Self-Efficacy, Pain and Suicidal Thoughts among Women with Breast Cancer Undergoing Chemotherapy

[1]Rania Abd-Elhameed Abd-Elrhman, [2]Hanem Ahmed Abd-Elkhalek & [3]Rehab Fathy Abdel Hady

[1] Clinical instructor at Technical institute of Nursing, Zagazig University , [2 & 3] Assistant Professor of Psychiatric & Mental Health Nursing, Faculty of Nursing, Zagazig University

Abstract

Background: Breast cancer continues to be the most frequently diagnosed cancer in women worldwide. Its diagnosis and treatment often results in a stressful life event and high levels of psychological distress. Pain, hopelessness, and suicidal ideation are common in patient with breast cancer. **Aim of the study**: To identify self- efficacy, pain and suicidal thoughts among women with breast cancer undergoing chemotherapy .**Subjects and method: Research design**: A Cross sectional descriptive design was used. **Setting**: The present study was done at oncology outpatient clinic at Zagazig university hospitals, **Subjects**: 305 patients were selected for the study by systemic random sampling technique. **Tools of data collection**: Three tools were used, the first tool composed of two parts: socio-demographic data sheet, and Symptom-Management Self-Efficacy Scale-Breast Cancer The second tool was the Numerical Rating Scale and the third tool was Suicide Probability Scale. **Results**: The study findings showed that 51.1% of breast cancer women had low score regarding self-efficacy, 68.2% had moderate pain and 54.8%had moderate score regarding suicide probability .Higher percentage of them who had severe score of suicide probability and severe pain aged 40-60 years, were not working, had moderate education, were widow, had not enough income and at fourth degree of cancer. The findings also indicated that there was statistically significant relation between total score of self-efficacy, pain intensity and suicide probability. **Conclusions**: The Study results proven that more than half of breast cancer patients had low score regarding self-efficacy and moderate score regarding suicide probability. Additionally, more than two third of breast cancer patients had moderate pain. Moreover, reduced self-efficacy among breast cancer patients is particularly associated with pain experience and current suicidal thoughts. **Recommendations**: Developing Psycho-educational program focus on preventing suicidal thought, reducing pain and increasing self-efficacy in breast cancer women.

Key words: Breast Cancer, Chemotherapy, Pain, Self-Efficacy and Suicidal Thoughts

Introduction

Cancer is one of the deadliest diseases in the world. It is the second leading cause of death globally .The prevalence of cancer in developing countries has increased [(1)]. Breast cancer is the second most prevalent type of cancer worldwide after lung cancer .The incidence of breast cancer in the Arab world has risen gradually between 1990 and 2016. It is predicted that the incidence is likely to continue to rise over the next 10 years, both globally and in the Arab world. The incidence of breast cancer in 2016 among women in the Arab region (28/100,000) was lower than the global mean (46/100,000) (3).

Chemotherapy can cure cancer, when chemotherapy destroys cancer cells to the point that the doctor can no longer detect them in the patient's body and they will not loner grow back.

Control cancer, when chemotherapy keeps cancer from spreading, slows it`s growth, or destroys cancer cells that have spread to other parts of patients body. Ease cancer symptoms (palliative care), when chemotherapy shrinks tumors that cause pain or pressure and help some patients have a better quality of life[(4)] .

Chemotherapeutic drugs have side effects because in addition to destroying the actively dividing cancer cells, they damage the actively growing normal cells [(5)]. These side effects of chemotherapy affect the patients' daily life and affect the different body system resulting in physical, psychological and cognitive side effects [(6)]. Chemotherapy treatment for cancer has been associated with fatigue, pain, depressive symptoms which is main trigger for suicidal behavior, and

disturbed sleep, poor sleep quality is a risk factor for exacerbation of chronic pain [7].

Pain is a multifaceted phenomenon involving biological, psychological, cognitive and social consequences. It is an unpleasant, sensory, and emotional experience, originating from any site in body, manifesting potential tissue damage [8].

