PSYCHOLOGICAL STRESS EVALUATION IN BREAST CANCER PATIENTS

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ABSTRACT

Objective: To assess the level of stress in breast cancer patients undergoing surgery and/or chemotherapy.
Study Design: Descriptive cross-sectional study.
Place and Duration of Study: This study was carried out from August 2015 to February 2016 in Military Hospital (MH) and Combined Military Hospital (CMH) Rawalpindi.
Material and Methods: The sample size was 61, which was calculated using WHO sample size calculator with a confidence interval of 95%, anticipated population proportion of 0.35 and absolute precision of 0.12. Purposive sampling technique was used. Stress levels were measured by using standardized Cohens stress Questionnaire. Data were entered and analyzed using SPSS version 20.
Results: The mean age of the patients was 46.72 ± 12.418 years. Among breast cancer patients who went for surgery all were having high stress that is 9 (100%). Among the chemotherapy patients, there was 1 (7.1%) in average stress category, 4 (28.6%) in moderate stress category and 9 (64.3%) in high stress category. Those patients who underwent surgery and chemotherapy sessions, there were 5 (13.2%) in average stress, 12 (31.6%) in moderate stress and 21 (55.3%) in high stress category but association was statistically not significant (p=0.165).
Conclusion: High level of stress was found in both the treatment modalities. Illiterate and unemployed had a considerably greater stress category as compared to educated and employed.

Keywords: Breast cancer, Breast carcinoma, Cancer, Chemotherapy, Psychological stress, Stress, Surgery,

INTRODUCTION

Breast cancer is a disease in which cancer cells are formed in breast tissue[1,2]. Approximately 50% of breast cancer is caused due to genetic, physiological or behavioral risk factors. Genetic risk factors include mutations in BRCA1 and BRCA2 genes[2]. Physiological and behavioral risk factors includes family history of breast cancer in first degree relatives, early menarche, late menopause, endocrine factors, obesity, alcohol consumption, smoking, psychological stress[3]. Other associated factors for breast cancer are mammographic density and previous benign disease. Together these all factors are responsible for its pathogenesis but it is still not very certain which of these factors plays a major role in pathogenesis of breast cancer[4]. Different treatment options are available but generally five types of standard treatment are used which include surgery, chemotherapy, radio-therapy, hormone therapy and targeted therapy. Most patients with breast cancerhavesurgeryto remove the cancer. Sentinel lymph node biopsy is performed after which the surgeon removes the tumor using breast-conserving surgery, total mastectomy or modified radical mastectomy. Preoperative or neoadjuvant therapy involves the use of chemotherapy to shrink the tumor and reduce the amount of tissue that has to be surgically removed[2]. After surgery has been performed postoperative or adjuvant therapy is done via radiation therapy, chemotherapy or hormone therapy in order to kill any cells that are left and to reduce the chance of recurrence of cancer[2]. Role of surgery in metastatic breast cancer is highly significant in patients of breast cancer who already have distant metastatic disease as resection of the breast tumour goes in their benefit which reduces the tumour load and influences metastatic growth[5]. Chemotherapy

