COVID-19 Pandemic and Post-Traumatic Stress Disorder in Women with Breast Cancer

Pandemia de Covid-19 e Transtorno de Estresse Pós-traumático em Mulheres com Câncer de Mama

Pandemia de Covid-19 y Trastorno de Estrés Postraumático en Mujeres con Cáncer de Mama

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ABSTRACT

Introduction: Cancer patients are at higher risk of contracting COVID-19 with worse outcomes. **Objective:** To evaluate COVID-19 pandemic post-traumatic stress disorder in women with breast cancer. **Method:** The Event Impact Scale − Revised (IES-R) was used, consisting of 22 items, in 3 subscales (avoidance, intrusion and hyperstimulation), including criteria for evaluating post-traumatic stress disorders. The invitation was made through WhatsApp or in online meetings of a rehabilitation center for women with breast cancer, further to a link to a Google Docs form and the Informed Consent Form (ICF) sent electronically. **Results:** 50 women were enrolled, aged between 34 and 81 years, 88% in use of some type of comorbidities medication and 10% used antidepressants. Participants did not have post-traumatic stress disorders, however the figures showed that older women had lower rates of post-traumatic stress disorders: total scale (p=0.002), subscales intrusion (p=0.001) and hyperstimulation (p=0.003). There was also a significant difference of antidepressant medication for the total scale (p=0.032) and for the intrusion (p=0.026) and hyperstimulation (p=0.030) subscales. **Conclusion:** The participants did not present post-traumatic stress disorder, possibly due to the fact that they are already attending a breast cancer rehabilitation center that offers online comprehensive care during the pandemic as well.
Key words: stress disorders, post-traumatic; breast neoplasms; COVID-19.

RESUMO

Introdução: Pacientes com câncer possuem um risco maior de contrair covid-19 e apresentar piores resultados. **Objetivo:** Avaliar o estresse pós-traumático advindo da pandemia de covid-19 em mulheres com câncer de mama. **Método:** Utilizou-se a Escala do Impacto do Evento – Revisada (IES-R) composta por 22 itens, em três subescalas (evitação, intrusão e hiperestimulação), que contemplam os critérios de avaliação de transtornos de estresse pós-traumáticos. O convite foi enviado via WhatsApp ou nas reuniões on-line de um núcleo de reabilitação para o câncer de mama juntamente com um *link* de um formulário do Google Docs e o Termo de Consentimento Livre e Esclarecido. **Resultados:** Participaram do estudo 50 mulheres que apresentaram idade entre 34 e 81 anos, 88% faziam uso de algum tipo de medicação para comorbidades e 10% usavam antidepressivos. As participantes não apresentaram transtornos de estresse pós-traumáticos, no entanto, os números mostraram que mulheres com idades mais avançadas apresentaram índices menores de transtornos de estresse pós-traumáticos: escala total (p=0,002), subescalas intrusão (p=0,001) e hiperestimulação (p=0,003). Houve também uma diferença significativa quanto à medicação antidepressiva para a escala total (p=0,032) e para as subescalas intrusão (p=0,026) e hiperestimulação (p=0,030). **Conclusão:** As participantes não apresentaram estresse pós-traumático, o que pode ter sido em razão de já frequentarem um núcleo de reabilitação para o câncer de mama que oferece uma assistência integral, inclusive durante a pandemia (atendimento on-line).
Palavras-chave: transtornos de estresse pós-traumáticos; neoplasias da mama; COVID-19.