It negatively affects one's performance of activities of daily living, enjoyment of life, increase anxiety, depression and suicidal thoughts leads to physical, psychological, sociological and spiritual distress [9]. The prevalence of pain in patients with breast cancer has been about 50% and 70% during cancer treatment and about 65% to 90 % for those with advanced disease [10].

Suicidal thought is the thought of self- inflicted death or self-reported to others. Suicidal thoughts can be passive, when there are only thoughts of suicide with no intent to act, or active when there are thoughts and plans of causing one's own death [11].

Suicidal ideation has also been reported as an uncomfortable activating, or depressive side effect of medications that may be prescribed for Patients with cancer. Being left to face illness as breast cancer alone may create a sense of isolation that also lead to the development hopelessness, helplessness and loss of control may be induced by symptoms or deficits due to this illness or its treatment. A sense of helplessness in the face of illness is an important factor in suicide thoughts [12].

Cancer related self-efficacy; belief that one can successfully execute behavior required to produce expected outcome in relation to consequences of cancer and its treatment factors. Higher self-efficacy has been associated with a greater effort and persistence to cope with obstacles and enhanced well-being (13).

Self-efficacy, refer to one's beliefs about perceived ability to manage their health conditions, it plays critical role in better disease adjustments and reduced pain among cancer patients. Moreover, a cancer patient may have a lower risk of reporting suicidal ideation if he/she possesses a high degree of self-efficacy [14].

The nurses should provide health care services to cancer patient who experience the biggest distress and pain or any risk of suicide. They perform their duties and responsibility in the delivery of care by creating healthy and safe physical, social and psychological environment for patients which is the center of nursing care. Psychiatric nurse can work in collaboration with oncology nurse this will help the oncology nurse to be able to identify, assess and manage cancer patients' suicide risk. The psychiatric nurses try to solve the patient psychological problems and make training service to the health care team [15]

The Psychiatric nurse plays a critical role in preventing suicide ideation in cancer patient since many patients refuse to see mental health clinicians who can reduce suffering and maintain patient safety. Nurses are frequently the first responders to cancer patients' psychological suffering and have a unique position to prevent death by suicide. A strong communication between patient and nurse can be protective against suicide. The nurse also provides social supports, Active listening, concern for patients' well-being, and provides clear explanations [16].

Significance of the study

The overall incidence of cancer is 157.0 per 100000 Egyptian women with the highest incidence being breast cancer (32%). A 3-fold increase in incidence of cancer in Egypt is predicted by 2050 with a tendency to occur in younger age groups with advanced stages (14). It can be noticed from previous researches that suicidal thoughts, pain, and self-efficacy can affect cancer patients from different aspects. So, the current study will be conducted to identify self-efficacy, pain, and suicidal thoughts among women with breast cancer undergoing chemotherapy.

Aim of the study:

The aim of the study was: To identify self-efficacy, pain and suicidal thoughts among women with breast cancer undergoing chemotherapy.

Research Question:

1. What is the level of self-efficacy among women with breast cancer undergoing chemotherapy؟
2. What is the level of pain among women with breast cancer undergoing chemotherapy؟
3. Is there suicidal thought among women with breast cancer undergoing chemotherapy؟
4. Is there a relationship between self-efficacy, pain and suicidal thoughts among women with breast cancer undergoing chemotherapy?

Subjects and methods:

Research design:

A cross- sectional descriptive study design was utilized in the current study.

Study setting:

The study was conducted at oncology outpatient clinic at Zagazig University hospitals at Sharkia governorate. The outpatient clinic is located beside surgical hospital. It consists of six floors; the Oncology outpatient clinic is located on the sixth floor. It contains many places such as obesity research and treatment department, oncology outpatient clinic, allergy and immunology clinic, patients' affairs and bathroom.

