ORIGINAL ARTICLE

Self-perceived stress by women during the COVID-19 pandemic: an online survey with Brazilian physiotherapists

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Abstract

Introduction: the COVID-19 pandemic highlighted the need to investigate the factors related to stress in female health professionals since women and men are exposed differently to pandemic consequences.

Objective: to analyze which psychosocial demands, sociodemographic, and clinical factors were associated with high levels of perceived stress among Brazilian female physiotherapists during the COVID-19 pandemic.

Methods: this is a cross-sectional study. The data were collected using the Perceived Stress Scale and an online questionnaire sent by e-mail. Unadjusted and adjusted odds ratios (ORs), with their respective 95% CI, were estimated by logistic regression.

Results: the sample was compounded by 339 physiotherapists. Participants who reported a lot/extreme concern with household workers (OR = 2.76; 95% CI: 1.40; 5.46), or relationship with a partner (OR = 4.06; 95% CI: 1.79; 9.21) or financial questions (OR = 2.24; 95% CI: 1.15; 4.35) were more likely to report high levels of perceived stress. In conclusion, the psychosocial demands associated with high levels of perceived stress are high or extreme concern with household chores, or with the relationship with a partner, or financial issues.

Conclusion: the factors associated with high levels of perceived stress in this sample of Brazilian physiotherapists were the following psychosocial demands: high or extreme concern with household chores, high or extreme with a relationship with a partner, or high or extreme with financial issues.

Keywords: COVID-19, mental health, physical therapists, stress disorders, women.

Authors summary

Why was this study done?
The COVID-19 pandemic highlighted the need to investigate the factors related to women's stress since women and men are exposed differently to pandemic consequences. Since the emergence of the COVID-19 pandemic, studies have assessed its effects on health professionals' mental and physical health. In general, these studies have shown high levels of mental burden among health workers and females with higher averages of stress, anxiety, and depression than males. In several countries, physiotherapists (PTs) play a decisive role in the treatment of patients with COVID-19, working in intensive care units, hospital wards, and rehabilitation after hospital discharge. However, few publications assessed the levels of stress among PTs during the pandemic, and to the best of our knowledge, no study was published focusing specifically on female PTs.

What did the researchers do and find?
In this cross-sectional study, we investigated the factors associated with high levels of self-perceived stress in Brazilian PTs during the pandemic. The analyzes revealed that in this sample of Brazilian female PTs, during the COVID-19 pandemic, the psychosocial demands associated with high perceived stress levels were high or extreme concern about housework, or about the relationship with the partner, or financial issues.

What do these findings mean?
The results highlight the importance of study gender differences in research that assesses the effects of the COVID-19 pandemic on the mental health. In addition, the results show the need to adopt measures to address the mental suffering of health professionals during the pandemic, as well as public policies that minimize the impact of gender and professional inequalities historically present in several countries.

Highlights
The COVID-19 pandemic highlighted the need to investigate the factors related to women's stress.
During the COVID-19 pandemic, health workers presented higher averages of stress.
Physiotherapists (PT) play a decisive role in treating patients with COVID-19, working in intensive care units, hospital wards, and rehabilitation after hospital discharge.
In this sample of female PTs, the psychosocial demands associated with high perceived stress levels were high or extreme concern about housework, the relationship with the partner, or financial issues.

INTRODUCTION

Since the emergence of the COVID-19 pandemic, several studies have assessed its effects on health professionals' mental and physical health. In general, these studies have shown high levels of mental burden among health workers and females with higher averages of stress, anxiety, and depression than males[1-6]. Despite this, most studies have focused their analysis on elucidating the professional aspects that have any impact on the mental burden of health professionals independently of gender[1-4,7]. However, there is a gap in studies that investigate specifically among female workers how much their stress is influenced by personal, domestic, economic, and family variables related to gender roles in each society.

Gausman & Langer[8] highlighted the importance that the studies on pandemics include in their analysis which they named "gender lens", to understand how women and men are exposed differently to the social and psychological consequences of a pandemic. They also emphasized that these studies should be carried out in global, national, and local contexts, as well as in different social and professional spheres due to disparities in gender equality aspects around the world.

Regarding health professionals, it is important to note that in recent decades, the proportion of female workers in the health workforce has increased. In addition, currently, there is a higher proportion of female workers in the health workforce than in the general workforce[9]. Therefore, it is essential to identify the factors related to high levels of stress perception among female workers in different health professions to contribute to the development of policies and strategies for facing this issue.