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involves use of drugs to eradicate cancer cells. Systematic chemotherapy is done while treating breast cancer in which drugs are taken either orally, intravenously or intramuscularly to reach the blood stream and attack cancer cells. The way the chemo-therapyis given depends on the type and stage of thecancer[2]. Neoadjuvant chemotherapy is indicated in those patients having locally advanced breast cancer or in those patients who may benefit from size reduction before surgery and there is sufficient evidence that it leads to a better outcome[6]. The prominent changes occuring during cancer development are proliferative signaling, evading growth suppressors, resisting cell death, enabling replicative immortality, inducing angiogenesis, and activating invasion and metastasis. Genome instability is the primary event that paves way to these changes generating genetic diversity. Immune destruction and reprogramming of energy metabolism are two emerging hallmarks[7]. Globally the most common cancer is breast cancer[4]. In United States an overview of female breast cancer statistics including data on incidence, mortality, survival and screening is provided by American cancer society. Although factors like obesity, parity and risk of tumor subtype greatly affect the trend of breast cancer among populations, etiological heterogeneity is widely prominent in statistical studies. Highest breast cancer incidence rate seen in women aged 40 and older. Breast cancer rates have decreased by 34% evidently in all racial groups except American Indians. African and American women have less chances of cancer survival as compared to other races showing survival disparities among different races[8]. In females of Asia-Pacific region breast cancer accounted for 18% of all cases in 2012 and not only became the most common type of cancer among females in that region but also became fourth most common cause of cancer related deaths (9%)[9]. In Asia, Pakistan has the highest rate of breast cancer with a prominent rise in rural areas because it is an inherited disease and poor socio-economic conditions also contribute to the cause[10]. In Pakistan every 1 in 9 female patients is diagnosed with breast cancer as a result of which incidence of breast cancer in Pakistan is 2.5 times higher than neighbouring countries like Iran and India[11], accounting for 34.6% of female cancers[12]. In Lahore during 2010 till 2012, 15840 new cancers were diagnosed in 43% male patients and 57% female patients[13].

Patients diagnosed with breast cancer and undergoing treatment have profound influence on their physical, psychosocial, and overall well-being[14]. Moreover cytotoxic therapy/ chemotherapy plays a major role in causing psychiatric adverse effects[15] stressful patients are found to have increased inflammatory markers and administration of inflammatory cytokines is attributed to these symptoms/states[16]. Cancer is seen as a distressful disease in patients. Even though efficient treatment are available, physical and psychological changes are evident due to surgery, chemotherapy, fear of loss of a body part, partial loss of feminization, fear of recurrence, fear of an incurable disease and death which ultimately results in stress, suffering and stigmatization[17]. These all and many other factors are responsible for stress in breast cancer patients. These depressive and stressful events are experienced by about 22% of the patients[18]. This state may progress chronically and render the patient unable to perform his/her routine activities. It might progress to such an extent that the patient may commit suicide and one study has even showed high risk of suicide in association with cancer[12]. Patients having high stress levels need to be treated as well but only 35% of the patients are properly diagnosed and treated. This needs to be taken into account as stress may lead to worse prognosis and high mortality rate as they are less inclined to treatment owing to factors such as adverse effects from medication, patient dissatisfaction with treatment, social stigmatism resulting in worse clinical outcomes[12]. Stress and frustrations are the psychological phenomenon almost always associated with the devastating ailment of cancer. Studies have proved that stress affects the tumor

growth and its metastasis. Treatment options of cancer challenges women's body image and sexuality. Greater incidence among younger women causes fertility issues leading to psychological disturbances. Onset and progress of cancer are therefore widely affected by psychological factors. This study was initiated to assess the burden of stress in breast cancer patients who had undergone surgery, chemotherapy or both using Cohen's perceived stress questionnaire and to advise possible recommendations to reduce stress in post therapy patients.

METHODOLOGY

It was adescriptive cross sectional study design carried out in Military Hospital and Combined Military Hospital Rawalpindi. Duration of the study was 6 months i.e. from August 2016 to February 2017. Using WHO sample size calculator, the sample size was calculated to be approximately 61 with confidence interval (CI) of 95%, anticipated population proportion (P) of 0.35 and absolute precision (d) of 0.12. The sampling technique used was non-probability purposive sampling. Study population were diagnosed cases of breast cancer by classified medical and surgical specialist at tertiary care hospitals of Rawalpindi. Unwilling patients, breast cancer patient's not undergone chemotherapy or any surgical procedure and critically ill patients were excluded from study design.Verbal informed consent was obtained from the patients prior to getting the questionnaire filled. The Cohen's stress questions were used to evaluate the level of stress levels in breast cancer patients under treatment via chemotherapy or surgery or both. Each item was rated on a 5-point scale ranging from never (0) to very often (4). Ratings were summed up, with higher score indicating more perceived stress. Perceived stress scale (PSS-10) scores are obtained by reversing the scores on the four positive items: For example, 0=4, 1=3, 2=2, etc. and then summing across all 10 items. Items 4, 5, 7, and 8 are the positively stated items. Scores less than 13 are usually considered average stress, between 13-20 are considered moderate stress and more than 20 are considered to have high stress. Data were analyzed under SPSS version 20. Descriptive statistics was used

Table: Demographic characteristics of breast cancer patients (n=61).

