

## Study of Anxiety and Depression among Breast Cancer Patients from North India

Vivek Srivastava<sup>1</sup>, Mumtaz Ahmad Ansari<sup>1</sup>, Anand Kumar<sup>1</sup>, Agni Gautam Shah<sup>1</sup>, Rakesh Kumar Meena<sup>1</sup>, Prasant Sevach<sup>1</sup> and Om Prakash Singh<sup>2</sup>

<sup>1</sup>Department of General Surgery, Institute of Medical Sciences, Banaras Hindu University, Varanasi, India

<sup>2</sup>Department of Medicine, Institute of Medical Sciences, Banaras Hindu University, Varanasi, India

**Corresponding Author:** Vivek Srivastava, Department of General Surgery, Institute of Medical Sciences, Banaras Hindu University, Varanasi, India, Tel: 0542-2312856; E-mail: vivekims97@gmail.com

Om Prakash Singh, Department of Medicine, Institute of Medical Sciences, Banaras Hindu University, Varanasi, India, Tel: 9453109844; E-mail: opbhu07@gmail.com

**Rec date: Jan 18, 2016; Acc date: Feb 15, 2016; Pub date: Feb18, 2016**

Copyright: © 2016 Srivastava V et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

### Abstract

**Background:** The prevalence of psychological distress among breast cancer patients is high, and they are at higher risk of developing severe anxiety, depression and potential mood disorders. In the present study, we conducted prospective study to determine the socio-economic factors associated with anxiety and depression among breast cancer patients and to assess the changes of psychological distress after the completion of treatment at 1 year of follow-up.

**Methods:** This study was conducted among breast cancer patients enrolled in the Department of General Surgery, Sir Sunderlal Hospital, Banaras Hindu University, Varanasi, India. A total of 200 patients who were diagnosed from January, 2013 to December, 2014 were interviewed using the questionnaires of Hospital Anxiety and Depression (HADS). The HADS was administered at two time points: at time of diagnosis and 12 months after completion of treatment. The associated factors investigated concerned socio-demographics, socio-economic background and the cancer stage.

**Results:** Prevalence of anxiety and depression among the breast cancer patients was 37.0% (n=74) and 28.0% (n=56) respectively. We found strong association of anxiety with age group (p=0.014), educational level (p=0.034), monthly income (p=0.001) and financial support (p=0.041). However, marital status (p=0.014), monthly income (p=0.017), accompanying person (p=0.005) and financial support (p=0.002) were significantly associated with depression. Binary logistic regression analysis shows age younger than 50 years old, those earned less income, illiterate or low level of education, being single and receiving less financial support are more likely to have anxiety. For depression, those earned less income, being single and receiving less financial support are more likely to have depression. At

the 12 month follow-up, 184 breast cancer patients were re-interviewed. We found significant improvement (P<0.001) after 12 month follow-up in both anxiety and depression level (mean anxiety level improved from 11.14 ± 4.23 to 8.64 ± 3.63 and mean depression score improved from 6.87 ± 3.11 to 5.13 ± 4.51).

**Conclusion:** Study clearly shows that younger age group, low monthly income, having less financial support, low education level and being single were associated with anxiety and depression. For managing breast cancer patients, more care or support should be given to this type of patients as they are at high risk of anxiety and depression.

**Keywords:** Breast cancer; Anxiety; Depression; Hospital Anxiety; Depression score

### Introduction

Breast cancer is the most frequently diagnosed cancer and the leading cause of cancer death in females worldwide, accounting for 23% (1.38 million) of the total new cancer cases and 14% (458,400) of the total cancer deaths in 2008. In Asia, breast cancer incidence peaks among women at the age of 40 year whereas in the United States and Europe, it peaks among women at the age of 60 year. In India pre-menopausal patients constitute about 50% of all patients. Over 100,000 new breast cancer patients are estimated to be diagnosed annually in India. As per the ICMR-PBCR (Indian Council of Medical Research- Population Based Cancer Registries) data, breast cancer is the commonest cancer among women in urban registries of Delhi, Mumbai, Ahmedabad, Kolkata, and Trivandrum where it constitutes >30% of all cancers in females. In the rural PBCR of Barshi, breast cancer is the second commonest cancer in women after cancer of the uterine cervix. The age standardized incidence rates (AARs) range from 6.2-39.5 per 100,000 Indian women. The AARs vary from

region, ethnicity, religion, with the highest incidence reported at 48.3 per 100,000 women in the Parsi community of Mumbai. The rise in incidence of 0.5-2% per annum has been seen across all regions of India and in all age groups but more so in the younger age groups (<45 years) [1-4].