In several countries, physiotherapists (PTs) play a decisive role in the treatment of patients with COVID-19, working in intensive care units, hospital wards, and rehabilitation after hospital discharge[10-15]. However, some publications have assessed the levels of stress among PTs during this pandemic[2,13,16] and to the best of our knowledge, no study was published focusing specifically on female PTs.

Thus, this study aimed to analyze which psychosocial demands, sociodemographic, and clinical factors were associated with high levels of perceived stress among Brazilian female physiotherapists during the COVID-19 pandemic.

METHODS

Study design

This cross-sectional study[17] included a post hoc subgroup analysis of female physiotherapists who participated in a web-based questionnaire survey published in 2022[2].

Study location and period

The data collection was performed from May to June 2020, during the period of social distancing in Brazil, by an online survey.

Study population and eligibility criteria

All female PTs registered in Regional Physical Therapy Council-15 (CREFITO-15), who were practicing physiotherapy in Espírito Santo (ES) state, Brazil, at the period of the data collection, received the questionnaire and agreed with the informed consent term, were included. The PTs who did not complete the questionnaire were excluded from the study. It is worth mentioning that registration on CREFITO-15 is mandatory for all PTs who work in the Espírito Santo state.

To calculate the sample, it was considered the number of PTs registered on CREFITO-15 in May 2020, 4,173 PTs (3,266 females and 907 males). Using this number, a confidence level of 0.95 with a margin of error of 5% and a proportion of 50%, the sample size was estimated at 352 participants for the analysis of PTs (both sexes), and 275 (78.3% of the total sample) for the analysis focusing specifically on female PTs, which was the target population of this post-hoc subgroup analysis. So, the estimated sample size was 275 (confidence level of 0.95 and 5% margin of error).

Data collection

For data collection, the Regional Physical Therapy Council of the 15th Region (CREFITO-15) sent e-mails to all physiotherapists registered and practicing physiotherapy in the Espirito Santo state. The e-mails included an invitation to participate in the survey and a link to a questionnaire available in Survey Monkey Software.

The self-reported questionnaire was structured in four sections: 1) sociodemographic and professional characteristics, 2) clinical characteristics and information related to COVID-19 pandemic, 3) psychosocial demands, and 4) Perceived Stress Scale (PSS-10).

The dependent variable was the perceived stress measured by the Perceived Stress Scale (PSS-10)[18], a widely used instrument for measuring perceived stress[19-22]. PSS-10 consists of 10 items (four positive and six negatives), which must be answered on a Likert scale of frequency, ranging from Never (0) to Always (4). The final score ranges from 0 to 40 and was obtained from the sum of the scores of the questions, and the four questions with a positive connotation had their quotation reversed. High stress was defined as a score equal to or above the 80th percentile (score greater than or equal to 27 points), according to a previous study[23].

The exposure variables were the factors related to the effects of COVID-19 on the participants' concerns related to psychosocial demands and measured by the question: "In the past 7 days, how much did the factors below affect you psychologically?" a. housework; b. care/relationship with children; c. relationship with the partner; d. professional overload; e. concern about financial issues; f. concern about being infected by SARS-CoV-2; g. concern about close people/family members being infected by SARS-CoV-2; h. restriction of leisure/social interaction; and i. loneliness. The options for response to these questions were: not at all, slightly, moderately, a lot and extremely[2].

The adjustment variables were: age group in years (22 to 34; 35 to 69); marital status (with partner - married / in a stable relationship; no partner - single; separated / divorced; widowed; others); children (yes or no); income (up to 5 minimum wage; above 5 minimum wage); working in person as a physiotherapist (yes or no); distancing (question: "Do you consider that you are adequately practicing the measures of" social distancing "due to the outbreak of COVID-19?", yes or no); COVID-19 diagnosis ("Have you ever been diagnosed with COVID-19?", yes or no).

Data analysis

Stata software (version 12.0) was used for data analysis. Descriptive analysis of all variables was performed using absolute and relative frequency distribution. In the bivariate analysis, the proportion of high levels of stress perception and the respective 95% confidence intervals (95% CI) were calculated according to the independent variables. Unadjusted and adjusted odds ratios (OR), with their respective 95% CI, were estimated through logistic regression. In the multiple analysis, a full model was fitted with all the independent variables included in the study[24]. A significance level of 5% was adopted.