RESUMEN

Introducción: Los pacientes con cáncer tienen mayor riesgo de contraer covid-19 y peores resultados. **Objetivo:** Evaluar el trastorno de estrés postraumático de la pandemia covid-19 en mujeres con cáncer de mama. **Método:** Se utilizó la *Event Impact Scale − Revised* (IES-R), que consta de 22 ítems, en tres subescalas (evitación, intrusión e hiperestimulación), que incluyen los criterios para evaluar el trastorno de estrés postraumático. La invitación se realizó a través de WhatsApp o en reuniones online de un centro de rehabilitación para mujeres con cáncer de mama, se envió un enlace a un formulario de Google Docs y el Formulario de Consentimiento Informado por vía electrónica. **Resultados:** Participaron del estudio 50 mujeres, con edades comprendidas entre 34 y 81 años, el 88% utiliza algún tipo de medicación para las comorbilidades y el 10% utiliza antidepresivos. Las participantes no tenían trastornos por estrés postraumático, sin embargo, los números mostraron que las mujeres mayores tenían tasas más bajas de trastornos por estrés postraumático: escala total (p=0,002), subescalas de intrusión (p=0,001) e hiperestimulación (p=0,003). También hubo una diferencia significativa con respecto a la medicación antidepresiva para la escala total (p=0,032) y para las subescalas de intrusión (p=0,026) e hiperestimulación (p=0,030). **Conclusión:** Las participantes no presentaban trastorno de estrés postraumático, lo que puede deberse a que ya están asistiendo a un centro de rehabilitación de cáncer de mama que ofrece atención integral, incluso durante la pandemia (asistencia en línea).
Palabras clave: trastornos por estrés postraumático; neoplasias de la mama; COVID-19.

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INTRODUCTION

Breast cancer is the most common type in Brazilian women, except non-melanoma skin cancer. For each year of the triennium 2020-2022, 66,280 new cases of the disease are anticipated[1].

Surgery, chemotherapy, radiotherapy and hormone therapy are the most common treatments combined or alone to control the disease, nevertheless, local and/or systemic adverse effects may affect the woman's life[2].

Treatment-related body changes can be traumatic for women leading to difficulties in coping with the complications, emotional compromise and potentiation of the fragility lived[3,4].

Since December 2019, the new coronavirus (2019-nCoV) was detected in Brazil affecting thousands of persons worldwide due to fast spread and the World Health Organization (WHO) declared a pandemic on March 11, 2020[5].

The diagnosis and treatment of breast cancer during the pandemic can create extreme stress. Post-traumatic stress disorder is a set of symptoms associated with traumatic event[6].

The coronavirus disease 2019 – COVID-19 caused by the severe acute respiratory syndrome coronavirus 2 – Sars-CoV-2 is highly contagious[7], affecting mainly the respiratory tract and lungs causing a new type of pneumonia[8].

Severe COVID-19 cases can progress rapidly to acute respiratory distress syndrome (ARDS), septic shock and multiple organs dysfunction syndrome (MODS)[9]. Older adults and those with preexisting conditions as cancer, cardiovascular diseases (CVD), diabetes *mellitus* and acute kidney injury have more odds of developing COVID-19 in addition to increased risk of death[8,10].

However, with new virus variants, this epidemiological profile has changed as concluded by a study[11] which evaluated the new variant P1 that appeared in the state of Amazonas. Increases of lethality rates, hospital lethality and mortality in diverse age ranges and genders have been proven, suggesting that it provoked alterations of virulence and pathogenicity when compared to former lineages.

Typically, fever, dry cough, coryza, sore throat and shortness of breath that can onset from two to 14 days post-infection are the symptoms for positive COVID-19. The clinical status ranges from asymptomatic infections to severe respiratory condition. According to WHO, nearly 80% of the patients can be asymptomatic, 20% may require hospitalization due to respiratory difficulties and of these, 5% are likely to need ventilatory support[1,12].

Preliminary data from China suggest that patients with preexisting comorbidities, particularly CVD and cancer are possibly in the group of great risk, not only of being infected but also with worse outcomes. The risk of adverse events can be even greater for those who are diagnosed with both diseases, mostly older adults. This is highly troublesome in the perspective of public health because cancer and CVD are among the most prevalent diseases worldwide and the COVID-19 impact can be devastating for these patients[13].

Patients with cancer have more risk of infection due to the compromise of the immune system as leukopenia, one of the antineoplastic treatment-related adverse effects[13] and high possibility of mortality from COVID-19 associated complications[14].