Studies have shown that prevalence of psychological distress among breast cancer patients is high, and they are at higher risk of developing severe anxiety, depression and potential mood disorders [5-7]. Depression and anxiety are the two most common psychiatric co-morbidities encountered in breast cancer patients [8,9]. Breast cancer patient may experience depression and/or anxiety at any stage of their illness from pre-diagnosis to the terminal phase of the illness. Studies in the Western countries have shown that the prevalence of depression ranges from 1% to 56%, whereas the prevalence of depression from Asian studies is between 12.5% and 31% [10]. The difference in the prevalence rate of anxiety disorders depends greatly on the type of anxiety disorder being measured. A study by Dastan and Buzlu [11] reported that 35% of their breast cancer patients had anxiety, while an Asian study reported a lower prevalence of 16% [12]. According to Burgess et al. [13], it seemed that the prevalence of depression and anxiety among women with breast cancer declined from the first year of diagnosis to the fifth year after diagnosis from 48% to 15%.

Recently, more attention has been paid to the rapidly increasing prevalence of psychiatric problems happening in breast cancer patients. As we know, diagnosis and treatment of breast cancer cases can be a very stressful issue during and after the treatment. Nearly 30% of those who survived cancers were reported some sort of psychological problems [14]. Cancer may induce the development of psychology disorder especially women whom having breast cancer and the effects can be on both the patients and their family members. It is very important to take early measures to treat these psychosocial problems for breast cancer patients and their partners thus will improve their quality of life later [15].

Studies based on socioeconomic effect on anxiety and depressions among breast cancer patients have been reported with variable findings [16,17]. This study aimed to investigate the impact of breast cancer diagnosis and its treatment on psychosocial distress by assessment of level of anxiety and depression at the time of diagnosis and 1 year after completion of treatment. It was assumed that the level of psychological distress would be higher around the time of diagnosis and during treatment than at the end of the treatment course. Thus, we were interested: i) the intensity of psychological distress at the time of diagnosis of breast cancer; ii) association of various socio economic factors with psychological distress; and iii) changes of psychological distress 1 year after the completion of treatment.

## Methods

This prospective study was conducted among 200 women who were diagnosed with breast cancer from January, 2013 to December, 2014 in S. S. Hospital of Department of General

Surgery, Institute of Medical Sciences, Banaras Hindu University, Varanasi, India. The intention was to interview all newly diagnosed breast cancer patients attending the surgical OPD (out patient department). Any patient with an established diagnosis of breast cancer by tru cut biopsy was interviewed before the treatment was initiated. Follow up assessment was scheduled 12 months after the completion of treatment during follow-up. The questionnaire at both pre-diagnosis and follow up assessment was administered by a trained female staff connected to research team in face to face interviews and in all instances the questions were read out loud. The study was approved by the Institute Ethical Committee and a written informed consent was obtained by all the patients. There were no restrictions on patient selection with regard to histology of breast cancer, disease stage and demographic characteristics.

Anxiety and depression were measured using the Hospital Anxiety and Depression Scale (HADS) [18]. This is a widely used valid questionnaire to measure psychological distress in cancer patients [19]. The results of Indian translation and validation of HADS used in cancer patients has been published earlier. Also, it is a brief and well-established instrument with cut-off scores suggestive of a psychiatric diagnosis [20-22]. HADS is a 14 item questionnaire consisting of two subscales: anxiety and depression. Each item is rated on a four-point scale, giving maximum scores of 21 for each anxiety and depression. Scores of 11 or more on either subscale are considered to be a significant 'case' of psychological morbidity, while scores of 8-10 represent 'borderline' and 0-7 'normal'. Demographic data were collected using a short questionnaire at the patients' first interview and included recording of age, level of education, marital status, number of children, employment status, monthly income, financial support, accompanying person and visit per month.