Study subjects:

Subjects of the current study composed of 305 breast cancer women. Women participated in the current study were fulfilled the following criteria:

- No age limit and all educational levels
- All Cancer Breast Grades.
- Free from other physical or mental disability or chronic illness

Sample size calculation:

Assuming correlation coefficient (r) between self- efficacy for coping with cancer and average pain level of past week among breast cancer patients was -0.16, [17]. At confidence level 95%, and power of test 80%, the sample was calculated to be 305women [18]

Tools of data collection:

Three different tools were used for collecting data of the present study: **Tool I:** It composed of two parts

Part 1: Socio-demographic and clinical data sheet .A specialized designed structured socio-demographic data sheet was prepared by the researcher and was developed based on the review of current related literature. It was used to assess the socio-demographic characteristics of women with breast cancer undergoing chemotherapy, as age, occupation, family income, residence, disease degree, educational level and marital status.

Part 2: Symptom-Management Self-Efficacy Scale-Breast Cancer (SMSES-BC): This scale was developed **by Liang, et al** [19] to assess the main behaviors and tasks relevant to symptom-management self-efficacy among women with breast cancer undergoing chemotherapy. This scale included 27 items divided into 3 sub-scales which are acquiring problem solving (7 items), managing chemotherapy related symptoms (15 items), and managing emotional and interpersonal disturbance (5 items).

Scoring system:

In the SMSES-BC scale, there are 11-point responses for various behaviors, ranging from 0 to 4, with 0 signifying not at all confident and 4 signifying complete confidence to A higher response score indicates higher perceived symptom-management self-efficacy.1 include (1,2,3) , 2 include (3,4,5), 3 include (7,8,9) and 4 refer to 10

- Low <50%
- Moderate 50-75.%
- High (more than 75 %).

Tool II: Numerical Rating Scales (NRS): (Appendix II)

This scale was developed by Al- Motairy & Ministry of Malaysia Health (20) to evaluate Intensity of pain among women with breast cancer undergoing chemotherapy. Ask patient to rate pain from (0-10)

Scoring system:

Minimum and maximum scores on the scale range between (0-10).

- A score zero indicates no pain
- 1-3 indicates mild pain.
- 4-6 indicates moderate pain
- 7-9 indicates severe pain

A score 10 indicates worst pain.

Tool III: Suicide Probability Scale (SPS): This scale was developed by Cull and Gill (21) to describe the patients with suicide attempt risk. The scale is a 36-item self-report measure and has four sub-scales, which are hopelessness [12 items], suicide ideation [8 items], negative Self-evaluation [9 items], and hostility [7 items].

Scoring system:

This scale was rated into 4-points Likert scale ranging from (1) none to (4) all of the time. The entire score ranges from 36 to 144, with a high score indicates a greater possibility of suicide. The risk of suicide is categorized into 4 levels as follow:

- The overall score (< 0,25%) indicates normal person with no suicidal risk
- The overall score (25% - < 50%) indicates mild suicidal risk.
- The overall score (50% - <75%) indicates moderate suicidal risk.
- The overall score (75% -100%) indicates severe suicidal risk.

Content validity& Reliability:

The validity of the tools were done by f panel of three experts from mental and psychiatric health nursing staff who reviewed the tools and ascertained clarity, relevance, comprehensiveness, and understandability. The Reliability of the utilized tools was assessed by Cronbach's alpha test in (SPSS) version 20.0.they showed a good level of reliability. Cronbach's alpha of Symptom management self-efficacy scale and suicide probability scale in the current study were (0.96 & 0.78 respectively).

Pilot study:

A pilot study was conducted on 30 women with breast cancer undergoing chemotherapy at oncology outpatient clinic, constituting about 10% of total study sample. It was carried out to assess content validity of the used tool, ascertain the clarity and applicability of the study tools, and estimated time needed to fill out the tools. Data obtained from the pilot were analyzed and no modification was done. The time needed to fill out the tools was about 20-25 minutes. The pilot sample was not included in the main study.

Fieldwork

The researcher started the interview with the women individually using the data collection tools. The questionnaire was read and explained. Instructions were given to breast cancer women to fill the questionnaire. Data was collected three days per week (Monday, Tuesday and Wednesday). The questionnaire sheet was distributed before taking chemotherapy session or at the end of the day after taking session. Every day about 18 to 21 patients are admitted to oncology outpatient clinic. The average number of completed questionnaire daily ranged from 6-7 questionnaires. Data collection period continued in about 4 months from the mid of October till the mid of February 2021.

