Artigo de Original

COVID-19: implications of social isolation on the well-being and lifestyle habits of brazilian pregnant women

COVID 19: implicações do isolamento social no bem-estar e no estilo de vida de gestantes brasileiras

Laudicéia Ferreira Fróis[1]* ORCID 0000-0002-8514-2600, Emilly Mões Oliveira[2] ORCID orcid.org/0000-0002-6721-501X, João Paulo Lima de Oliveira[2] ORCID 0000-0002-9623-5474, Lílian Gonçalves Teixeira[2] ORCID 0000-0003-4682-8594

ABSTRACT

Introduction: The COVID-19 pandemic affected various population groups, particularly pregnant women who experienced the impacts of changes in family dynamics, lifestyle habits, and psychological disturbances. **Objective:** To assess changes in lifestyle habits and perceived stress among Brazilian pregnant women who experienced social isolation during the COVID-19 pandemic. **Methods:** A cross-sectional study was conducted between October and November 2020 using an online questionnaire. Data were collected on sociodemographic, economic, and lifestyle characteristics. Additionally, perceived stress was assessed using the Perceived Stress Scale (PSS-10). The data were tabulated in Excel, and statistical analyses were performed using the Statistical Package for the Social Sciences (SPSS). Chi-square tests and Spearman's rank correlation were conducted to evaluate associations and correlations between perceived stress and sociodemographic variables and lifestyle habits. **Results:** The sample consisted of 85 pregnant women with a mean age of 31.33 ± 4.87 years. A negative correlation was observed between perceived stress and age ($r = -0.318$) and a positive association between worsening sleep quality and reduced physical activity ($p = 0.022$). The level of perceived stress was 21.2 ± 6.88 points, considered moderate to high. **Conclusion:** There were changes in lifestyle habits and perceived stress among pregnant women during the COVID-19 pandemic

Keywords: COVID-19; coronavirus; pregnancy; maternal health; social networks; epidemiology.

[1] Federal University of Ouro Preto, Ouro Preto-MG,Brazi.
[2] Federal University of Lavras, Faculty of Health Sciences, Lavras-MG, Brazil.
* **Autor correspondente:** Rua Paraguai, nº 475. Campo Belo – Minas Gerais, Brazil. CEP: 37270-000. laudiceia.frois@aluno.ufop.edu.br.

RESUMO

Introdução: A pandemia de COVID-19 afetou diversos grupos populacionais, principalmente gestantes que sofreram os impactos das mudanças na dinâmica familiar, hábitos de vida e distúrbios psicológicos. **Objetivo:** Avaliar mudanças nos hábitos de vida e estresse percebidos de gestantes brasileiras que vivenciaram o isolamento social na pandemia de COVID-19. **Métodos:** Estudo transversal, realizado entre o outono e novembro de 2020 por meio de um questionário online. Foram coletados dados sobre características sociodemográficas, econômicas e de estilo de vida. Além disso, o estresse percebido foi avaliado por meio da Escala de Estresse Percebido (PSS-10). Os dados foram tabulados no software Excel e as análises estatísticas foram realizadas no programa Statistical Package for the Social Science (SPSS). O teste Qui- quadrado e esclarecido de Spearman foram realizados para avaliação de associações e correlações entre estresse percebido e variáveis sociodemográficas e hábitos de vida. **Resultados:** A amostra foi composta por 85 gestantes com idade média de 31,33± 4,87 anos. Foi observado uma correlação negativa entre estresse percebido e idade (r=-0,318) e associação positiva entre piora na qualidade do sono e redução da atividade física (p=0,022). O nível de estresse percebido foi de 21,2 ± 6,88 pontos, considerado moderado a alto. **Conclusão:** Houve mudanças nos hábitos de vida e percepção de estresse das gestantes durante a pandemia de COVID-19.

Palavras-chave: COVID-19; coronavírus; gravidez; saúde materna; redes sociais; epidemiologia.

INTRODUCTION

Throughout the gestational period, the mother and fetus undergo rapid transformations, with significant physiological, anatomical, and metabolic changes[1]. In this sense, these changes affect the pregnant woman's psychological dynamics and social relationships[2]. These adaptations are influenced by personal factors, such as her psychosocial well-being, her family, and the society in which she lives[3]. Thus, the way the pregnant woman experiences these changes has a direct impact on the development of motherhood and the mother-child relationship[2].