Ethical and legal aspects of the research

The Ethics Committee of Federal University of Espírito Santo approved this study (number 4.032.838 / CAAE: 31522720.2.0000.5060).

■ RESULTS

A total of 522 questionnaires were initiated and 417 were completed, yielding a completion rate of 79,88%, among which 339 were completed by PTs who identified themselves as belonging to the female sex, being included in this sample.

Therefore, the sample consisted of 339 PTs. Among them, 69% were between 18 and 35 years old, 54.87% had a partner, 53.98% did not have children, 67.5% reported having a monthly income less than 5 minimum wage, 64.3% reported working as PTs during the period of data collection (table 1).

Participants who reported having a lot or extreme concern with housework (OR = 2.76; 95% CI: 1.40; 5.46), with their relationship with the partner (OR = 4.06; CI 95 %: 1.79; 9.21) and with financial issues (OR = 2.24; 95% CI: 1.15; 4.35) were more likely to report high perceived stress levels (table 1).

Table 1: Factors related to high perceived stress levels among Brazilian physiotherapists

Variables	Total		Bivariate analysis	Multivariate analysis
	n (%)	% (IC95%)	OR (IC95%)	OR (IC95%)
Age group (years)				
18 to 34	182 (53.69)	21.98 (16.52; 28.62)	1.64 (0.93; 2.89)	1.55 (0.71; 3.36)
35 to 69	157 (46.31)	14.65 (9.91; 21.13)	1.00	1.00
Marital status				
With a partner	186 (54.87)	15.05 (10.58; 20.98)	1.00	1.00

Continuation - Table 1: Factors related to high perceived stress levels among Brazilian physiotherapists

Variables	Total		Bivariate analysis	Multivariate analysis
	n (%)	% (IC95%)	OR (IC95%)	OR (IC95%)
Without a partner	153 (45.13)	22.88 (16.87; 30.25)	1.67 (0.96; 2.90)	1.67 (0.78; 3.55)
Children				
No	183 (53.98)	21.31 (15.95; 27.88)	1.49 (0.85; 2.61)	1.10 (0.45; 2.67)
Yes	156 (46.02)	15.38 (10.50; 21.98)	1.00	1.00
Family income				
Up to 5 minimum wage	229 (67.55)	18.78 (14.21; 24.40)	1.04 (0.58; 1.87)	1.58 (0.78; 3.20)
> 5 minimum wage	110 (32.45)	18.18 (12.00; 26.59)	1.00	1.00
Working in person-care as a physiotherapist				
No	121 (35.69)	23.14 (16.44; 31.55)	1.57 (0.90; 2.75)	1.89 (0.97; 3.67)
Yes	218 (64.31)	16.06 (11.73; 21.58)	1.00	1.00
Adequately practicing the measures of social distancing				
No	44 (12.98)	25.00 (14.29; 39.99)	1.56 (0.74; 3.28)	1.19 (0.50; 2.80)
Yes	295 (87.02)	17.63 (13.67; 22.43)	1.00	1.00
Confirmed diagnosis of COVID-19				
No	315 (92.92)	17.78 (13.92; 22.42)	1.00	1.00
Yes	24 (7.08)	29.17 (14.31; 50.38)	1.90 (0.75; 4.81)	1.75 (0.57; 5.36)
Housework				
Not at all/slightly/ moderately	257 (75.81)	13.62 (9.92; 18.41)	1.00	1.00
Very/extremely	82 (24.19)	34.15 (24.64; 45.12)	3.29 (1.84; 5.87)	2.76 (1.40; 5.46)
Care/relationship with children				
Not at all/slightly/ moderately	287 (84.66)	18.12 (14.06; 23.03)	1.00	1.00
Very/extremely	52 (15.34)	21.15 (12.02; 34.50)	1.21 (0.58; 2.52)	0.53 (0.19; 1.52)
Relationship with the partner				
Not at all/slightly/ moderately	285 (84.07)	14.74 (11.06; 19.37)	1.00	1.00
Very/extremely	54 (15.93)	38.89 (26.77; 52.55)	3.68 (1.95; 6.97)	4.06 (1.79; 9.21)
Professional overload				
Not at all/slightly/ moderately	225 (66.37)	16.00 (11.75; 21.42)	1.00	1.00
Very/extremely	114 (33.63)	23.68 (16.72; 32.41)	1.63 (0.93; 2.85)	1.32 (0.69; 2.55)
Concern about financial issues				
Not at all/slightly/ moderately	165 (48.67)	11.52 (7.44; 17.39)	1.00	1.00
Very/extremely	174 (51.33)	25.29 (19.35; 32.32)	2.60 (1.45; 4.68)	2.24 (1.15; 4.35)