Administrative and ethical considerations:

On the basis of letters from the post graduate affairs and nursing college, Zagazig University, an official permission was obtained from the out-patient clinic director, dean of the faculty of medicine Zagazig University after explaining the nature and aim of this study to get the permission for collection and facilitate the role of researcher.

Statistical analysis:

Data entry and statistical analysis were done using SPSS 20.0 statistical software package. Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables, and means and standard deviations and medians and interquartile ranges for quantitative variables. Cronbach alpha coefficient was calculated to assess the reliability of the developed tools through their internal consistency. Quantitative continuous data were compared using the non-parametric Mann- Whitney for two categories or Kruskal-Wallis tests for three or more categories.

Spearman rank correlation was used for assessment of the inter-relationships among quantitative variables and ranked ones. In order to identify the independent predictors of self- efficacy, pain and suicidal thoughts regression analysis was used and analysis of variance for the full regression modelswas done. Statistical significance was considered at p-value <0.001.

Results:

Table (1) shows that about three fifth of the studied patients (59.7%) aged from 40-60 years and the mean age of the whole sample was 42.73±9.88 years. Majority of them (78%) were not working. Regarding their educational level, 40% were moderate education. The same table also reveals that about two-third of the sample were from rural areas and married (70% &64.3% respectively). Moreover, the majority of studied patients have insufficient income .(%٨٧.٢)

Figure (1) show that, more than one third of studied women were at second degree and the other third were at third degree of cancer (35.7% & 36.7% respectively).

Figure (2) shows total scores of self-efficacy and its domains as reported by breast cancer patients. It was revealed that more than half of them (51.1%) had low score regarding self-efficacy compared to 30.2% and 18.7% had moderate and high scores respectively. However, more than two fifth of them (49.2% and 43.9%) had low scores regarding acquiring problem-solving and managing chemotherapy-related symptoms respectively. Furthermore, about two third of them (67.9%) had low score in relation to managing emotional and interpersonal disturbance.

Figure (3) shows total score of pain intensity as reported by breast cancer patients. It was found that more than two third of them (68.2%) had moderate pain compared to 10.2% and 21.6% had mild and severe pain respectively.

Figure (4) display total scores of suicide probability and its domains

as reported by breast cancer patients. It demonstrated that more than half of them (54.8%) had moderate score regarding suicide probability compared to 25.2% and 20% had mild and severe scores respectively. Furthermore, more than half of them (51.8%) had moderate scores regarding hopelessness. However, majority of them (76.1%) had mild score regarding suicidal ideation, as well as, more than half of them (59.7%) had severe score in relation to hostility.

Table (٢) found that there was highly statistically significant relation between total score of self-efficacy, pain intensity and suicide probability (p<0.001). It was clear that higher percentage of cancer patients, who had severe score of suicide probability, had low score of self-efficacy and severe pain.

Table (3) reveals correlation among different study variables. It was found that there was highly statistically significant negative correlation between self-efficacy and its domains on one hand and pain intensity, suicide probability and its domains on the other hand. However there was highly statistically significant positive correlation between pain intensity on one hand and suicide probability and its domains on the other hand .

Table (4) shows Step wise multiple linear regression for predicting factors which affect suicide probability of breast cancer patients it was found that self-efficacy and residence were highly significant negative predictors of suicide probability. While, pain intensity and age were significant positive predictors of suicide probability.

Discussion:

Breast cancer continues to be the most frequently diagnosed cancer in women worldwide [22]. Its diagnosis and treatment often result in a stressful life event and high levels of psychological distress. Pain, hopelessness, and suicidal ideation (SI) are common in patient with breast cancer [23]. Pain occurs in approximately 50% of patients with breast cancer and is identified as

one of the most distressing symptoms. In particular, pain and depressive symptoms may be more severe during chemotherapy [24].