Concerns and uncertainties caused by the pandemic impact directly the activities of the daily life of the population and their mental health[15].

During the pandemic, it is common for health caregivers and scientists to focus predominantly on the pathogen and the biological risk, attempting to understand the physiopathology mechanisms involved and propose measures to prevent, contain and treat the disease. The secondary psychological and psychiatric implications to the phenomenon both individually and collectively tend to be underestimated and neglected generating gaps in coping strategies and increasing the burden of associated diseases[15].

When social isolation is mandatory, the flow of information is overwhelming and fear installs in the individuals' life as in the COVID-19 pandemics it is necessary to care for mental health to avoid potential disorders, particularly for women still in treatment for breast cancer.

Possibly, this group of persons is in fear in view of the reality, they feel threatened because their immune condition favors the infection making them more vulnerable. In addition, they are living with a life-threatening and stigmatized disease. The objective of this study is to evaluate COVID-19 post-traumatic stress in women with breast cancer.

METHOD

The Impact Event Scale – Revised (IES-R) translated into Portuguese by Caiuby et al.[16] already in public domain was adopted to evaluate the post-traumatic stress associated with the necessity of social isolation to prevent COVID-19.

It is a 22-items Likert-scale where women respond to the questions referred to the days before the application of the scale and self-applied distributed in three subscales: avoidance (avoidance behavior), intrusion (intrusive memories) and hyperarousal (anxiety). The subscales

comprehend criteria of evaluation of post-traumatic stress published in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5)[17].

Absolute and relative frequency of the data were calculated, the variables were crossed applying the Mann-Whitney and the Shapiro-Wilk tests. The orientations of the authors were followed, the score of each question ranges from zero to four points and the score of each subscale was obtained by the mean of the items of the subscales, discarding the unanswered questions. The total score is the sum of the scores of the subscales. As recommended, the cutoff was 5.6 to separate patients with post-traumatic stress from those with no post-traumatic stress. The Statistical Package for the Social Sciences (SPSS), version 25 was utilized for the analyzes.

Cross-sectional design was chosen to evaluate post-traumatic stress related to the pandemic in women with breast cancer attending the rehabilitation group of a university in the countryside of the state of São Paulo. The group's program comprehends emotional, physical, spiritual and social support to mastectomized women with recommendations to prevent lymphedema and other cancer-related complications, discussion rounds, psychological assistance, cultural and craftwork activities, among others attempting to reinsert these women within the concept of full care.

In-person meetings were suspended due to the pandemic as mandated by the sanitary authorities, Google Meets was adopted to allow the professionals to meet the study population and coach them with visual demonstration of the exercises, lectures and weekly meetings, clarifications and emotional support in regard to breast cancer and COVID-19.

Inclusion criteria were women aged 18 years or more diagnosed with breast cancer, registered at the rehabilitation group and with access to Internet. Exclusion criteria were women with cognitive impairment unable to respond to the online form.

The invitation to join the study was through WhatsApp or at the online group meetings, with a link to the form where the women were able to access the Informed Consent Form (ICF). Data were collected electronically, initially with sociodemographic information (age, origin, marital status, profession, religion and education), health history and breast cancer treatment and application of IES-R available through Google Docs.

From June to September 2020, the data were collected through interviews with 50 women.

The Institutional Review Board approved the study, (CAAE 31796120.2.0000.5393) in compliance with Resolution 466/2012[18] of the National Health Council for studies with human subjects.

RESULTS

Sociodemographic and history data related to breast cancer treatment, comorbidities and medications utilized by the participants were collected with Google Docs.