Variables	Frequencies (%)
Age (Mean ± Standard Deviation)	46.72 ± 12.418
Occupational Status	
Employed	1 (1.6)
Unemployed	60 (98.4)
Education Status	
Illiterate	33 (54.1)
Under matric	9 (14.8)
Matriculation	5 (8.2)
Graduation	3 (4.9)
Post-Graduation	11 (18)
Type of treatment	
Surgery	9 (14.8)
Chemotherapy	14 (23)
Both	38 (62.3)
Stress category	
Average stress	6 (9.8)
Moderate stress	16 (26.2)
High stress	39 (63.9)

to calculate mean and standard deviation for quantitative variables like age etc. Frequency and percentage were calculated for qualitative variables like educational status, occupational status etc. Chi square test was applied to find out association between stress category and treatment received. A *p*-value of less than 0.05 was taken as statistically significant.

RESULTS

A total of 70 questionnaires were distributed out of which 67 were received back, 6 of them were incomplete and thus were discarded. The mean age of the patients was 46.72 ± 12.418 years. There was only 1 (1.6%) patient who was employed and rest of the population were unemployed that is 60 (98.4%). Regarding educational status more than half were illiterate that is 33 (54.1%), 9 (14.8%)were under matric, 9 (8.2%) had completed matriculation, only 3 (4.9%) had graduated and 11 (18%) had completed post-graduation. There were 9 (14.8%) who underwent surgery for breast cancer, 14 (23%) were having chemotherapy sessions and 38 (62.3%) went through both that is surgery followed by chemotherapy sessions. There were only 6 (9.8%) with no stress, 16 (26.2%) with moderate stress and 39 (63.9%) were having high stress. Details are in table & figure. Among breast cancer patients who went for surgery all were having high stress that is 9 (100%). Among the chemotherapy patients, there was 1 (7.1%) in average stress category, 4 (28.6%) in moderate stress category and 9 (64.3%) in high stress category. Those patients who underwent surgery and chemotherapy sessions, there were 5 (13.2%) in average stress, 12 (31.6%) in moderate stress and 21 (55.3%) in high stress category but association was statistically not significant (0.165).