Regarding characteristics of breast cancer women, the current study revealed that less than two-third of breast cancer women were married. This may be due to the using of hormonal contraceptive methods that increase the chance of breast cancer in married women. Similar finding was reported by **Jacobsen et al** [25] in Ethiopia who found that majority of breast cancer women undergoing chemotherapy were married.

The present study found that more than half of the studied women aged from 40-60 years old and the mean age of the whole sample was 42.73±9.88 years. This may be explained as the using of hormonal therapy to reduce the menopausal symptoms that usually happens at this age from 40 to 60 years old. This result goes on line with a study conducted in Pennsylvania revealed that 50% to 70% of breast cancer women undergoing chemotherapy older than 40 years [26].

Also the current study indicated that the majority of studied women were not working and have insufficient income. This can be interpreted as the most of the women who do not work do not have enough income and therefore they were unable to take care of their health, detect the disease early, follow healthy life style or seek health facilities .Similar finding was reported by **Mirzaei et al** [27] in India who found that more than half women with breast cancer in their sample had insufficient level of income, and majority of them were housewives.

Moreover, the current study found that more than half of the studied women were at third and fourth degree of cancer. This can be explained as most participants in this study were from rural area which is mostly characterized by lack of medical services and the difficulty of transportation and consequently the lack of health awareness, all of these factors lead to the spread of the disease and the lack of early detection or examination to

predict the disease. This result is inconsistent with the result of more recent study conducted in Iran reported that most participants were in stage two of the disease [28].

The current study found that the highest percent of the studied women had moderate education or less. It may be related to majority of participants from rural areas as there is no interest in educating womenor completing their education which past. This finding was contrasted with **Moey et al** [29] in Malaysia who found that the majority of the respondents obtained tertiary education.

The current study revealed that about two third of studied women were from rural area. This may be attributed to that there are many villages surrounding Zagazig University hospitals. This result was similar to those reported by **Gueye et al** [30] in the United State who found that more than half of the breast cancer women came from rural area. However this finding was dissimilar to those conducted in Iran who found that most of the participants with breast cancer women lived in urban areas (31).

As regards self-efficacy domains, the present study revealed that more than two third of the studied sample were not able to manage their emotional and interpersonal disturbance. This may be due to the negative attitude of society and belief in imminent death of patients with breast cancer that leads to emotional and interpersonal disturbance among those patients. This result is consistent with that of **Brunault et al** [32] in France who reported that the majority of participants had low scores in the area of emotional and interpersonal disturbance and in the area of managing chemotherapy-related symptoms.

The current study revealed that more than two fifth of women with breast cancer were not able to manage chemotherapy-related symptoms. This might be explained as significant percent of them suffered from hopelessness which weaken their will in

managing chemotherapy –related symptoms.

Also the current study found that about half of breast cancer women were not able to acquire problem solving. This may be explained as breast cancer is considered overwhelming disease that can affect patient ability to cope with the disease which appeared in their difficulty to acquire problem solving.

Concerning total self-efficacy, the Current study revealed that more than half of the studied women suffered from low self-efficacy. It might be due to the crisis of cancer which causes imbalances and lack of coordination in mind, body and soul, and reduces the ability to self- efficacy in patients with breast cancer. This result answered the first research question .This finding goes on line with **Akin & Kas Guner** [33] in Turkey who reported that self-efficacy is low in patient with breast cancer undergoing chemotherapy.

Concerning pain intensity as reported by breast cancer patients, the current study revealed that more than two third of the studied sample suffered from moderate pain. This might be due the progress of medicine and pain relieving medication that helps in decreasing women feeling of pain. This result answered the second research question. This result contrasted with **Juhl, Christiansen & Damsgaard** [34] in Denmark who reported that the Persistent pain after breast cancer treatment continues to have a high prevalence.

