RESEARCH

Sleep disorders and their relationship to other psychiatric disorders in women with breast cancer: a case-control study

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Abstract

Background: Breast cancer is the most frequent cancer among women, impacting 2.1 million women each year. The aim of the study is to determine prevalence of sleep disorders among patients with breast cancer, its correlation with different psychological symptoms and the ability of such symptoms to predict sleep disorders among those patients. The current study is a case-control study compromised of 153 participants, 93 breast cancer patients versus 60 cross-matched healthy control persons recruited from the outpatient clinic of Oncology Department—Assiut University Hospital. Arabic versions of Beck's Depression Inventory, symptom checklist, and Sleep Disorder Scale were used to evaluate depression, obsession, sensitivity, anxiety, hostility, phobic anxiety, paranoia ideation, psychoticism, and sleep disorders, respectively. The correlation of this data with clinical and social variables of these patients and the effect of such variables on each other were also determined.

Results: A statistically higher prevalence of sleep disorders and depression was reported among breast cancer patients compared to the control group. Also, patients with breast cancer scored statistically higher mean scores in somatization, obsession, sensitivity, anxiety, and phobic anxiety than those of the control group.

Conclusions: Prevalence of sleep disorders, depression, obsession, sensitivity, anxiety, hostility, phobic anxiety, paranoia ideation, and psychoticism among breast cancer patients poses a challenge to the treatment of such patients. Misdiagnosis and mismanagement lead to poor treatment outcomes of both cancer disease and psychiatric disorders.

Keywords: Sleep disorders, Psychiatric disorders, Breast cancer and woman

Background

Breast cancer is the most frequent cancer among women, impacting 2.1 million women each year; it also causes the greatest number of cancer-related deaths among women. Recent studies suggest that sleep disturbance is considered one of the most common disorders among breast cancer patients. Several evidence show that 30% to 70% of adult cancer patients reported experiencing one or more sleep disturbances [1, 2], a

percentage that is twice as high as those reported in the general population [3, 4].

Survival women with breast cancer suffer many different conditions that may influence their emotional welfare and mental health. About 30% of breast cancer survivors experience chronic pain several years after treatment. This chronic pain is commonly related to development of depression. Thus, pain and depression are common symptoms in many serious diseases and carry a risk of self-perceived poor health, poor quality of life, and premature mortality [4].

Sleep disorders were considered a common phenomenon in breast cancer patients. Several other psychiatric disorders were associated with sleep

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disorders such as depression, anxiety, psycho-somatic symptoms, and pain [5]. In general, sleep disorders were associated with a worsening of the general health condition leading to changes in cognitive functions, depression, and emotional instability [6].

Sleep problems are commonly reported as the most burdensome symptoms among cancer survivors [7, 8], up to 79% of the cases reported sleep disturbance during treatment period. Also, serious physical and psychological symptoms are associated with these sleep problems in cancer patients, such as lower quality of life, more depressive symptoms, poor social and occupational functioning, and early mortality [9–11].

Also, depression is considered as one of the most frequent psychiatric comorbidities in breast cancer patients. Studies show its average prevalence ranges from 12 to 25% [12]. Sleep disturbance is considered as one manifestation of depression manifestation (hypersomnia or insomnia) or as a separate disorder.

Emotional distress in cancer patients is a common phenomenon that negatively impacts the quality of life and carries elevated risk of mortality [12]. Cancer is a serious illness that is usually aggressive and requires very invasive treatments. Thus, since the event is evaluated as a threat, an anxious emotional reaction arises. Cancer is perceived as a significant loss (loss of health, psychological well-being, life expectancy, etc.) that will result in sadness and increased somatization, obsession, sensitivity, anxiety, and phobic anxiety, all of which can trigger or increase depression and sleep disorders [13].

The current study is a case control study that aims to evaluate prevalence of different sleep disorders among breast cancer patients, also, we examine the prevalence of different other psychiatric symptoms among those patients and its relation to sleep problems. Special emphasis on some clinical and social characteristics of the patients and correlation with the prevalence of those psychiatric symptoms was also performed.