Given these premises, women in general constitute a vulnerable group to the psychological consequences of public health crises, such as pandemics, which, in turn, are linked to the emergence of a significant number of stressors[4,5]. From this perspective, pregnant women are particularly affected by such phenomena, considering the possibility of unfavorable outcomes for the health of the mother-child dyad. This scenario has already been observed in the past, as with the MERS-CoV virus, the Zika virus[4,6,7], and more recently, the SARS-CoV-2 virus, which led to globally recommended social isolation[8].

The COVID-19 pandemic had considerable effects at various social levels, beyond public health itself, such as behavioral changes, psychological consequences, and mental health issues, including excessive fear, stress, anxiety, insomnia, and depressive symptoms[8]. In the psychological context, the COVID-19 crisis was a decisive factor showing that medical care should never be neglected for a pregnant patient[9]. Additionally, it increased biological vulnerability during pregnancy to infections, associated with the need for admission to intensive care units, mechanical ventilation, and the occurrence of death[5]. As such, this event had profound effects on parenting, marital life, and the development of the maternal-fetal bond[8], factors that correlate with the progression of pregnancy, the child's health, and the experience of feelings and emotions[10].

Additionally, there were changes in pregnancy management, such as in-person access to health services, fewer prenatal medical appointments, and changes in childbirth and postpartum care protocols[5]. Thus, the limitations in interpersonal contact and the practice of social isolation significantly

influenced the pregnancy experience, causing changes in family dynamics, lifestyle habits, and psychological disorders[4,11].

Considering that maternal and child health is a social determinant that influences public health policies[4], studies aimed at establishing the consequences of the changes imposed by the pandemic period on the well-being parameters of Brazilian pregnant women are justified. This is to elevate the discussion of this topic in the scientific context and to contribute to the development of strategies to mitigate possible harmful repercussions for this social group. In line with this premise, the objective of this study was to evaluate the changes in lifestyle habits and the perception of stress among Brazilian pregnant women who experienced social isolation due to the COVID-19 pandemic.

METHODS

This is a cross-sectional study, derived from a larger study titled "Assessment of lifestyle habits, eating habits, and behaviors during social isolation due to the COVID-19 pandemic in the maternal-infant population in Brazil." Data were collected between October and November 2020. Volunteers were invited to participate in the online survey through a self-administered, semi-structured virtual questionnaire containing questions about their sociodemographic condition and lifestyle habits. The invitation to participate in the study was sent through social media platforms such as Facebook™, Instagram™, and WhatsApp™. In this context, pregnant women of Brazilian nationality who agreed to the terms outlined in the Informed Consent Form were eligible to participate.

Sociodemographic characteristics such as age, gestational age, socioeconomic status[12], practice of social isolation, and lifestyle habits were investigated.

Perceived stress was assessed using the Perceived Stress Scale (PSS-10), validated in Portuguese[13]. This scale contains 10 questions, answered on a five-point Likert scale ("never," "almost never," "sometimes," "fairly often," "very often"), which evaluates subjective feelings, personal events, and behavior in stressful situations during the past month. The scores for questions 4, 5, 7, and 8 were calculated inversely, meaning the responses were recoded (0=4; 1=3; 2=2; 3=1; 4=0), and the remaining items were scored in ascending order. The total score was obtained by summing the items, and the higher the score, the greater the level of perceived stress.

The data were tabulated in Excel software and analyzed using the Statistical Package for the Social Sciences (SPSS) software, version 20.0. The normality of the data was verified using the Shapiro-Wilk test. Descriptive analysis was conducted, with continuous variables presented as mean and standard deviation, while categorical variables were expressed as absolute values and percentages. To assess the association between sleep quality and lifestyle habits, the Chi-square test was applied. Additionally, Pearson's correlation was used to investigate the relationship between changes in the pregnant women's sleep duration and the variables of age, gestational age, and perceived stress. Significance values below 0.05 were considered statistically significant.

RESULTS

The sample consisted of 85 pregnant women with an average age of 31.33 ± 4.87 years and a gestational age of 22.49 ± 8.97 weeks. Regarding average family income, 42.4% (n=36) had a family income of up to 5,641.64, and 42.4% (n=36) reported practicing social isolation, as shown in Table 1.

