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Effect of Fear of Covid-19 Infection on Functionality in Breast Cancer Patients in the Pandemic

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Abstract

Background: Coronavirus disease 2019 (COVID-19) has spread rapidly across the globe through coughing, sneezing, droplet inhalation, and contact.

Objectives: The current study aimed to assess the impact of the fear of COVID-19 infection on functionality in women with breast cancer.

Methods: The present study included women with diagnosed breast cancer (n=75) under treatment in Istanbul Florence Nightingale Hospital and healthy (n=69) women(a total of 144 volunteers). The participants were asked to fill out the Sociodemographic Data Form, Anxiety Sensitivity Index-3 (ASI-3), and Fear of COVID-19 Scale to evaluate the impact of fear of infection and cleaning behavior due to COVID-19 on functionality.

Results: No statistically significant difference was found between the women with and without diagnosed breast cancer regarding the impact of fear of COVID-19 infection on all functionality parameters (all parameters: P>0.05). In the breast cancer group, the effect of Covid-15 anxiety and cleaning behavior on functionality performance was significantly higher in participants with underlying disease (P=0.044, P=0.013) and smoking (P=0.0234, P=0.0147).

Conclusion: As evidenced by the results of this study, smoking and the presence of comorbidity in breast cancer patients may have a negative effect on the functionality effect of fear of Covid-19 infection. In terms of psychiatric intervention, the parameters affected by functionality should be considered.

Keywords: Breast cancer, Contamination, COVID-19, Fear, Functionality

1. Background

Coronavirus disease 2019 (COVID-19) has spread rapidly across the globe through coughing, sneezing, droplet inhalation, and contact. Comprehensive precautions observed for protection from COVID-19 contamination have included general hygiene procedures, such as the nature, frequency, and duration of hand-washing and indoor/outdoor surface cleaning (1). Thoughts and behaviors that may have been interpreted as obsessional pre-COVID-19 have become a normal part of life in a pandemic (2). Our clinical observations suggest that some individuals can tolerate this “new normal” easily, whereas individual functionality is negatively affected in others.

Pandemics are accompanied by difficulties and losses for all people (3); nonetheless, certain specific segments of the community are more highly affected, such as cancer patients (4). Under pandemic circumstances, changes have been made in the treatment of cancer patients within a frame of priority and urgency. The immune systems of cancer patients are weakened due to their existing disease and implemented therapies (5-6). This medical condition is a factor that may facilitate COVID-19 infection. The presence of cancer in an individual leads to a more severe clinical course of COVID-19 and increases the mortality rate (7-8).

While struggling with cancer, which presents a very difficult clinical course even in the absence of a pandemic, the presence of pandemic circumstances

has noticeably increased the biopsychosocial loading factors. The current picture may negatively affect the mental health and functionality of cancer patients. Assessing the causes of mental problems affecting functionality in this highly sensitive group will facilitate the psychiatric intervention.

2. Objectives

In light of the aforementioned issues, the present study aimed to evaluate the cognitive and socio-demographic parameters that play an effective role in functional impairment due to fear of COVID-19 infection in women diagnosed with breast cancer. We expect that the functionality of cancer patients will be more negatively ımpacted in the circumstances of the COVID-19 pandemic considering the changes and disruptions in the treatment process, as well as the weakened immune system that may create sensitivity to infection.

3. Methods

The present study was conducted on a total of 144 volunteer women aged 30-45 years consisting of women diagnosed with breast cancer (n=75) and healthy women (n=69). The study was carried out with approval from the National Ethics Committee (Ethical Approval No: 2020-09-07T12_07_19). The data collection procedure was performed in accordance with the rules of the Helsinki Declaration. While the study group was composed of female breast cancer patients who were being followed up at the General Surgery Clinic at Istanbul Florence Nightingale Hospital, the control group consisted of healthy women who had made appointments for a routine breast examination.

In the present study, the scales were supplied to the participants in the online environment. The participants were first instructed about the study (how to fill in the survey and scales, how and whom to consult in the case of issues in the survey-taking process) via a phone call. Thereafter, the survey and scales were sent via email and Whatsapp messaging to the volunteers who met the inclusion criteria. Informed consent was obtained in the electronic environment. The volunteers who agreed to participate in the study were provided access to the scales. The survey-taking process took place from May 15, 2020 to June 15, 2020. The fully completed documents were evaluated. The participants' information and survey results were kept confidential.