At the interview, the age-range of the women were 34-81 years, 14.6% in the age range of 34-50 years, 43.8% from 50 to 60, 37.5% from 60 to 70 years old, 4.2%, older than 70 years and 4.2% did not inform the age. 70% were from *Ribeirão Preto*, 14%, from the cities of the region (Health Regional − DRS-XIII), 8% from other cities of the state of São Paulo and 8% from other states. 6% were single, 68%, married, 12%, divorced and 14%, widows. 28% of the interviewees were retired, 20%, home-work, 48%, in formal jobs, 2%, unemployed and 2% did not inform. 48% were Catholic, 38%, Evangelic, 12%, Spiritualists and 2%, Jehovah's Witnesses. 10% did not complete elementary school, 12% completed elementary school, 16% did not complete high-school, 22% completed high-school, 10% did not complete university and 30% completed university.

The data on breast cancer treatment revealed that 64% underwent mastectomy, 30%, quadrantectomy, 6%, nodulectomy, 86%, axillary lymphadenectomy, 12% did not submit to axillary lymphadenectomy and 2% did not inform; 42% underwent neoadjuvant chemotherapy, 38%, adjuvant chemotherapy and 20% did not undergo chemotherapy; 70% submitted to radiotherapy, 28% did not undergo radiotherapy and 2% will begin; 58% were treated with hormone therapy, 8% concluded the treatment with target-therapy, 78% did not submit to the treatment, 4% are in treatment and 10% did not inform.

Regarding comorbidities, 18% had diabetes, 50%, arterial hypertension, 12%, CVD, 4%, neurologic diseases, 4%, kidney diseases, 14%, respiratory diseases, 24%, dyslipidemia and 22%, other diseases. 88% of the interviewees used some type of medication, and of these, 44% used antihypertensive, 18%, antidiabetic, 10%, antidepressants, 18%, anti-dyslipidemic and 70%, still used other medications.

The application of IES-R allowed the elaboration of Table 1 which explained the results of the means of the subscales and to the general mean (sum of the three subscales).

Table 2 presents the results of the application of the Mann-Whitney test and the Shapiro-Wilk test relating the subscales IES-R to the medications utilized by the participants.

Table 3 compares the age of the interviewees with the values encountered in total scores and in the subscales and identifies that those at advanced age have lower post-traumatic stress indexes. According to the Spearman's

Table 1. Values of the subscales and mean of IES-R of the study participants (n=50)

Subscales	Mean	Median	Standard Deviation	Minimum	Maximum
Avoidance	1.0	1.1	0.8	0.0	3.1
Intrusion	0.9	0.9	0.7	0.0	2.8
Hyperarousal	0.8	0.6	0.7	0.0	2.3
Mean total	0.9	0.9	0.7	0.0	2.8

Table 2. Use of medications according to the subscales of IES-R of the study participants (n=50)

Medications	Use	N	Avoidance		Intrusion		Hyperarousal		Mean total	Median total	Standard Deviation
			Mean	Median	Mean	Median	Mean	Median			
Antihypertensive	Yes	22	0.9	1.1	0.8	0.7	0.7	0.6	0.8	0.8	0.6
	No	28	1.1	1.3	1.0	0.9	0.9	0.6	1.0	0.9	0.7
Antidepressants	Yes	09	1.3	1.4	1.5	1.6	1.4	1.7	1.4	1.5	0.8
	No	41	1.0	1.0	0.8	0.7	0.7	0.6	0.8	0.9	0.6
Antidiabetic	Yes	05	0.8	0.8	1.2	1.1	1.2	1.0	1.1	1.0	0.5
	No	45	1.0	1.3	0.9	0.7	0.8	0.6	0.9	0.9	0.7
Dyslipidemic	Yes	09	0.9	1.0	1.2	1.1	0.9	0.7	1.0	1.0	0.6
	No	41	1.0	1.3	0.9	0.7	0.8	0.6	0.9	0.9	0.7
Other medications	Yes	35	1.0	1.1	0.9	0.9	0.8	0.7	0.9	0.9	0.6
	No	15	1.0	0.8	1.0	0.9	0.8	0.4	0.9	0.9	0.9

Table 3. Spearman's correlation for the variables age, total scale and subscales intrusion, hyperarousal and avoidance (n=48)

Subscales (mean)	Correlation coefficient	Age
Avoidance	-0.282	0.052
Intrusion	-0.465	0.001
Hyperarousal	-0.415	0.003
Total mean	-0.427	0.002

correlation with age and mean total scores and of the three subscales, the data are inverse than the total scale (p=0.002), subscales intrusion (p=0.001) and hyperarousal (p=0.003). The relation with subscale avoidance (p=0.052) was not relevant.