Also, investigating the role of such psychological symptoms is predicting sleep disorders among breast cancer patients.

Methods
Sample
The study includes 93 breast cancer patients versus 60 age and sex cross-matched healthy control persons.

The current study was carried out at the outpatient clinic, Oncology Department—Assiut University Hospital. All patients coming for follow-up at the outpatient clinic (from June 2019 to March 2020) were selected

after accepting to participate in the study and after proper explanation of the aim and tools of the study. An informed signed consent was obtained from all patients. Patients were interviewed by a well-trained psychologist for evaluation.

All patients and control were examined for previous history of psychiatric disorders and those who have a history of any psychiatric disorders were excluded from the study.

Study tools
Beck's Depression Inventory
The Beck's Depression Inventory (BDI-II) [14], created by Aaron T. Beck, is a 21-question multiple-choice, self-report inventory, is one of the most widely used psychometric tests for measuring the severity of depression.

Assessment of depression was performed by the Arabic version of Beck's Depression Inventory [15].

In the current study, the reliability coefficient of the "Beck" list for depression ((BDI-II) Arabic version) was verified using Cronbach's alpha coefficient.

Symptom checklist
A symptom checklist (SCL-90-R) is a tool that enables clinicians and researchers to quickly estimate the presence of different psychiatric disorder symptoms [16]. It is designed to evaluate a broad range of psychological problems and symptoms of psychopathology.

The primary symptom dimensions being assessed are somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism.

The verification of the Arabic version of symptom checklist was done by Al-Buhairi, A R 2005, and was verified using factor analysis [17].

Verification of validity and reliability of the Arabic version of symptom checklist was done by Al-Buhairi, A R 2005.

Sleep Disorder Scale (SDS)
The Sleep Disorder Scale (SDS) is a questionnaire that is widely used in developed countries to measure daytime sleepiness and diagnose sleep disorders.

The validity and reliability of the Arabic version of SDS were performed by Arnout and Boshra [18].

Statistical analysis
Data analysis was performed using the Statistical Package for Social Science (SPSS) in its nineteenth version.

Quantitative data analysis was used in this study. The results were analyzed using descriptive and

inferential statistics. Categorical variables were described by number and percent (N, %), whereas continuous variables were described by mean and standard deviation (mean, SD). Independent sample (T test) was used for comparison between samples. The Pearson correlation coefficient was used to determine the relationship between psychological symptoms and sleep disorders and simple regression analysis was used to determine the ability of independent variables to predict the dependent variables.

Results

The current study includes 153 participants, 93 breast cancer patients versus 60 cross-matched healthy control persons.

The age group of the studied sample was 23:79 years. About 97.8% of the patients were unemployed compared to 66.7% of the control group. On the other hand, 2.2% of the patients have jobs compared to 33.3% of the control group (Table 1).

Regarding the marital status, 77.4% of the patients were married, 43% of the married cases got a good husband's support compared to 34.4% of who did not get good husband's support. Most of the patients had treatment duration from 1 month to 4 years (68.8%), the rest of them had more than 4 years of treatment. Also, about 39.8% of the patients had recurrence of the disease, compared to 60.2% of them who had no recurrence of breast cancer or its metastasis. The entire patient group had received chemotherapy, while only 52.7% got sessions of radiotherapy (Table 2).

Assessment of depressive symptoms using the Arabic version of Beck's Depression Inventory revealed that most of the studied sample were depressed (39.8% of patients suffer from mild depression, 53.8% of patients suffer from moderate depression, and 2.2% suffer from

severe depression). The control group showed that 25.6% of them did not suffer from any symptoms of depression, while 10.9% suffered from mild depression, and 1.9% suffers from moderate depression with no cases of severe depression (Table 3).

The evaluation of the presence of different sleep disorders in the studied sample using Sleep Disorder Scale shows that patients with breast cancer scored significantly higher mean scores of some domains of sleep disorder (insomnia, hypersomnia, interrupted sleep, nightmares, and total sleep disorders) than the control group. However, there were no statistically significant differences between breast cancer patients and control group in night dismay and sleep walking disorder (Table 4).