Data were analyzed using SPSS version 16. Statistical test were carried out with univariate, bivariate and multivariable analysis. For univariate analysis, descriptive analysis was used while for bivariate analysis, Chi-square test and Correlation test were used. Binary logistic regression was used for multivariable analysis to control for possible confounders. For paired samples t-test was applied to compare the mean score difference of baseline and follow-up anxiety and depression. P-value <0.05 is considered as statistically significant.

## Results

In our study, majority of cases aged between 41 to 60 years (59.50%) followed by the age group of 20 to 40 years (34.0%) and the mean age was  $49.65 \pm 13.51$  years. Majority of the respondents were married (79.50%) compared to those who were still single/divorce (11.50%) or widowed (9.0%). Most of the women with breast cancer in this study were illiterate or had basic educational level up to primary school (63.50%). We found that majority of women were parous and had living children (88.0%). Most of the women had monthly family income <2000 rupees per month (55.50%) followed by the monthly income of rupees 2000-4000 (29%) (**Table 1**).

**Table 1:** Socio and demographic characteristics of the patients

Characteristic	No. of cases (n=200)	Percentage
Age group (years)		34
20-40	68	59.5
41-60	119	6.5
>60	13	
Educational level		34
Illiterate	68	29.5
Primary	59	21
Secondary	42	15.5
College/university	31	
Marital status		11.5
Single / Divorce	23	79.5
Married	159	9
Widowed	18	
No. of Children		88
<5	176	12
>5	24	
Employment Status		79.5
No	159	20.5
Yes	41	
Monthly Income (Rs)		55.5

< 2000	111	29
2000-4000	58	15.5
>4000	31	
Accompany by		42.5
Family	85	37.5
Friends	75	20
Own self	40	
Visit per month		94.5
<2 times	189	5.5
>2 times	11	

Out of 200 women with breast cancer, 74 (37.0%) were screened of having anxiety while 126 (63.0%) considered as normal. For depression, 56 (28.0%) were screened as having depression and 144 (72.0%) were considered as normal. Table 2 shows that for anxiety, age group ( $p=0.014$ ), educational level ( $p=0.034$ ), monthly income ( $p=0.001$ ) and financial support ( $p=0.041$ ) are significant factors. Whereas for depression, associated factors include marital status ( $p=0.014$ ), monthly income ( $p=0.017$ ), accompanying person ( $p=0.005$ ) and financial support ( $p=0.002$ ). Binary logistic regression analysis shows younger age, those earned less income, illiterate or low level of education, being single and receiving less financial support are more likely to have anxiety. For depression, those earned less income, being single and receiving less financial support are more likely to have depression (**Table 2**).

**Table 2:** Factors Associated with Anxiety and Depression

	Anxiety present (n=74)		Anxiety absent (n=126)		p	Depression present (n=56)		Depression absent (n=144)		p
	No	%	No	%		No	%	No	%	
Age group (years)					0.01					0.78
20-40	17	22.97	51	40.48		21	37.5	47	32.64	
41-60	49	66.22	70	55.56		32	57.1	87	60.42	
>60	8	10.81	5	3.97		3	5.36	10	6.94	
Educational level					0.03					0.26
Illiterate	33	44.59	35	27.78		24	42.9	44	30.56	
Primary	19	25.68	40	31.75		16	28.6	43	29.86	
Secondary	16	21.62	26	20.63		11	19.6	31	21.53	
College/university	6	8.11	25	19.84		5	8.93	26	18.06	
Marital status					0.16					0
Single	5	6.76	18	14.29		2	3.57	21	14.58	
Married	60	81.08	99	78.57		52	92.9	107	74.31	