As regards suicide probability domains, the current study demonstrated that majority of the studied sample suffered from mild suicidal ideation. This can be interpreted as the patient have the power of will and belief in God and satisfied with God's judgment and worth so ,their personality traits are strengthens to deal with the disease impact in different timing of pharmacological treatment and not thinking in suicide. This result was in contrast with **Van Oer & Schlebusch** [23] in India who reported that the breast cancer group reported significantly higher levels of hopelessness and also, significantly higher incidence of suicidal ideation.

The current study also revealed that more than half of the studied women felt with moderate hopelessness. This might be related to the integration of oncology with psychiatry service which helps breast cancer patients to get psychological support and other psychiatric service early. This result contrasted with recent study conducted in Tunis who reported breast cancer women had higher hopelessness score [35]

The current study also revealed that more than half of the studied women were severely hostile. This might be related to the hostility associated with thinking about cancer related concerns, low Economic status, maladaptive coping with the disease especially the tendency to adopt a pessimistic attitude about the illness (hopelessness) and the current study revealed that more than half of the studied women had low score in self-efficacy, moderate hopelessness and insufficient income. This finding was similar to the study conducted in Italy who found that higher percentage of cancer patient showed high hostility score [36].

The current study also demonstrated that about half of the studied women had moderate negative self-evaluation. This might be related to the breast cancer diagnosis and treatment adversely effect on women physical, psychological health and body image which lead to decrease their self-esteem level and negative self-evaluation. This finding was dissimilar to those **reported by Yektatalab & Ghanbari** [37] in Iran who found that small percent of breast cancer women had negative self-evaluation

Concerning total suicide probability, the present study found that more than half of the breast cancer women had moderate suicide probability. This result answered the third research question. This can be interpreted as the studied women might be satisfied with the service they got in the hospital, they might be using advanced technology to

carry out the health care delivery system, they might also get mental health service and they might feel satisfied when having these types of treatment and think about getting better. All these factors might decrease suicide probability.

Regarding relation between self-efficacy, pain intensity, and suicide probability among women with breast cancer, the result of current study showed that all percentage cancer patients who had severe suicide probability had low self- efficacy and severe pain. This may be interpreted as lower self-efficacy lead to inability to cope with stress, overcome challenges to take care of their health, acquire problem solving or manage chemotherapy related symptoms which in turn increase the risk of suicide probability and pain intensity. This result answered the fourth research question. This result was in line with that of **Xu, et al** [14] in China who reported that low health self-efficacy played significant effect on the association between pain and suicide ideation. An increased risk of suicide ideation was shown in those patients with low health self-efficacy and had severe pain.

Also, the current study showed that there was highly statistically significant negative correlation between self-efficacy and each of hopelessness, suicidal ideation, negative self-evaluation, hostility, total suicide probability, and pain intensity. This can be explained by patient with lower self-efficacy unable to search for information about the disease so they can't find solution for their problems, manage chemotherapy related symptoms or interpersonal and emotional problems which in turn increase pain intensity and suicide probability. This finding was similar to those conducted by **Du et al** [38] in China who reported that Patients with high levels of self- efficacy and well-being the risk of suicide ideation are reduced.

Moreover, the current study revealed that there was highly statistically significant positive correlation between pain intensity and

each of hopelessness, suicidal ideation, negative self- evaluation, hostility, and total suicide probability. This was explained by increasing suffering from pain lead to increase the risk of suicide probability. This result was similar to the study conducted in China reported that suicidal ideation in breast cancer patients was associated with moderate-to- severe pain [39].

Conclusion:

In view of the study findings, it is concluded that the breast cancer patients had low self-efficacy, moderate suicide probability and moderate pain. There was highly statistically significant negative correlation between self-efficacy and its domains on one hand and pain intensity, suicide probability and its domains on the other hand. While, there was highly statistically significant positive correlation between pain intensity on one hand and suicide probability and its domains on the other hand. Therefore, reduced self-efficacy among breast cancer patients is particularly associated with pain experience and current suicidal thoughts.