Assessment of different psychiatric symptoms by SCL shows the following: Patients with breast cancer scored statistically higher mean scores in depression somatization, obsession, sensitivity, anxiety, and phobic

Table 1 Socio-demographic data of a sample of breast cancer patients and control group

Variables		Patients (N=93)		Control (N=60)	
		N	%	N	%
Age	23-40	23	24.7	15	25
	41-55	34	36.6	31	51.7
	56 and over	36	38.7	14	23.3
Work	Work	2	2.2	20	33.3
	No work	91	97.8	40	66.7
Marriage	Single	3	3.2	5	8.3
	Married	72	77.4	52	86.7
	Divorced	4	4.3	1	1.7
	Widowl	14	15.1	2	3.3

Table 2 The clinical data for a sample of breast cancer patients (N=93)

Variables		Patient (N=93)	
		N	%
Did you have psychiatric disorders before you had breast cancer?	Yes	0	0
	No	93	100
Supporting family	Supporting family	40	43.0
	Without the support of a family	32	34
Duration	From month to 3 years	64	68.8
Treatment	From 4 years or more	29	31.2
Recurrence	Recurrence	37	39.8
	No recurrence	56	60.2
Sessions of chemotherapy	0-6 session	50	53.8
	7≤more	43	46.2
Sessions of radiotherapy	0 sessions	44	47.3
	1 ≤more	49	52.7

Table 3 Beck depression inventory scores in patients with breast cancer and the control group (total N=153)

Variables		Patient (N=93)		Control (N=60)	
		N	%	N	%
Beck scale	Normal	4	4.3	40	25.6
	Mild depression	37	39.8	17	10.9
	Moderate depression	50	53.8	3	1.9
	Severe depression	2	2.2	0	0

Table 4 Mean scores of Beck depression and SCL in patients with breast cancer-control group

Scale	Subscale	Control Mean ± Std	Patients Mean ± Std	T	P value	CI 95%
Beck depression	Beck depression	11 ± 5.05	20.26 ± 3.75	12.99	.000	{−10.67873:−7.8590}
SCLR	Somatization	1.455 ± .713	1.836± .423	4.14	.000	{−.56205: −1.9889 }
	Obsession	1.376 ±.7333	1.781 ± .375	4.50	.000	{−.58348:−.22762}
	Sensitivity	1.244 ± .569	1.801 ± .376	7.29	.000	{−.70810:−.40634}
	Anxiety	1.158 ± .557	1.405 ± .394	3.20	.002	{−.39932:.09476}
	Hostility	.755±.351	.758±.465	.036	.972	{−.14156:1.13654}
	Phobic anxiety	.692 ± .295	.860 ± .535	2.21	.028	{−.31679:−.01792}
	Paranoia ideation	1.327±.684	1.353±.431	.280	.780	{−.20341:.15287}
	Psychoticism	.983±.620	1.047 ± .320	.837	.404	{−.21500:.08704}

anxiety than those of the control group. On the other hand, there were no statistically significant differences between the patients and the control sample in terms of hostility, paranoia ideation, and psychoticism (Table 5).

Correlating family support with the psychiatric symptomatology reveals the following: Breast cancer patients without supporting family scored significantly higher mean scores of all domains of sleep disorder except hypersomnia, night dismay. Breast cancer patients without supporting family cored significantly higher mean scores of depression and somatization than the group of patients having supporting family. On the other hand, group of patients with supporting family scored significantly lower mean scores of sensitivities than the group without supporting family (Tables 6 and 7).

Correlating disease characteristics with the psychiatric symptomatology shows that patients with breast

cancer metastatic recurrence scored significantly higher mean scores of all domains of sleep disorder (insomnia, hypersomnia, interrupted sleep, nightmares, night dismay, sleep walking, total sleep disorder) as well as depression and phobic anxiety and psychoticism than the group of patients with no recurrence (Tables 8 and 9).

There is a significant positive correlation between depression and all types of sleep disorders (insomnia, hypersomnia, nightmares disorder, night dismay, and sleep walking disorder). Moreover, significant positive correlations were found between all sleep disorder subscales and SCL-R except that of the sensitivity domain (Table 10).