The inclusion criteria were willingness to participate and having at least a primary school education. On the other hand, the exclusion criteria entailed being diagnosed with a neurological and/or psychiatric disorder that may influence judgment and decision making (such as treatment-resistant epilepsy, psychotic disorders, and manic seizures), obsessive-compulsive disorder (for isolated evaluation of the symptoms induced by fear of COVID-19 infection), and pregnancy. The study participants were asked to fill in the sociodemographic data form, the Fear of COVID-19 Scale (which evaluates infection anxiety and cleaning behaviors developing due to COVID-19) (Table 1), and the Anxiety Sensitivity Index-3 (ASI-3).

Table 1. Questions and responses on the impact of fear of COVID-19 infection on functionality

Questions	Responses				
	0	1	2	3	4
Question-1 How long do you feel fear for COVID-19 infection in a day? (Duration of fear for infection)	Never	Less than 1 hour	1-3 hours	3-8 hours	8 hours or longer
Question-2 How long do you spend your time in a day for cleaning behaviors to prevent probable COVID-19 infection? (Duration of cleaning behavior)	Never	Less than 1 hour	1-3 hours	3-8 hours	8 hours or longer
Question-3 To what extent fear of being infected with COVID-19 influences your daily activities/social life? (Impact of fear for infection on functionality	Not at all	Somewhat however I usually have a good level of functionality	My functionality was impaired however I can manage.	My functionality was impaired in many aspects and I can hardly manage them.	I am not functional.
Question-4 To what extent did your cleaning behavior due to the anxiety of COVID-19 infection affect your daily activities/social life? (The impact of cleaning behavior on functionality)	Not at all	Somewhat however I usually have a good level of functionality.	My functionality was impaired however I can manage.	My functionality was impaired in many aspects and I can hardly manage them.	I am not functional.

The questions evaluating the impact of fear for COVID-19 infection on functionality and the scores corresponding to the responses of these questions

Online questionnaires were sent to 115 breast cancer patients and 90 healthy women via email and Whatsapp messaging. We excluded the questionnaires of 66 volunteers due to non-compliance with the inclusion criteria (n=33) and noncompletion of the scales (n=28)

3.1. Sociodemographic Data Form

The sociodemographic data form was used to evaluate age, marital status, education level, any additional general medical condition, presence of a psychiatric disorder in the medical history, and the impact of fear of COVID-19 infection on functionality in the participants. The presence of cardiac disease, diabetes, chronic obstructive pulmonary disease (COPD), chronic bronchitis, and asthma in a subject was established as indicating the presence of an additional general medical condition.

3.2. Fear of COVID-19 Scale

The impact of fear of COVID-19 infection on functionality was assessed through four questions that we adapted from the Dimensional Yale-Brown Obsessive-Compulsive Scale (DY-BOCS) (9). The first two questions were asked to evaluate the cleaning behaviors performed out of fear of infection and prevention of infection in terms of duration, while the impact of infection anxiety and cleaning behavior on functionality was assessed by the last two questions. The items were rated as 0, 1, 2, 3, and 4, with higher scores being suggestive of a more severe effect of fear of COVID-19 infection. The concrete responses to the answers to each question are provided in Table 1.

3.3. Anxiety Sensitivity Index-3

The anxiety sensitivity index (ASI-3): This 18-item scale was developed by Taylor et al. in 2007 (10) to evaluate anxiety sensitivity. The Turkish version of this questionnaire was tested for validity and reliability by Mantar et al. (11). The items are rated on a 5-point Likert scale, ranging from 0=very little to 4= very much. The survey does not include reversed coded items. The total score from the ASI-3 scale (ASI-tot) was used in the present study.

3.4. Statistical Method

The obtained data were analyzed in SPSS software (version 23) (Statistical Package for Social Sciences, IBM Inc., Chicago, IL, USA). The sociodemographic data of subjects with and without breast cancer were compared by the Chi-Square test. The relationships between the patients with breast cancer and the control group with respect to the impact of fear of COVID-19 infection on functionality were comparatively analyzed by the Chi-Square test. The descriptive statistics related to ASI-tot scores of the breast cancer patients and control group were analyzed using the independent t-test. In the breast cancer group, the relationship between the impact of fear of COVID-19 infection on functionality and sociodemographic data was comparatively analyzed by the Chi-Square test. One-way analysis of variance was implemented for the analysis of the relationship between ASI-tot value and the impact of fear of COVID-19 infection on functionality for both the breast cancer patients group and the control group. Significant differences between the impact of fear of COVID-19 infection on functionality according to the results of the variance analysis were compared by implementing Duncan's multiple comparison test.