Widowed	9	12.16	9	7.14		2	3.57	16	11.11	
No. of Children					0.4					0.54
<5	67	90.54	109	86.51		48	85.7	128	88.89	
>5	7	9.46	17	13.49		8	14.3	16	11.11	
Employment Status										
No	62	83.78	97	76.98	0.25	43	76.8	116	80.56	0.55
Yes	12	16.22	29	23.02		13	23.2	28	19.44	
Monthly Income (Rs)					0					0
<2000	56	75.68	55	43.65		40	71.4	71	49.31	
2000-4000	13	17.57	45	35.71		11	19.6	47	32.64	
>4000	5	6.76	26	20.63		5	8.93	26	18.06	
Accompany by					0.23					0
Family	34	45.95	51	40.48		33	58.9	52	36.11	
Friends	30	40.54	45	35.71		18	32.1	57	39.58	
Own self	10	13.51	30	23.81		5	8.93	35	24.31	
Visit per month					0.55					0.53
<2 times	69	93.24	120	95.24		52	92.9	137	95.14	
>2 times	5	6.76	6	4.76		4	7.14	7	4.86	
Financial support					0.04					0
Self	44	59.46	67	53.17		35	62.5	52	36.11	
Government	25	33.78	34	26.98		15	26.8	57	39.58	
Others	5	6.76	25	19.84		6	10.7	35	24.31	

At the 12 month follow-up, 184 breast cancer patients were re-interviewed, and the remaining 16 patients were excluded from the study. Of these 16 patients, 14 were lost to follow up and two were dead (Table 3).

**Table 3:** Binary Logistic Regression \*Significant of p<0.05.

	p-value	Odds Ratio (OR)	95% CI	
			Lower	Upper
Anxiety				
Constant	0.08	0.8		
Age group	0.00*	3.41	1.47	5.41
Educational status	0.01*	2.56	1.33	3.61
Monthly Income	0.00*	2.15	1.23	3.43
Financial Support	0.00*	2.11	1.21	3.22
Depression				
Constant	0.06	0.6		
Marital status	0.00*	4.13	1.58	5.13
Monthly Income	0.00*	3.31	1.36	4.11

Accompany by	0.23	1.41	0.58	2.66
Financial support	0.00*	3.88	1.43	4.89

Table 4 shows the anxiety and depression scores of breast cancer patients at two time points. Anxiety improved over time and showed a significant difference (P<0.001), the level of anxiety at pre-diagnosis (mean score 11.14) and at 12 months follow-up, patients rated lower (mean score 8.64). Also, a significant decline for overall depression score was detected at 12-month follow-up (P<0.001) 6.87 ± 3.11 in base line compared to 5.13 ± 4.51 at 12 months. The results indicated that 25.0% and 21.20% of the patients experienced severe anxiety and depression at 12 months assessment. However, on grading the anxiety and depression score, it was seen that there was a decline in severe anxiety score from 37% to 25.0% at 12 months follow up, but the severe depression score at 12 month follow up from 28.0% to 21.20% (Table 4).

**Table 4:** Anxiety and depression scores at two points in breast cancer patients.

	Baseline (n=200)	12-month follow-up (n=184)	P
Anxiety			

0-7	73 (36.5)	96 (52.17)	
10-Aug	53 (26.5)	42 (22.83)	
21-Nov	74 (37.0)	46 (25.0)	
Mean ± SD	11.14 ± 4.23	8.64 ± 3.63	<0.001
Depression			
0-7	101 (50.5)	101 (54.89)	
10-Aug	43 (21.5)	44 (23.91)	
21-Nov	56 (28.0)	39 (21.20)	
Mean ± SD	6.87 ± 3.11	5.13 ± 4.51	<0.001

## Discussion

This study was conducted among 200 women with breast cancer, the prevalence of anxiety and depression was 37.0% and 28.0% respectively. Studies have shown that the prevalence of psychological distress among breast cancer patients is high, and they are at higher risk of developing severe anxiety, depression and potential mood disorders [5–7]. In a study conducted by Hassan et al. [23] found that the prevalence of anxiety and depression was 31.7% and 22.0% respectively. Another study conducted by Vahdaninia et al. [24] found that 38.4% of the patients experienced severe anxiety and 22.2% had severe depression. One study on a large sample of cancer patients reported that the prevalence of depression among breast cancer survivors was about 32.8% [25].