Table 4 presents the relation among the use of medications, IES-R and Mann-Whitney.

DISCUSSION

The COVID-19 pandemic caused unprecedent deaths and suffering, a global challenge of mental resilience. Many countries investigated the level of suffering in order to pursue strategies of coping and social support, especially those with low education[19]. The present study did not find relation of higher values of IES-R with low-education women.

A study concluded that young age and former traumatic stressors associated with post-traumatic stress[20], similar to the results of the Spearman's correlation with the

Table 4. Use of medications and Mann-Whitney test for mean of avoidance, mean of intrusion, mean of hyperarousal and total mean of the scale

Medications	Mean avoidance	Mean intrusion	Mean hyperarousal	Mean total
	Mann-Whitney Test	Mann-Whitney Test	Teste Mann-Whitney	
Antihypertensive	0.480	0.264	0.549	0.469
Antidepressant	0.145	0.026*	0.030*	0.032*
Antidiabetic	0.593	0.180	0.159	0.449
Dyslipidemic	0.710	0.125	0.502	0.471
Other medications	0.686	1.000	0.632	0.735

(*) Teste Mann-Whitney. Level of significance 0.05.

women interviewed in this study. Older women had lower post-traumatic stress indexes in the total scale (p=0.002), subscales intrusion (p=0.001) and hyperarousal, with less likelihood for this stress.

In the COVID-19 risk group, there are 60-years old women or older with chronic diseases and immunodepressed, that is, with cancer. In addition to the vulnerability because of pre-existing disease which negatively affect the immune system, they may also develop severe complications because of COVID-19 clinical evolution[21].

According with two studies, the most prevalent comorbidities in women with breast cancer are: systemic arterial hypertension, diabetes *mellitus*, obesity and psychological damages[22]. The presence of comorbidities associated with breast cancer are directly related to the quality-of-life of these patients because some diseases and harms are frequently more present[23]. COVID-19 is an example of a disease that can cause harms in oncologic patients.

The COVID-19 pandemic was challenging for the society because the prevention and contention brought political, economic and social impacts negatively affecting the mental health of the population[24].

Psychological suffering may occur after stressor situations, most of the times temporary but can prolong more than a few weeks. In this case, other mental diseases as depression, anxiety and post-traumatic stress[25] may develop.

COVID-19 pandemic stressors are related to social distancing, extended quarantine, frustration, overload, economic difficulties, remote job, fear, concern with the disease and risks to leave the house. In addition, fear of the future can change the routines and are life-threatening[24].

Despite innumerous impacts and stressor events the study population lived daily, it was possible to identify that the interviewees did not present COVID-19 related post-traumatic stress, likely because of the physical, emotional, spiritual and psychosocial support they receive from the rehabilitation group with ongoing online visits, following social distancing to avoid the spread of the virus.

The importance of social support to the population with cancer was found also in a study developed by Sette e Capitão[26] who evaluated social support and quality-of-life in oncologic patients; it was possible to conclude that the support offered by NGOs provided better well-being and mood stability ensuring an improved perception of the general health[26].

Comparing the total score and scores of three subscales (avoidance, intrusion and hyperarousal) of the IES-R and the medications in use (hypertensive, antidepressant, antidiabetic, for dyslipidemia and others)

with the application of the Mann-Whitney test (non-parametric test since these variables did not present normal distribution) and of the Shapiro-Wilk test, there was difference in the variable "antidepressant medication" for total scale (p=0.032) and for the subscales intrusion (p=0.026) and hyperarousal (p=0.030). Nevertheless, this did not occur in the subscale avoidance (p=0.145) and for other classes of medications.