4. Results

4.1. Sociodemographic data

The study group (Group 1) included 75 women diagnosed with breast cancer and followed up, while 69 women without breast cancer constituted the control group (Group 2). The mean age scores of participants in two groups of breast cancer and control were obtained at 39.10±3.70 and 37.39±4.31 years, respectively (P=0.328). The analysis of the groups regarding anxiety sensitivity index scores indicated that the mean ASI-tot scores of women in the breast cancer group and those in the control group were reported as 22.31±15.351 and 19.67±13.822, respectively. No statistically significant difference was detected between the two groups (P=0.370; Table 2).

The sociodemographic features of participants are presented in Table 2. No statistically significant difference was detected between the groups in terms of marital status, education level, history of psychiatric disease, and the presence of physical disease (P>0.05).

4.2. Analysis of the impact of fear for COVID-19 infection on functionality in the Covid Fear Survey

No statistically significant difference was observed between the groups with and without breast cancer in terms of the impact of fear of COVID-19 infection on functionality (Table 3) (p>0.05).

4.3. Sociodemographic parameters reported on the Covid Fear Survey in the breast cancer group

Intragroup evaluation of the women diagnosed with breast cancer revealed that smoking and an additional general medical condition were associated with the effect of contamination anxiety (P=0.013, P=0.044) and cleaning behavior to prevent contamination on functionality (P=0.0147, P=0.0234, respectively) (P<0.05). The analysis of the impact of COVID-19 infection anxiety on functionality in women in the breast cancer group with an additional general medical condition (the Covid Fear Survey/Question3) indicated that functionality was completely impaired in 10% of them, whereas no

Table 2. Sociodemographic features of participants

Sociodemographic features		Breast Cancer patients	Control Group	P-value
Age		39.10±3.70	37.39 ± 4.31	0.328*
Marital Status	Single	12 (9)	24.6 (17)	0.110*
	Married	85.3 (64)	71 (49)	
	Divorced	2.7 (2)	4.3 (3)	
	Total	100 (75)	100 (69)	
Education level	Primary school	2.7 (2)	1.4 (1)	0.174*
	Secondary school	4 (3)	1.4 (1)	
	High School	24 (18)	11.6 (8)	
	Bachelor	64 (48)	73.9 (51)	
	Doctorate	5.3 (4)	11.6 (8)	
	Total	100 (75)	100 (69)	
Psychiatric History	Present	18.7 (14)	17.4 (12)	1.000*
	Absent	81.3 (61)	82.6 (57)	
	Total	100 (75)	100 (69)	
Additional General Medical Condition	Present	13.3 (10)	14.5 (10)	1.000*
	Absent	86.7 (65)	85.5 (59)	
Cigarette smoking	Present	14.7 (11)	47.8 (33)	0.000*
	Absent	85.3 (64)	52.2 (36)	
Anxiety Sensitivity Total Score (AD-tot)		22.31±15.351	19.67±13.822	0.370**
Total		100 (75)	100 (69)	

* =Chi-Square test. **= Independent t-test
Data were expressed as number (n) and mean±standard deviation (Sd).

functional impairment was detected in 12.7% of women without an additional physical disease (Chi-Square: 8.95; P=0.044) (Table 4).

The analysis of the impact of COVID-19 cleaning behavior on functionality in women with breast cancer both with and without an additional general medical condition (the Covid Fear Survey/Question 4) indicated that none of the women had completely impaired functionality. No impairment was encountered in 10% and 21.56% of women with breast cancer and an additional general medical condition and their counterparts with breast cancer and no additional general medical condition, respectively (Chi-square: 17.72, P=0.0234) (Table 4). The analysis of the impact of COVID-19 infection anxiety on functionality in women with breast cancer (the Covid Fear Survey/Question 3) revealed that functionality was completely impaired in 9.09% of the women who smoked cigarettes, whereas none of the nonsmoking women with breast cancer had completely impaired functionality (Chi-Square: 12.63; P=0.013) (Table 4).

The analysis of the impact of COVID-19 cleaning behaviors on functionality regarding cigarette smoking (the Covid Fear Survey/Question 4) demonstrated that functionality was completely impaired in 9.09% of smokers with breast cancer but in none of nonsmokers with breast cancer (Chi-Square: 12.393, P=0.0147) (Table 4).