In this study, age group, educational level, monthly income and financial support were associated with anxiety; whereas having monthly income, accompanying person, financial support and being single were the associated with depression. In a study conducted by Hassan et al. [23] found age group, monthly income were associated with anxiety; whereas financial support and being single were the associated with depression.

In our study, logistic regression analysis shows younger age, those earned less income, illiterate or low level of education, being single and receiving less financial support are more likely to have anxiety. For depression, those earned less income, being single and receiving less financial support are more likely to have depression. Anxiety shows much higher prevalence rather than depression prevalence. This finding supported by the study conducted by Hassan et al. [23], which shows that age younger than 50 years old and those earned less income are more likely to have anxiety. For depression, those receiving less financial support and employment status are more likely to have depression. In his study, those who have anxiety 52.3 percent of them developed depression. Anxiety was significantly associated with depression with a fair strength of relationship which explains 25% depression occurrence among the breast cancer patients. From the regression analysis, it is significantly shows that those breast cancer patients who have anxiety is 12 times higher at risk of getting depression.

In our study, majority of patients had age group 41-60 years (59.5%) followed by age group 20-40 years (34.0%) women shows the highest prevalence of breast cancer. This finding supported by the study conducted by Hassan et al. [23] and The National Cancer Registry 2003 [26], which shows that the commonest age of breast cancer is between 40 to 49 years with mean age of 50 years old.

In our study, majority of women were illiterate or low education level were found to be with the highest prevalence of breast cancer. For the impact of psychiatry morbidity due to education level, prevalence of anxiety were more in women with illiterate or low education level as compared with high education level (secondary or college/university). In women with depression, low and high education level was found to have similar prevalence. In a study conducted by Mehnert et al. [5] found lower educational level has been found to be a predictor of psychological comorbidity in patients with breast cancer. This somehow might be explained by the fact that patients with higher educational levels have a greater opportunity to be aware about their disease and its related aspects.

Married women were found to be with the highest prevalence of breast cancer. For the impact of psychiatry morbidity due to marital status, single or married women were found to have similar prevalence of anxiety respectively. However single woman showed much higher prevalence on depression rather than married women. In our opinion married women are more depressed because they have families to take care which is the biggest commitment to their life while single women are more anxious as they might afraid of need of partner or friends to take care during illness. Feel of low self esteem after having surgery may contribute to the psychiatry morbidity. Since the perception of breast cancer as a fatal disease, they are more worried about their life and their future. In this study, marital status was significantly associated with depression but not for anxiety. Although study conducted by Aass et al. [27] and Hassan et al. [23] showed that neither the patient's civil status (married, widowed, single) nor their situation of living (living alone or with partner) as significantly related to the prevalence of anxiety and depression.

Economic status plays an important role in term of cancer treatments. In this study, patients' economic status was studied to investigate any association between their economic level and psychiatry morbidity. From the findings, most of the patients are not working and have low monthly income less than Rs. 2000 per month. This situation was considered as low living status due to the high living cost in an urban city. Some of the patients were from other district or state. The cost of transportation and accommodation can be considerably high. As a consequence, majority of the patients claimed that they felt burdened by cancer treatment and the expenses, especially when referring to their economic status. If this feeling is not being treated, it could allow for the occurrence of psychiatric morbidity. This supported by Ell [28] and Hassan et al. [23], which found that low income women are characterized by the prevalent of anxiety and depression due to unlikely of receiving any treatments.

Many studies found that economic status were associated with prevalence of psychiatry morbidity. In this study, socioeconomic status data were taken from the breast cancer patients to study on the relation of economic status towards anxiety and depression. Lower economic status and higher treatments expenses were directly associated with anxiety and depression percentage. Travel to the hospital for treatment need budget in terms of transportation, fuel, tolls, parking fee and accommodation. Besides, family or friends who accompany the patient for treatment are not entitled for the hospital meals. Hence, extra expenses are needed to buy for the meals. This supported by Ell [28], which found that Major Depression Disorder (MDD) is prevalent among ethnic minority and low income breast cancer women. It appears to be correlated with pain, anxiety, depression and health related quality of life. Due to the low economic status, these women are unlikely to receive psychiatry treatment or supportive counselling. In other studies found that, there were significantly more patients receiving disability pension reported anxiety compared to patients with earned income, patients on sick-leave, patients receiving age pension or unemployed patients [27].

