* 2007;**34**:24 - 39. <http://dx.doi.org/10.1016/j.jpainsymman.2006.10.017>
  26. So WKW, Marsh G, Ling WM, Leung FY, Lo JCK, Yeung M, et al. The symptom cluster of fatigue, pain, anxiety, and depression and the effect on the quality of life of women receiving treatment for breast cancer: A multicenter study. *Oncol Nurs Forum* 2009;**36**:4. <http://dx.doi.org/10.1188/09.ONF.E205-E214>
  27. Ochayon L, Zelker R, Kaduri L, Kadmon I. Relationship between severity of symptoms and quality of life in patients with breast cancer receiving adjuvant hormonal therapy. *Oncol Nurs Forum* 2010;**37**:5. <http://dx.doi.org/10.1188/10.ONF.E349-E358>
  28. Lemieux J, Maunsell E, Provencher L. Chemotherapy-induced alopecia and effects on quality of life among women with breast cancer: A literature review. *Psycho-Oncology* 2008;**17**:317 - 328. <http://dx.doi.org/10.1002/pon.1245>
  29. Dodd M, Janson S, Facione N, Faucett J, Froelicher ES, Humphreys J, et al. Advancing the science of symptom management. *J Adv Nurs* 2001;**33**:668 - 676. <http://dx.doi.org/10.1046/j.1365-2648.2001.01697.x>