Table 3. Analysis of the relationship between the responses given to questions on functionality in the breast cancer and control groups

Questions	Groups	Responses						p value
		0 % (n)	1 % (n)	2 % (n)	3 % (n)	4 % (n)	Total % (n)	
Question-1 (The duration of fear infection)	Breast Cancer	9.3% (7)	62.7% (47)	24% (18)	4% (3)	0% (0)	100% (75)	0.330***
	Control	13% (9)	66.7% (46)	13% (9)	5.8% (4)	1.4% (1)	100% (69)	
Question-2 (The duration of cleaning behavior)	Breast Cancer	2.7% (2)	53.3 (40)	36% (27)	8% (6)	0% (0)	100% (75)	0.125***
	Control	11.6% (8)	49.3 (34)	27.5% (19)	8.7% (6)	2.9% (2)	100% (69)	
Question-3 (The impact of infection fear on functionality)	Breast Cancer	10.7% (8)	56% (42)	26.7(20)	5.3% (4)	1.3% (1)	100% (75)	0.389***
	Control	13% (9)	46.4% (32)	34.8(24)	1.4% (1)	4.3% (3)	100% (69)	
Question-4 (The impact of cleaning behavior on functionality)	Breast Cancer	20% (15)	57.3% (43)	21.3% (16)	1.3% (1)	0% (0)	100% (75)	0.431***
	Control	17.4% (12)	47.8% (33)	29% (20)	2.9% (2)	2.9% (2)	100% (69)	

The data are given as number (n) and percentage (%).Numbers (0,1, 2, 3, 4)are answers corresponding to given to questions on functionality .For Question 1 and the Question 2; '0'; Never "1"; Less than 1 hour, '2'; 1-3 hours, '3'; 3-8 hours, '4'; 8 hours or longer. For Question 3 and Question 4; '0'; Not at all, '1'; Somewhat however I usually have a good level of functionality, '2'; My functionality was impaired however I can manage, '3'; My functionality was impaired in many aspects and I can hardly manage, '4'; I am not functional. ***=One-way variance analysis.

Table 4. Relationship of an additional general medical condition and cigarette smoking with the impact of infection anxiety on functionality in the breast cancer patients

Breast cancer group (n:75)				
Question -3 Responses (The impact of infection anxiety on functionality)	**Addıtıonal general medical condition % (n)**	**Addıtıonal general medical condition % (n)**	**Cıgarette smokıng % (n)**	**Cıgarette smokıng % (n)**
	Yes	No	Yes	No
0	0% (0) 00 00	10.96% (8) 12.7 100	4.11% (3) 27.27 37.50	6.85% (5) 8.06 62.50
1	9.59% (7) 70.00 17.5	45.21% (33) 52.4 82.5	2.74% (2) 18.18 5.00	52.05% (38) 61.29 95.00
2	1.37% (1) 10.00 5	26.03% (19) 30.2 95	5.48% (4) 36.6 20.00	21.92% (16) 25.81 80.00
3	1.37% (1) 10.00 25	4.11% (3) 4.8 75	1.37% (1) 9.09 25.00	4.11% (3) 4.84 75.00
4	1.37% (1) 10.00 100	0% (0) 00 00	1.37% (1) 9.09 100.00	0% (0) 0.00 0.00
Total	13.7% (10)	86.3 (63)	15.07 (11)	84.93 (62)
	Chi-Square: 8.95	p= 0.044	Chi-Square: 12.63	p= 0.013
Question-4 responses (The impact of cleaning behavior on functionality)				
	Yes	No	Yes	No
0	1.3% (1) 10 6.7	18.2% (14) 21.56 93.3	1.37% (1) 9.09 7.14	17.81% (13) 20.97 92.86
1	9.1% (7) 70 16.3	46.8% (36) 55.44 83.7	6.85% (5) 45.45 12.20	49.32% (36) 58.06 87.80
2	1.3% (1) 10 6.25	19.5% (15) 23.1 93.75	4.11% (3) 27.27 18.75	17.81% (13) 20.97 81.25
3	1.3% (1) 10 100	0% (0) 0.00 00	1.37% (1) 9.09 100.00	0% (0) 0.00 0.00
4	0% (0)	0% (0)	1.37% (1) 9.09 100.00	0% (0) 0.00 0.00
Total	13.70% (10)	86.30% (65)	15.07% (11)	84.93% (62)
	Chi-Square: 17.72	P= 0.0234*	Chi-Square: 12.393	P= 0.0147*

Data were expressed as number (n) and mean±standard deviation (Sd). Numbers (0,1, 2, 3, 4) are answers corresponding to given to questions on functionality. '0'; Not at all, '1'; Somewhat however I usually have a good level of functionality, '2'; My functionality was impaired however I can manage, '3'; My functionality was impaired in many aspects and I can hardly manage, '4'; I am not functional. * =Chi-Square test.