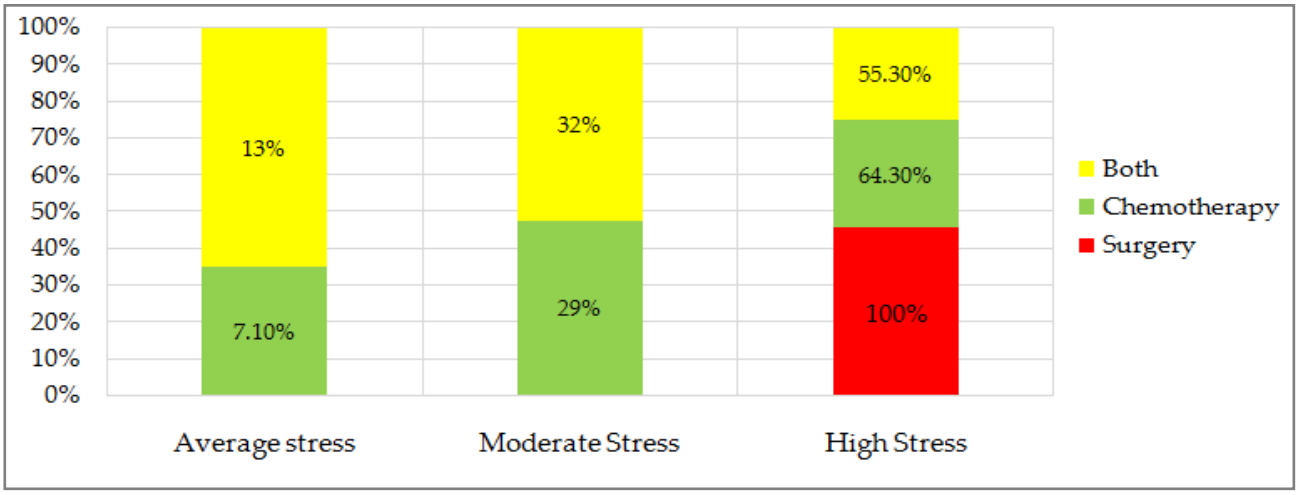

Figure: Psychological stress among breast cancer patient in different treatment modalities (n=61) (*p*=0.165).

DISCUSSION

Prospective study was carried out to analyzed the psychological adaptation of breast cancer patients having neoadjuvant chemo-therapy prior to surgery with limitations that a small sample size, non-probability sampling technique was used. It was found that the average level of stress at the time of diagnosis and prior to starting treatment was overall higher for all patients[19]. During 2013, in a cross sectional study enrolling breast cancer patients of age group 14 to 21 years old it was concluded that there lies an inverse relation between emotional intelligence and depression which means that by the reduction of emotional intelligence, depression was increasing or vice versa[20]. The number of breast cancer patients who are at the risk of developing stress after the diagnosis is evident from a global data according to which 425000 deaths occurred out of total of 1643000 cases in 2010[21,22]. Prevalence of post-traumatic

stress disorder was determined by a study carried out in China in 2016 according to which 9.6% of the breast cancer patients would develop the PTSD symptoms. Moreover patients who are younger, non-caucasian and undergoing a prolonged treatment are at a greater risk of having stressful condition[23]. Western countries require psychosocial support to combat stress owing to the high levels of psychological distress and depression. According to a study that 41% of recently diagnosed BC patients experience high levels of distress and 11% had clinically significant levels of depression[24]. Women of younger age group suffer more distress than older women according to previous studies on breast cancer survivors despite the fact that most cases of breast cancer occur in women over 50 years of age[14] Patients with more advanced disease were much prone to psychiatric disorders as they experience greater threat in their survival. The prevalence of psychiatric disorders in breast cancer patients was found to range from 22% to 50%. Despite this, up to 50% of psychiatric disorders remain unrecognized by medical, nursing and health-care personnel[25]. Previous studies have shown various factors that are linked with more distress and lower quality of life. These factors include feeling of tiredness, treatment related nausea, pain and surgery which is more invasive than chemotherapy[25]. Preoperative breast pain is also associated with depression and it also decreases subjective well-being as compared to patients who donot experience pain[26]. A Chinese research employed self-rating anxiety scale (SAS) and self-rating depression scale (SDS) to show stress in breast cancer patients. Sixty one percent of the enrolled patients were affected by anxiety and 48% by depression according to SAS and SDS respectively. The study also showed that women suffered from more anxiety (61%) and depression (53%) than men (anxiety, 39%; depression, 38%). This prevalence is consistent with previous reports of symptoms of psychosocial problems that ranged between 30% and 70%[27]. Patients and their caregivers suffer from social, emotional, economical along with psychological disturbances. A significant role in reduction of stress is being played by group psycho education. Statistics from a study showed that the proportion of depressed individuals reduced from 23.5% to 2.9% after the psychological intervention which would improve the five year survival from breast cancer[28].

CONCLUSION

High level of stress was found in both the treatment modalities. Low and moderate stress was particularly seen in younger patients who were undergoing chemotherapy. Illiterate patients were the most stressed ones. Those who were unemployed had a considerably greater stress as compared to those who were employed.

RECOMMENDATIONS

Breast cancer patients should receive cognitive behavioral stress management after effective treatment which have been proven to provide better quality of life and lower symptoms of depression as long as 15 years after treatment. Moreover psycho educational control groups can also help in skill management. Awareness campaigns regarding exercising regularly, learning to relax, having balanced meals along with timely rest and sleep and indulging oneself in healthy activities reduce the burden of stress.

CONFLICT OF INTEREST

There is no conflict of interest to be declared by any author.

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