Simple regression analysis of the data shows significant predictors for depression and anxiety to all sleep disorders subscales. On the other hand, somatization, hostility, and psychoticism predict higher scores of all sleep disorders subscales except night dismay. Also, obsession predicts higher scores of all sleep disorders subscales except that of sleep cycle rhythm disorder. Phobic anxiety also predicts all sleep disorders subscales except that of hypersomnia. Paranoid ideation also predicts higher scores of sleep disorders subscales except nightmare disorder and night dismay (Table 11).

Simple regression analysis of the data shows positive significant predictors for psychological symptoms to all sleep disorder subscales. Depression ranked the first in predicting total sleep disorders, it got 25% of the variance in total sleep disorders, and it also ranked the second in night dismay prediction, where it got 24% of variance in night dismay and the third and fourth order in predicting sleep walking and insomnia. It got 22% in the variance of sleep walking and 20% in the variance of insomnia. Obsession ranked the fifth in the predictive ability of sleep walking disorder, as it got 18% in the variance of sleep walking disorder (Table 11).

Table 5 Frequency of sleep disorders between patients with breast cancer versus control group

Scale	Subscale	Control Mean ± Std	Patients Mean ± Std	T	P value	CI 95%
Sleep disorder	Insomnia	12.77 ± 2.80	18.19 ± 3.68	9.73	.000	{−6.52827:−4.32550}
	Hypersomnia	8.050 ± 2.683	8.935 ± 1.892	2.39	.018	{−1.61679:−.15417}
	Interrupted sleep	8.650 ± 1.447	12.634 ± 2.426	11.46	.000	{−4.67111:−3.29771}
	Nightmares	7.150 ± 1.857	8 ± 2.231	2.45	.015	{−1.53485:−.16515}
	Night dismay	6.083 ± 2.444	6.602 ± 2.579	1.24	.217	{−1.34584:.30820}
	Sleep walking disorder	5.100 ± 2.260	5.655 ± 1.862	1.65	.100	{−1.21907:.10724}
	Total sleep disorder	46.15± 5.61	60.02 ± 13.09	7.75	.000	{−17.40643:−.01792}

Table 6 Difference in Beck depression and SCL scores between breast cancer patients with or without family support (N=93)

Scale	Subscale	Supporting family Mean ± Std	Without supporting family Mean ± Std	T	P value	CI 95%
Beck depression	**Beck depression**	18.175 ± 1.781	21.031 ± 4.185	3.902	.000	{−4.31:−1.39}
SCLR	**Somatization**	1.735 ± .487	1.940 ± .264	2.136	.036	{−.396:−.135}
	Obsession	1.685±.450	1.825±.292	1.518	.134	{−.32399:.04399}
	Sensitivity	1.894 ± .172	1.642 ± .541	2.779	.007	{.0711:.432}
	Anxiety	1.385±.445	1.396±.327	1.26	.900	{−1.9990:1.7615}
	Hostility	.750±.469	.677±.308	.757	.452	{−.1194:.26508}
	Phobic anxiety	.700±.426	.924±.629	1.796	.077	{−.47299:.02478}
	Paranoid ideation	1.279±.531	1.322±.338	.404	.687	{−.25958:.17208}
	Psychoticism	.995±.333	1.01±.288	.151	.880	{−.15995:.13745}

Discussion

The current case-control study examines the associations between different psychiatric domains and sleep disorders in breast cancer patients and correlates them with some of the patients and disease characteristics.

Breast cancer and its invasive treatment option are perceived as a loss of health or body integrity, or even a challenge for the loss of life itself. Such loss may be a triggering force for the development of depression. Also, pain associated with the disease itself and with its treatment is considered as a factor to increase the liability to develop depression and anxiety.

Assessment of prevalence of depression among patients with breast cancer revealed that those patients have significantly higher scores of depressions than those of the control group. A data that is common in different similar studies [19–21].

Facing a malignancy is a big shock and distress for the patient and is considered by the many as a life crisis which causes psychological instability ranging from anxiety to depression.