Continuation - Table 1: Factors related to high perceived stress levels among Brazilian physiotherapists

Variables	Total		Bivariate analysis	Multivariate analysis
	n (%)	% (IC95%)	OR (IC95%)	OR (IC95%)
Concern about being infected				
Not at all/slightly/moderately	129 (38.05)	11.63 (7.11; 18.46)	1.00	1.00
Very/extremely	210 (61.95)	22.86 (17.65; 29.06)	2.25 (1.20; 4.22)	1.06 (0.47; 2.38)
Concern about close people/family members being infected				
Not at all/slightly/moderately	58 (17.11)	6.90 (2.58; 17.16)	1.00	1.00
Very/extremely	281 (82.89)	21.00 (16.61; 26.18)	3.59 (1.25; 10.31)	1.73 (0.48; 6.19)
Restriction of leisure/social interaction				
Not at all/slightly/moderately	125 (36.87)	12.00 (7.34; 19.02)	1.00	1.00
Very/extremely	214 (63.13)	22.43 (17.31; 28.54)	2.12 (1.13; 3.97)	1.42 (0.68; 2.96)
Loneliness				
Not at all/slightly/moderately	246 (72.57)	14.23 (10.37; 19.20)	1.00	1.00
Very/extremely	93 (27.43)	30.11 (21.60; 40.25)	2.60 (1.47; 4.59)	1.40 (0.71; 2.76)

OR- odds ratio; CI = confidence interval; COVID-19 = coronavirus disease 2019.

DISCUSSION

After multivariate analysis, PTs' high levels of perceived stress remained associated with the following psychosocial demands: feeling high or extreme concern about housework, high or extreme concern about the relationship with their partner, and high or extreme concern about financial issues. Sociodemographic and clinical factors were not associated with high levels of perceived stress among these Brazilian female PTs during the pandemic.

Some sociodemographic factors included in the current study (like age[1,2,16], marital status[1,16], and family income[2]) were previously associated with stress in health professionals during the COVID-19 pandemic, which differs from our results. However, none of these studies analyzed the association of these variables specifically with high-stress perception levels, defined as scores equal to or above the 80th percentile of the PSS-10[23]. To the best of our knowledge, this is the first study about the factors associated with high levels of perceived stress levels in female PTs during the pandemic, which is relevant since scores equal to or above the 80th percentile of the PSS-10, which have been considered significant indicators of pathology[23].

The effects of biological, physiological, sociocultural elements on the prevalence of stress in women have been discussed since before the pandemic[25-26]. The three psychosocial demands associated to high perceived stress levels in present study seems to be related to the socio-cultural elements that comprise gender and may be determinants in the health-disease process, although sometimes ignored by biomedical research[27]. The different social roles assigned to men and women may explain differences in the impacts of the pandemic between the sexes[8,27,28].

A multi-country study, including data from the United States, Canada, Denmark, Brazil, and Spain, evidenced that during the COVID-19 pandemic, women spent more time on tasks such as household chores and childcare than men[29]. These challenges for female workers have also been reported in others studies[30-31]. Although it has not been investigated specifically in female health workers the association between household chores and stress, it was reported that the scientific productivity of female academics has been disproportionately affected due to increasing challenges as family responsibilities, domestic labor, childcare, and others, during the pandemic[31]. Moreover, the prementioned multi-country study showed that the women reported lower happiness, to the extent they spent more time on housework[31]. The disparities in time use by gender during the pandemic can explain the association between extreme concern about housework and perceived stress observed in the present study since participants who reported a high or extreme concern about housework were more likely to report high perceived stress levels.

Marital status did not predict the high stress perceived levels in this study, which corroborates a study

conducted with nurses in Saudi Arabia[32] but diverges from studies conducted with physicians[1] and PTs[16], in which married individuals reported lower levels of perceived stress than non-married ones[16,32]. However, in the current study, participants who reported a high or extreme level of concern about their relationship with their partner were more likely to report a high level of perceived stress. Although we did not find any study analyzing this psychosocial demand among health professionals, an Austrian study with the general population showed that the lockdown was a challenge, especially for couples with poor relationships. In that study, relationship per se was not a risk or a protective factor for mental health during COVID-19. However, the relationship quality was. A poor relationship was a risk factor, while a good relationship was a protective factor, compared to no relationship[33]. Indeed, an increase in family stress and domestic violence occurred during the COVID-19 pandemic[34].