Recommendations:

Based on the current study findings, these recommendations are suggested:

- Developing Psycho-educational program focus on preventing suicidal thought, reducing pain and increasing self-efficacy in breast cancer women
- Holding seminars and workshops for patient to improve their knowledge about breast cancer
- Assess the patient's suicidal thought and self-efficacy level as a part of the screening. Intervention should be planned and implemented to those having low self-efficacy and severe suicidal thought levels.
- Establishing counseling centers or psychiatric clinic at the oncology clinic to identify the women's with psychological problems at early st

Table 1: socio-demographic and clinical characteristics of the studied breast cancer patients (n=305).

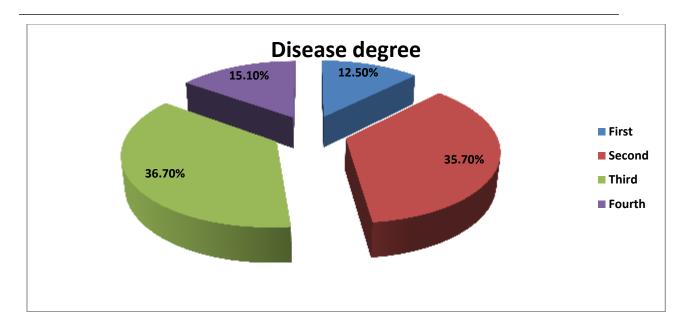| Characteristics	N	%
Age (year)		
20-40	109	35.7
40-60	**182**	**59.7**
More than 60 y	14	4.6
Mean± SD	42.73±9.88	
Occupation		
Work	67	22.0
Not work	**238**	**78.0**
Educational level		
Illiterate	39	12.8
Read & write	36	11.8
Moderate education	**122**	**40.0**
High education	108	35.5
Residence		
Rural	**214**	**70.2**
Urban	91	29.8
Family income		
Enough	39	12.8
Not enough	**266**	**87.2**
Marital status		
Single	39	12.8
Married	**196**	**64.3**
Widow	63	20.7
Divorced	7	2.3
Disease degree		
First	38	12.5
Second	**109**	**35.7**
Third	**112**	**36.7**
Fourth	46	15.1

Disease degree

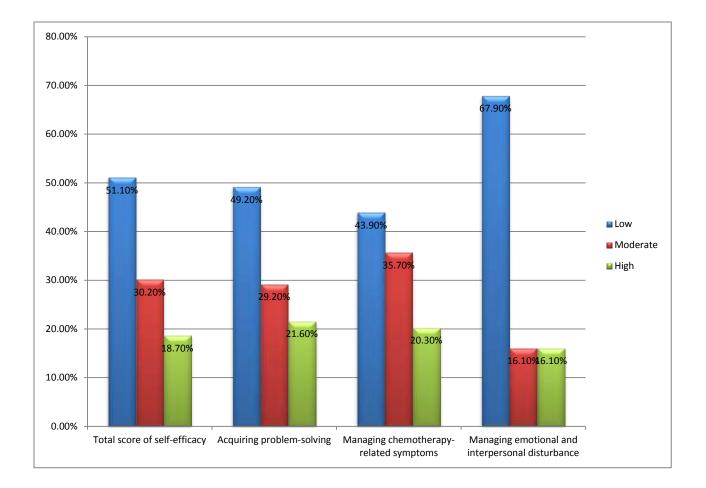**Figure (1)**: Pie chart showing disease degree

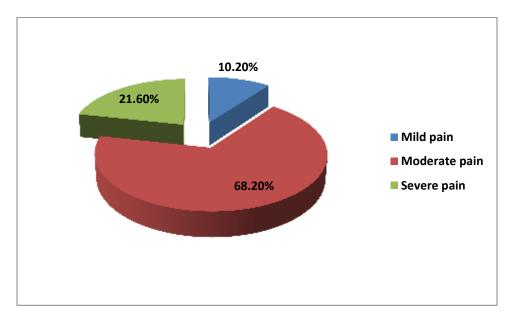**Figure2:** Bar chart showing total scores of self-efficacy and its domains as reported by breast cancer patients