Several previous studies show that family support is an important determinant to protect from depression in cancer patients. The current results show that patients with poor family support are manifested with higher levels of depression and anxiety than those with high family support (mean scores of 21.0 ± 4.185 versus 18.2 ± 1.781) [22]. Also, patients with recurrent disease after treatment had a higher prevalence of depression than those without recurrence. This can be explained by the burden of treatment (radio and chemotherapy). Such findings are like those previous data obtained by Jovana and Milutin [23].

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Table 7 Difference in sleep disorders mean scores in breast cancer patients with or without family support (N=93)

Scale	Subscale	With family support Mean ± Std	Without family support Mean ± Std	T	P value	CI 95%
Sleep disorder	**Insomnia**	17.150 ± 2.326	18.687 ± 3.987	2.044	.045	{−3.037:−.037}
	Hypersomnia	8.475±1.280	9.156±2.156	1.666	.100	{−1.497202:.13452}
	Interrupted sleep	12.050 ±1.782	13.125 ± 2.587	2.083	.041	{−1.075:.5160}
	Nightmares disorder	7.450 ± 1.584	8.406 ± 2.353	2.054	.044	{−1.884:−.027}
	Night dismay	6.125±1.284	6.843±2.941	1.390	.169	{−1.74982:.31232}
	Sleep walking disorder	4.950 ± 1.299	5.968 ± 2.055	2.561	.013	{−1.812:−.225}
	Total sleep disorder	56.200 ± 6.381	62.187 ±14.930	2.291	.025	{−11.199:−.775}

Table 8 Different mean scores of Beck depression and SCL in breast cancer patients with or without history of disease recurrence (*N*=93)

Scale	Subscale	Recurrence Mean ± Std	No recurrence Mean ± Std	T	P value	CI 95%
Beck depression	Beck depression	23.729 ± 2.950	17.982 ± 2.136	10.895	.000	{4.699:6.795}
SCLR	Somatization	1.927±.400	1.775±.430	1.720	.089	{−02361:.32887}
	Obsession	1.854±.248	1.733±.434	1.522	.132	{−.03670:.27695}
	Sensitivity	1.717±.476	1.857±.282	1.770	.080	{−.29587:.01702}
	Anxiety	1.470±.390	1.362±.395	1.293	.199	{−.05781:.27336}
	Hostility	.864±.507	.687±.426	1.819	.072	{−.01630:.37103}
	Phobic anxiety	1.057 ± .729	.507 ± .475	3.020	.003	{.328 :.108}
	Paranoid ideation	1.450±.285	1.288±.497	1.789	.077	{−.01785:.34137}
	Psychoticism	1.135 ± .989	.329 ± .303	2.192	.031	{.145:.066 }

Cancer-related stress is considered as a precipitating factor for the development of different psychiatric symptoms. Evaluating different psychiatric symptoms using symptom checklist (somatization, obsession, sensitivity, anxiety, phobic anxiety, hostility, paranoia ideation and psychoticism) shows that patients with breast cancer scored statistically higher mean scores in somatization, obsession, sensitivity, anxiety, and phobic anxiety than those of the control group. Other different studies showed comparable results [24, 25].

The severe physical and psychological stress, exerted by the cancer itself and its treatment modalities (chemo and radiotherapy), makes depression, somatization, obsession, sensitivity, anxiety, and phobic anxiety symptoms more prevalent in women with breast cancer.

The general-distress factors have been demonstrated in seven mood and anxiety disorders (major depression, dysthymia, agoraphobia, social phobia, simple phobia, GAD, and panic disorder) [26].

Sleep is essential to the maintenance of physiological and psychological health in humans.

Evaluating the presence of sleep disorders in the studied sample using Sleep Disorder Scale shows that patients with breast cancer scored a significantly higher mean score of insomnia, hypersomnia, interrupted sleep, nightmares, and total sleep disorder than in control group. These data consistent with the data showing that about 30% to 70% of the adult population suffering from cancer reported one or more sleep problems [2].