In this study, a high and extreme concern with financial issues was associated with a higher perceived stress. Gausman & Langer[8] reported that financial uncertainties can have the effect of increasing psychological suffering for women. Moreover, economic inequalities experienced by women in the labor market have been pointed as one of the factors of psychological overload and increasing the predisposition to the development of depressive symptoms, anxiety, and stress[33,35]. According to Barbosa, Costa, and Heckscher[36], in Brazil, women, compared to men, had a greater deterioration in working conditions, with loss of occupation, due to the COVID-19 pandemic. These facts should be considered in the formulation of public policies to minimize the economic impact of this pandemic.

The results highlight the importance of studying gender differences in research that assesses the effects of the COVID-19 pandemic on mental health. In addition, the results show the need to adopt measures to address the mental suffering of health professionals during the pandemic and public policies that minimize the impact of gender and professional inequalities historically present in several countries.

This study had three main limitations. The first limitation was the convenience sample, which precludes the generalization of the results. The second limitation was the cross-sectional design, which limits the results to a single point in time; therefore, it does not show the dynamics of changes in the level of perceived stress during the pandemic. Finally, the third limitation was the assessment of stress using a self-report questionnaire, which is less reliable than a professional assessment.

Although, the questionnaire PSS-10 is a validated and largely used tool for stress screening.

CONCLUSION

In this sample of Brazilian female physiotherapists, during the COVID-19 pandemic, the psychosocial demands associated with high levels of perceived stress were high or extreme concern about housework, or about the relationship with the partner, or financial issues. The sociodemographic and clinical factors were not associated with high levels of stress perception in this population.

Author Contributions

All authors contributed to the manuscript. Pablo Cardozo Rocon: Participated in data analysis planning and interpretation, discussion of results, writing of the text, and final review and approval. Flavia Marini Paro: Participated in the study design, data collection, data analysis planning and interpretation, discussion of results, writing of the text, final review and approval. Rodrigo Daros Vieira: Participated in the study conception and design, data collection, data collection coordination, discussion of results, critical revision of the text, and approval. Amanda Cristina de Souza Andrade: Participated in data analysis planning and interpretation, statistical analysis, discussion of results, critical revision of the text, and final approval. Marcela Cangussu Barbalho-Moulim: Participated in the study design, data collection, discussion of results, critical revision of the text, and approval. Christyne Gomes Toledo de Oliveira: Participated in the study design, data collection, discussion of results, critical revision of the text, and approval. José Roberto Gonçalves de Abreu: Participated in the study design, critical revision of the text, and approval. Halina Duarte: Participated in the study conception and design, project coordination, data collection, data analysis planning and interpretation, discussion of results, critical revision of the text, and approval.

Conflicts of Interest

The authors have no conflict of interest.

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Resumo

Introdução: a pandemia de COVID-19 evidenciou a necessidade de investigar os fatores relacionados com o stress em profissionais de saúde do sexo feminino, uma vez que mulheres e homens estão expostos de forma diferente às consequências da pandemia.

Objetivo: analisar quais são as demandas psicossociais e os fatores sociodemográficos e clínicos associados a altos níveis de percepção de estresse em fisioterapeutas brasileiras durante a pandemia.

Método: estudo de corte transversal, cujos dados foram coletados por meio da Escala de Estresse Percebido e de um questionário on-line enviado por e-mail. Para análise dos dados, Odds ratio (OR) não ajustado e ajustado, com seus respectivos intervalos de confiança (IC95%), foram estimados por regressão logística.

Resultados: compuseram a amostra 339 fisioterapeutas. Participantes que relataram muita/extrema preocupação com: afazeres domésticos (OR=2,76; IC95%: 1,40;5,46), ou relacionamento com o parceiro (OR=4,06; IC95%: 1,79;9,21) ou questões financeiras (OR=2,24; IC95%: 1,15;4,35) eram mais propensas a altos níveis de estresse percebido.

Conclusão: os fatores associados a altos níveis de percepção de estresse nesta amostra de fisioterapeutas brasileiras foram as seguintes demandas psicossociais: preocupação alta/extrema com as tarefas domésticas, com o relacionamento com o parceiro, ou questões financeiras.

Palavras-chave: COVID-19, saúde mental, fisioterapeutas, estresse, mulheres.