As compared to pre-diagnosis and 12 months assessments, patients had lower scores on both psychological disorders 1 year after the completion of their treatment. Similarly, a study from the U.S. indicated that patients with breast cancer had lower scores of anxiety and depression at 3 months post-treatment [29] suggesting that psychological distress in breast cancer patients are more common throughout the course of the disease and also in the recurrent phase of breast cancer [30,31]. Therefore, to prevent clinical psychological distress, there is a need to recognize the problem throughout the course of the disease and its treatment and if accrued manage disorders appropriately. However, the findings indicated that 25.0% of the patients experienced severe anxiety and 21.20% had severe depression. Similarly, studies have shown that women with breast cancer are highly exposed to developing anxiety and depression even after the completion of their treatment. A study of breast cancer survivors from Germany with an average of 47 months follow-up demonstrated that 38% of the patients had moderate to high anxiety and 22% had moderate to high depression as measured with the HADS [5]. A study among 300 Thai breast cancer patients indicated that the prevalence of anxiety and depressive symptoms were 19% and 16.7%, respectively [12].

Lastly, this study shows that the prevalence of anxiety and depression among breast cancer patients in North India is high. Younger age group, low monthly income, having less financial support, low education level and being single were associated with anxiety and depression. In general, the findings showed that the impact of breast cancer diagnosis and its treatments are important and in particular, improved diagnosis and treatment for breast cancer might provide a better emotional environment and enhance coping skills among breast cancer survivors.

The use of a convenience sample and the fact the study was conducted in a single facility with outpatients is one of the

limiting factor for generalization of results to other groups. Further, longitudinal studies on larger population are needed to validate our findings.

## Acknowledgement

Author thanks to Dr. Vaibhav Pandey and Dr. Ram Niwas Meena, Department of Pediatric Surgery, Institute of Medical Sciences, Banaras Hindu University for helpful comments and suggestions in the preparation of the manuscript.

## References

1. Jemal A, Bray F, Center MM, Ferlay J, Ward E, et al. (2011) Global Cancer Statistics. CA: A Cancer J Clinicians 61003A 69-90.
2. Agarwal G, Ramakant P, Forgach ER, et al. (2009) Breast cancer care in developing countries. World J Surg 33: 2069-2076.
3. National Cancer Registry Programme: Consolidated report of the population based cancer registries 1990-1996 (2001). New Delhi: Indian Council of Medical Research.
4. Murthy NS, Chaudhry K, Nadayil D, Agarwal UK, Saxena S (2009) Changing trends in incidence of breast cancer: Indian scenario. Indian J Cancer 46:73-74.
5. Mehnert A, Koch U (2008) Psychological co-morbidity and health-related quality of life and its association with awareness, utilization and need for psychosocial support in a cancer register based sample of long-term breast cancer survivors. J Psychosom Res 64:383-391.
6. Deshields D, Tibbs T, Fan MY, Taylor M (2006). Differences in patterns of depression after treatment for breast cancer. Psycho oncology 15:398-406.
7. Burgess C, Cornelius V, Love S, Graham J, Richards M, et al. (2005) Depression and anxiety in women with early breast cancer: five year observational cohort study. BMJ 330:402-705.
8. Baumeister H, Kriston L, Bengel J, Härter M (2010). High agreement of self-report and physician-diagnosed somatic conditions yields limited bias in examining mental/physical comorbidity. J Clin Epid 63:558-65.
9. Härter M, Reuter K, Aschenbrenner A, Schretzmann B, Marschner N, et al. (2001) Psychiatric disorders and associated factors in cancer: Results of an interview study with patients in inpatient, rehabilitation and outpatient treatment. Eur J Cancer 37:1385-93.
10. Zainal NZ, Nik-Jaafar NR, Baharudin A, Sabki ZA, Ng CG (2013) Prevalence of depression in breast cancer survivors: a systematic review of observational studies. Asian Pac J Cancer Prev 14: 2649-56.
11. Dastan NB, Buzlu S (2011) Depression and anxiety levels in early stage Turkish breast cancer patients and related factors. Asian Pacific J Cancer Prev 12: 137-41.
12. Lueboonthavatchai P (2007) Prevalence and Psychosocial 334 Factors of Anxiety and Depression in Breast Cancer Patients. J Med Assoc Thai 90: 2164.
13. Burgess C, Cornelius V, Love S, Graham J, Richards M, et al. (2005) Depression and anxiety in women with early breast cancer: five year observational cohort study. BMJ 330:702-5.