Those who used antidepressant medications had more elevated level of stress than those who did not use.

Antidepressants are used to treat mood disorders, specially depression with emotional and biological symptoms. Emotional symptoms comprehend depressive mood, excessive negative thinking, unhappiness, pessimism, culpability, low self-esteem, loss of motivation and reward and anhedonia; the biological include loss of libido and appetite, slow thinking and action and sleep disorders[27].

For the women in use of antidepressants investigated with scores indicating high level of stress due to the COVID-19 pandemic, it is believed that the causes are the preexisting pathologies related to the mental health provoking pessimistic and discouraging thoughts.

In addition, the COVID-19 stressors on their own cause frustration, concerns and uncertainties and when associated with emotional symptoms for those who use antidepressants, it is understandable that the score nears the spectrum of post-traumatic stress.

During the pandemic, boredom and isolation can cause anguish, thus, it is important to provide orientations and practical advices on coping and stress control; a mobile phone is not a superfluous commodity today through which psychiatric nurses can provide care for those in quarantine[25].

Although this study did not address coping techniques for stress, the interviewees participation in a rehabilitation group might have contributed to relieve the stress in this moment. Since the beginning of the pandemic, the group attempted to strengthen the use of social networks by them (all the activities were conducted remotely), offering an exclusive phone number to contact the attending nurse whenever they need. As already pointed out, they can have access to physical exercises to prevent and control breast cancer complications through live transmissions and Google Meet encounters once a week with health professionals of the group.

A study[28] attempted to identify how Positive Psychology can contribute to reduce psychopathological symptoms (for example, depression, anxiety and stress) and increase of well-being during social isolation caused by COVID-19 spread with combined strategies to promote self-compassion, creativity, optimism and well-being

(with mindfulness mediation, for example). Besides, these strategies can support interventions in different settings, as in clinical contexts, in separate in case it is detected the importance of working with one or two of them more deeply. The general population can use these practices to keep their mental health and well-being during social isolation as they are less expensive, easily accessible and implemented with few adverse effects[28].

A study conducted in hospitals of the Paris *Institut Curie* showed a low death but not negligible 6.7% rate for the population investigated (four of 59 patients) who were Sars-CoV-2 positive with diagnosis of breast cancer[29]. This rate might be associated with meeting social distancing procedures by patients with cancer who were in the COVID-19 risk group.

The study population consisted in 50 women who joined a rehabilitation group of a countryside university of the state of São Paulo. It offers full care of emotional, physical, spiritual and social rehabilitation for mastectomized women further to prevention strategies created by a multiprofessional team.

For individuals with cancer, it is important to count with a multiprofessional support network with the inclusion of other patients during any crisis and can ameliorate the self-esteem and quality-of-life like what occurred with the study population who participated of the rehabilitation group[30,31].

It is necessary and understandable to investigate this phenomenon in other groups or approach women with breast cancer who do not participate in any rehabilitation group considering that the study population consisted in women with breast cancer who joined a similar group which offers full health care to these patients. The number of participants should be expanded and because the study period was referred to the beginning of the pandemic, a different result would likely be achieved, had the study been referred to a later period.

CONCLUSION

The scores indicated for the population investigated that no post-traumatic stress occurred as a result of COVID-19 mandated social isolation. It is believed that the reason is because they had already joined a group which offered physical, emotional, spiritual and psychosocial breast cancer rehabilitation. In addition, even with the discontinuation of in-person visits, online support continued to be offered by a multiprofessional team and other women working in the group to not interrupt the regular activities of the study population.

The results indicate some details deserving more attention, such as younger women and those in use of antidepressants. The services providing full attention to women should pursue strategies for stress relieve in this population.

CONTRIBUTIONS

All the authors contributed substantially to the study design, analysis and interpretation of the data, wording and critical review and approved the final version to be published.

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DECLARATION OF CONFLICT OF INTERESTS

There is no conflict of interests to declare.

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