Patients with breast cancer are one of the most common examples of sleep disturbance suffering [27–29]. A study done by Harris reported that breast cancer patients had sleep problems before diagnosis and sleep disorders aggravated after the diagnosis and ongoing therapy [29].

Such sleep disorders are not only affected by the cancer diagnosis itself but also correlated with the disease staging and with the type of treatment used (radiotherapy and chemotherapy). Also, the current results show that sleep disorders in cancer patients have a higher prevalence in patients with metastasizing and recurrent cancer than those without recurrence of the tumors (Table 9).

Table 9 Different mean scores of sleep disorders in breast cancer patients with or without history of disease recurrence (*N*=93)

Scale	Subscale	Recurrence Mean ± Std	No recurrence Mean ± Std	T	P value	CI 95%
Sleep disorder	Insomnia	19.540 ±4.975	17.303±2.114	2.987	.004	{.749:3.724}
	Hypersomnia	9.621±2.453	8.482±1.235	2.959	.004	{.37451:1.90445}
	Interrupted Sleep	13.513±3.114	12.053±1.622	2.957	.004	{.47935:2.44053}
	Nightmares disorder	9.000±2.788	7.339±1.455	3.755	.000	{.782 : 2.539}
	Night dismay	7.567±3.625	5.964±1.220	3.064	.003	{.56399:2.64257}
	Sleep walking disorder	6.540 ± 2.640	4.928±1.109	4.064	.000	{.824:2.399}
	Total sleep disorder	65.783±18.470	56.071±5.483	3.705	.000	{4.540:14.920}

Table 10 Correlation between Beck depression and SCL R and Sleep Disorder Scale among woman with breast cancer (*N*=93)

sleep disorder	Beck depression	SCL R							
		Somatization	Obsession	Sensitivity	Anxiety	Hostility	Phobic anxiety	Paranoia ideation	Psychoticism
Insomnia	.445**	.272**	.343**	.035	.326**	.268**	.380**	.250*	.363**
Hypersomnia	.406**	.237*	.243*	.654	.297**	.243*	.198	.243*	.233*
Interrupted sleep	.444**	.267**	.198	.049	.319**	.225*	.318**	.230*	.220*
Nightmare disorder	.407**	.303**	.347**	.088	.213**	.315**	.403**	.169	.330**
Night dismay	.494**	.068	.248*	.077	.222*	.172	.275**	.005	.191
Sleep walking disorder	.478**	.386**	.426**	.023	.327**	.242*	.253*	.225*	.362**
Total sleep disorder	.502**	.306**	.339**	.009	.338**	.275**	.354**	.211*	.324**

(Value*=.05 & **=.01)

Table 11 Results of a simple regression analysis of depression and psychological symptoms in predicting sleep disorders in breast cancer patients (*N*=93)

Predictive variables	Predicted variables	R	R Square	B	Beta	F	T
Beck depression	**Insomnia**	.445	198.	.436	.445	22.487	4.742
	Hypersomnia	.406	.165	.204	.406	17.931	4.235
	Interrupted sleep	.407	.165	.262	.407	18.016	4.245
	Nightmare disorder	.444	.198	.246	.444	22.403	4.733
	Night dismay	.494	.244	.339	.494	29.406	5.423
	Sleep walking disorder	.478	.229	.257	.478	26.986	5.195
	Total sleep disorder	.502	.252	1.736	.502	30.666	5.538
Somatization	**Insomnia**	.272	.074	2.364	.272	7.245	2.692
	Hypersomnia	.237	.056	1.058	.237	5.393	2.322
	Interrupted sleep	.267	.071	1.533	.579	7.006	2.647
	Nightmare disorder	.303	.092	1.598	.303	9.207	3.034
	Sleep walking disorder	.386	.149	1.847	.462	15.963	3.995
	Total sleep disorder	.306	.049	9.559	.306	9.429	3.071
Obsession	**Insomnia**	.343	.118	3.367	.343	12.134	3.483
	Hypersomnia	.243	.059	1.226	.243	5.717	2.391
	Nightmare disorder	.347	.120	2.060	.585	12.422	3.525
	Night dismay	.284	.062	1.707	.284	5.983	2.446
	Sleep walking disorder	.426	.181	2.297	.426	20.177	4.492
	Total sleep disorder	.339	.115	11.937	.339	11.841	3.441
Anxiety	**Insomnia**	.326	.106	3.039	.326	10.805	3.287
	Hypersomnia	.297	.088	1.424	.297	8.811	2.968
	Interrupted sleep	.319	.101	1.957	.319	10.280	3.206
	Nightmare disorder	.312	.097	1.763	.312	9.812	3.134
	Night dismay	.222	.049	1.450	.222	4.713	2.171
	Sleep walking disorder	.327	.107	1.674	.327	10.867	3.297
	Total sleep disorder	.338	.114	11.308	.338	11.753	3.428