14. Maeda T (2008) The effect of psychological intervention on personality change, coping and psychological distress of Japanese primary breast cancer patients. *Cancer Nurs* 31:27-34.
15. Ahmet Alacacioglu, Eda Ulger, Umut Varol, et al. (2014) Depression, anxiety and sexual satisfaction in breast cancer patients and their partners-izmir oncology group study. *Asian Pac J Cancer Pre* 15:10631-6.
16. Pandey M, Sarita GP, Devi N, Thomas BC, Hussain BM, et al. (2006) Distress, anxiety, and depression in cancer patients undergoing chemotherapy. *World J Surg Oncol* 4:68.
17. Chintamani, Gogne A, Khandelwal R, Tandon M, Jain S, et al. (2011) The correlation of anxiety and depression levels with response to neoadjuvant chemotherapy in patients with breast cancer. *JRSM Short Rep* 2:15.
18. Zigmond AS, Snaith RP (1983) The Hospital and Anxiety Depression Scale. *Acta Psychiatrica Scandinavica* 67:361-370.
19. Herrmann C (1997) International experiences with the Hospital Anxiety and Depression Scale: a review of validation data and clinical results. *Journal of Psychosomatic Research* 42:17-41.
20. Hopwood P, Howell A, Maguire P (1991) Screening for psychiatric morbidity in patients with advanced breast cancer: validation of two self-report questionnaires. *British J of Cancer* 64:353-356.
21. Moorey S, Gree S, Watson M, et al. (1991). The factor structure and factor stability of the Hospital Anxiety and Depression Scale in patients with cancer. *British Journal of Cancer* 158: 255-259.
22. Ibbotson T, Maguire P, Selby T, et al. (1994) Screening for anxiety and depression in cancer patients: the effects of disease and treatment. *European J of Cancer* 30A:37- 40.
23. Hassan MR, Shah SA, Ghazi HF, Mujar NMM, Samsuri MF, et al. (2015) Anxiety and Depression among Breast Cancer Patients in an Urban Setting in Malaysia. *Asian Pac J Cancer Prev* 16:4031-4035.
24. Vahdaninia M, Omidvari S, Montazeri A (2010) what do predict anxiety and depression in breast cancer patients? A follow-up study. *Soc Psychiat Epidemiol* 45:355–361.
25. Zabora J, BrintzenhofeSzoc K, Curbow B, Hooker C, Piantadosi S (2001) The prevalence of psychological distress by cancer site. *Psych oncology* 10:19-28.
26. NCR (2004) 2nd Report of the national cancer registry: cancer incidence in malaysia 2003. ministry of health Malaysia.
27. Aass N, Fossa SD, Dahl A, Moe TJ (1997). Prevalence of anxiety and depression in breast cancer patients seen at the Norwegian radium hospital. *Eur J Cancer* 33:1597-4.
28. Ell K (2005) Depression, correlates of depression and receipt of depression care among low income women with breast cancer or gynecologic cancer. *Women Oncol Review* 5:227-8.
29. Costanzo ES, Lutgendorf SK, Mattes ML, Trehan S, Robinson CB (2007) Adjusting to life after treatment: distress and quality of life following treatment for breast cancer. *Br J Cancer* 97:1625–1631.
30. Somerset W, Stout SC, Miller AH, Musselman D (2004). Breast cancer and depression. *Oncology (Williston Park)* 18:1021-1034.
31. Northouse LL, Mood D, Kershaw T, Schafenacker A, Mellon S, et al. (2002) Quality of life of women with recurrent breast cancer and their family members. *J Clin Oncol* 20:4050- 4064.