5. Discussion

The current study assessed the impact of the fear of COVID-19 infection on functionality in women with breast cancer. As suggested by the results, no statistically significant difference was found between the groups with and without breast cancer in terms of the impact of fear of COVID-19 infection on functionality. Moreover, smoking and the presence of comorbidity in breast cancer patients had a negative effect on the effect of the fear of Covid-19 infection on functionality. The thoughts and behaviors of participants whose functionality was negatively affected by the fear of COVID-19 infection shared similarities with the symptoms of obsessive-compulsive disorder (OCD).

The OCD is a mental disorder that involves obsessions and/or compulsive behaviors, leading to impaired individual functionality. Obsessions are recurring unwanted and unavoidable ego-dystonic thoughts, impulses, and imaginings. Compulsions are behaviors and cognitive actions performed to decrease the anxiety induced by the obsessions and/or to prevent fearful consequences (12). The most commonly observed phenomenological pattern of OCD is contamination obsession-leaning behaviors intended to prevent infection (13).

Contamination obsession coexists with anxiety regarding being infected by microorganisms, dirt, or potentially harmful agents. Contamination obsessions are accompanied by cleaning compulsions and/or avoidance compulsions focused on potentially contaminating objects (14). Concerning mental health, such behaviors as avoiding infection and cleaning for

protection from pathogens are normal for healthy individuals. In people with OCD, infection anxiety, avoidance, and cleaning behaviors may reach a level that can influence individual functionality (3). The OCD is one of the mental disorders that reportedly are at a higher risk of occurrence during the COVID-19 pandemic (14). In the present study, we evaluated the impact of the fear of COVID-19 infection on functionality in women with breast cancer.

Breast cancer is the most common type of cancer with the highest mortality rate in multiple countries around the world, including Turkey (16). The diagnosis and treatment of the disease are usually discomforting for patients (17). Psychiatric symptoms that may be observed in cancer patients during the disease period include anger, depressive symptoms, anxiety, fear of death, and suicidal thoughts (18-19). Depressive and anxiety symptoms are the most commonly observed psychiatric manifestations in breast cancer patients (20). Carreira et al. have analyzed 60 studies on psychiatric diagnoses and symptoms in breast cancer patients and found that only one study addressed obsessive-compulsive symptoms (21). The OCD, a frequently observed psychiatric disease, has a lifetime prevalence of 1.9%-3.3% (22).

In the same context, Shen et al. evaluated the incidence of cancer in people with OCD and noted that out of 52,656 OCD patients, 718 cases were diagnosed with cancer, 96 of whom had breast cancer. The results of the mentioned study demonstrated that breast cancer is not prevalent in the OCD patient group (23). Obsessive/compulsive symptoms are reportedly exacerbated by an increase in stressors (24). In the current study, it was estimated that fear of COVID-19 infection would have a more negative impact on functionality in breast cancer patients, as compared to that in the group without breast cancer due to increased intensity of stressors.

In contrast to our expectation, no significant difference was detected in favor of breast cancer patients, as compared to the control group, regarding the impact of fear of COVID-19 infection and cleaning behavior on functionality. It was determined that other parameters that increased the negative impact of fear of infection and cleaning behaviors due to COVID-19 on functionality are cigarette smoking and the presence of additional chronic disease. In the control group, these two parameters (cigarette smoking and the presence of an additional chronic disease) had no effect on functionality.

5.1. Limitations

The present study was carried out as an online survey in the internet environment instead of through face-to-face interviews in order to prevent viral spread. Although it was attempted to overcome this limitation by allowing the participants to reach the survey team prior to and during the survey stage, completing an online survey was an unusual process for participants.

6. Conclusion

In the present study, no statistically significant difference was detected between women with and without breast cancer regarding the impact of fear of COVID-19 infection and cleaning behaviors on functionality. Smoking and the presence of comorbidity in breast cancer patients may have a negative effect on functionality due to a fear of contamination. The implementation of necessary interventions that reduce fear among this highly vulnerable group can prevent unnecessary avoidance behaviors and positively affect their functionality.

Footnotes

Authors' Contribution: Emine Fusun Akyuz Cim, Esra Torlak, and Gizem Unveren: conceived the project, collected the data, and wrote the draft of the paper. Gursel Remzi Soybir, Vahit Ozmen, Zeynep Erdoğan İyigün and Tuba Kayan Tapan,: designed and supervised the project and edited final proof. Abdullah Yeşilova, Gül Alço, Ebru Yılmaz, Aslı Eyrenci and Filiz Elbüken: participated in data analysis and interpretation. Serkan İlgün and Tomris Duymaz: designed the project, consulted its integrity, and wrote the draft. Çetin Ordu: supervised the integrity of the data collection. Kezban Nur Pilancı: wrote the draft of the paper and edited the final version.
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