Table 11 Results of a simple regression analysis of depression and psychological symptoms in predicting sleep disorders in breast cancer patients (*N*=93) *(Continued)*

Predictive variables	Predicted variables	R	R Square	B	Beta	F	T
Hostility	**Insomnia**	.268	.072	2.121	.268	7.054	2.656
	Hypersomnia	.243	.059	.987	.243	5.710	2.390
	Interrupted sleep	.225	.051	1.174	.225	4.870	2.207
	Nightmare disorder	.315	.099	1.510	.315	10.053	3.171
	Sleep walking disorder	.242	.059	1.051	.242	5.658	2.379
	Total sleep disorder	.275	.076	7.796	.275	7.453	2.730
Phobic anxiety	**Insomnia**	.380	.144	2.615	.380	15.358	3.919
	Interrupted sleep	.318	.101	1.440	.318	10.215	3.196
	Nightmare disorder	.403	.162	1.680	.403	17.645	4.201
	Night dismay	.275	.076	1.326	.275	7.459	2.731
	Sleep walking disorder	.253	.064	.958	.253	6.249	2.500
	Total sleep disorder	.354	.125	8.718	.354	12.996	3.605
Paranoid ideation	**Insomnia**	.250	.063	2.136	.250	6.056	2.467
	Hypersomnia	.243	.059	1.066	.243	5.718	2.391
	Interrupted sleep	.230	.053	1.292	.230	5.082	2.254
	Sleep walking disorder	.225	.051	1.056	.225	4.870	2.207
	Total sleep disorder	.211	.045	6.457	.211	4.248	2.061
Psychoticism	**Insomnia**	.363	.132	4.174	.363	13.823	3.718
	Hypersomnia	.233	.054	1.374	.233	5.206	2.282
	Interrupted sleep	.220	.048	1.662	.220	4.609	2.147
	Nightmare disorder	.330	.109	2.296	.330	11.107	3.333
	Sleep walking disorder	.362	.131	2.284	.362	13.708	3.702
	Total sleep disorder	.324	.105	13.329	.324	10.643	3.262

(Value =.01 & .001)

By correlating the different stressors (whether social or physical) which are being faced by breast cancer patients with different study domains as depression and anxiety and sleep disorders, we conclude that there is a positive correlation between all, these stressors, and the different study domains. The association between physical and social symptoms burden and the incidence of depression and anxiety in breast cancer patients were done by [30].

Conclusions

Prevalence of depression and anxiety among breast cancer patients poses a challenge to the treatment of such patients. Misdiagnosis and mismanagement lead to poor treatment outcomes of both cancer disease and psychiatric disorders with much poorer quality of life. Also, the higher prevalence of sleep disorders poses both mental and physical stress upon those patients with depilating disorder, which again is closely associated with depression and anxiety.

Study limitation

Factors such as effect of radiotherapy and chemotherapy on the sleep could not be excluded in the current study. Also, those factors may interfere with the development of other psychiatric manifestation. Larger scale study is needed to exclude such factors.

Availability of data and materials

The data sets generated and/or analyzed during the current study are available from the corresponding author on reasonable request.

Ethics approval and consent to participate

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. The current study was also approved by faculty of medicine, Assiut University Ethical Committee (reference number is not available).

Informed consent was obtained from all individual participants included in the study.

Consent for publication

All authors consenting for publication.

Competing interests

Authors declare that they have no competing interests.

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