Figure3: Pie diagram showing total score of pain intensity as reported by breast cancer patients.
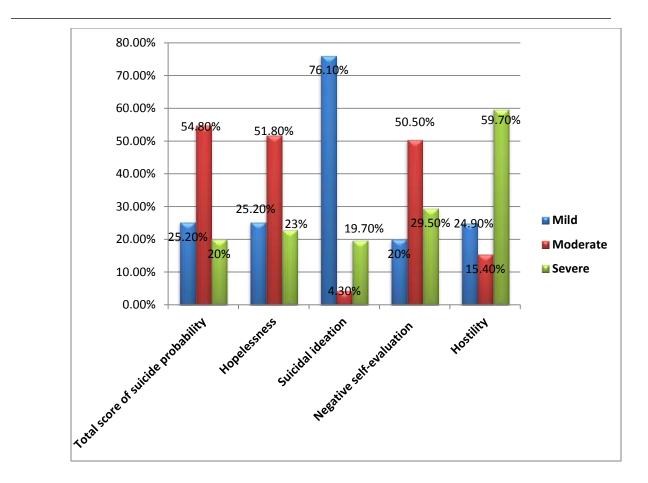
Figure 4: Bar chart showing total scores of suicide probability and its domains as reported by breast cancer patients.

Table2: Relation among total score of self-efficacy, pain intensity and suicide probability.

Item		Total score of suicide probability						χ^2	P-value
		Mild		Moderate		Severe			
		(n= 77)		(n= 167)		(n= 61)			
		No.	%	No.	%	No.	%		
Total score of self-efficacy	Low	4	5.2	91	54.5	61	100.0	227.466	<0.001**
	Moderate	20	26.0	72	43.1	0	0.0		
	Highly	53	68.8	4	2.4	0	0.0		
Total score of pain intensity	Mild pain	7	9.1	24	14.4	0	0.0	255.528	<0.001**
	Moderate pain	69	89.6	137	82.0	2	3.3		
	Severe pain	1	1.3	6	3.6	59	96.7		

**: highly significant (p<0.001)

Table 3: Correlation matrix among different study variables.

	Self efficacy	AP	MC	ME	pain intensity	suicide probability	Hopelessness	Suicidal ideation	Negative self-evaluation	Hostility
Self efficacy										
AP	0.951**									
MC	0.983**	0.904**								
ME	0.873**	0.785**	0.799**							
pain intensity	-0.610**	-0.610**	-0.592**	-0.512**						
Suicide probability	-0.823**	-0.807**	-0.772**	-0.793**	0.612**					
Hopelessness	-0.703	-0.703**	-0.644**	-0.704**	0.379**	0.895**				
Suicidal ideation	-0.691**	-0.659**	-0.682**	-0.592**	0.833**	0.759**	0.468**			
Negative self-evaluation	-0.729**	-0.721**	-0.679**	-0.705**	0.590**	0.916**	0.744**	0.704**		
Hostility	-0.726**	-0.711**	-0.668**	-0.743**	0.335**	0.895**	0.854**	0.472**	0.764**	

**: highly statistically significant (p<0.001); AP: Acquiring problem-solving; MC: Managing chemotherapy-related symptoms; ME: Managing emotional and interpersonal disturbance

Table 4: Step wise multiple linear regression for predicting factors which affect suicide probability of breast cancer patients.

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
(Constant)	96.018	5.771		16.63	.000	84.660	107.375
Self-efficacy	-.213	.018	-.566	-12.103	<0.001**	-.247	-.178
Disease degree	2.237	1.264	.088	1.770	0.078 NS	-.251	4.724
Age	.196	.093	.086	2.114	0.035*	.014	.379
Pain intensity	2.152	.552	.185	3.895	<0.001**	1.065	3.239
Residence	-5.880	1.937	-.119	-3.036	0.003**	-9.691	-2.069

NS: Non-significant (p>0.05)*: significant (p<0.05)**:highly significant (p<0.001)
R-square=0.730, ANOVA: F=161.697,   P<0.001
Variables entered and excluded: job, educational level, family income, marital status.

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