Table 1. Sociodemographic characteristics and lifestyle habits of pregnant women during the COVID-19 pandemic. Lavras, Minas Gerais, 2020. (n=85)

Variables (n)	% (n) or Mean ± Standard Deviation
Age[*]	31.33 ± 4.87
Gestational age	22.49 ± 8.97
Socioeconomic classification[**]	
A1	14.1 (12)
A2	18.8 (16)
B1	42.4 (36)
B2	14.1 (12)
C	7.1 (6)
D e E	3.5 (3)
Social isolation	
No	5.9 (5)
Yes	42.4 (36)
Partially	51.8 (44)
Work hours during the COVID-19 pandemic	
Increased	76.5 (65)
Decreased	4.7 (4)
Unchanged	18.8 (16)
Alcohol consumption during the COVID-19 pandemic	
Increased	11.8 (10)
Decreased	22.4 (19)
Unchanged	22.4 (19)
Does not consume	42.4 (36)
Physical activity during the COVID-19 pandemic	
Increased	8.2 (7)
Decreased	48.2 (41)
Unchanged	20 (17)
Does not practice	23.5 (20)
Change in sleep quality during the COVID-19 pandemic	
Worsened	40 (34)
Improved	12.9 (11)
Unchanged	47.1 (40)
Hours of sleep before the COVID-19 pandemic	7.89 ± 1.17
Hours of sleep during the COVID-19 pandemic	8.66 ± 1.01
Perceived stress	21.2 ± 6.88

Note: * Data available for 84 pregnant women; ** Classification according to the Brazil Criteria Cut-off Classification.

When it comes to analyzing sleep in relation to lifestyle habits and perceived stress, the analyses presented in Tables 2 and 3 identified a negative correlation between stress and age (r = -0.318), as shown in Table 3.

Table 2: Correlation between sleep hours, age, and perceived stress. Lavras, Minas Gerais, 2020. (n=85)

Variables (n)	Hours of sleep during pandemic	
	r	p-value
Age	-0.133	0.232
Gestational age	-0.052	0.635
Perceived stress	0.026	0.811

Table 3. Correlation between perceived stress, lifestyle habits, and maternal variables. Lavras, Minas Gerais, 2020. (n=85)

Variables (n)	Perceived stress	
	r	p-value
Age	-0.318	**0.004**
Hours of sleep during pandemic	0.026	0.811
Gestational age	0.042	0.706

When evaluating the association between sleep quality during the pandemic and lifestyle habits, as presented in Table 4, it was found that 70.6% (n=24) of the pregnant women reported a deterioration in sleep quality, coinciding with a decrease in physical activity.

Table 4. Association of sleep quality with lifestyle habits during the COVID-19 pandemic. Lavras, Minas Gerais, 2020. (n=85)

Variables (n)	Sleep quality during the pandemic % (n)			p-value
	Worsened	Improved	Unchanged	
Work hours				
Increased	35.3 (12)	18.2 (2)	32.5 (13)	0.447
Decreased	38.2 (13)	36.4 (4)	37.5 (15)	
Unchanged	23.5 (8)	27.3 (3)	27.5 (11)	
Does not practice	2.9 (1)	18.2 (2)	2.5 (1)	
Alcohol consumption*				
Increased	20.6 (7)	9.1 (1)	5.1 (2)	0.395
Decreased	17.6 (6)	27.3 (3)	25.6 (10)	
Unchanged	20.6 (7)	9.1 (1)	28.2 (11)	
Does not consume	41.2 (14)	54.5 (6)	41 (16)	
Physical activity				
Increased	5.9 (2)	18.2 (2)	7.5 (3)	**0.022**
Decreased	70.6 (24)	36.4 (4)	32.5 (13)	
Unchanged	11.8 (4)	9.1 (1)	30 (12)	
Does not practice	11.8 (4)	36.4 (4)	30 (12)	

Note: * Data available for 84 pregnant women;

DISCUSSION

The results of this study showed that perceived stress negatively influenced the lifestyle habits of pregnant women during the COVID-19 pandemic.

According to studies on the topic[14–16], during this period, women were more likely to develop mental disorders such as anxiety, depression, and stress compared to men[14]. One hypothesis explaining the greater psychological distress experienced by women in the context of the pandemic is that they represented a larger percentage of the workforce during the acute phase of infection spread, comprising a higher proportion of the healthcare service sectors[14].

In this sense, it is important to emphasize that the experience of stress during pregnancy is associated with an increased risk of miscarriage, preterm birth, low birth weight, and low Apgar scores, as well as influencing the child's neuropsychological development throughout life, increasing the predisposition to emotional disorders[15,16]. Therefore, investigating the relationship between maternal stress and neonatal outcomes is essential, especially considering that factors such as uncertainty, social isolation, and disruption of prenatal care may have exacerbated this stress.

The cellular mechanisms involved, such as the activation of the hypothalamic-pituitary-adrenal (HPA) axis and the increase in cortisol levels, can negatively impact fetal development, influencing the child's mental health[17]. Therefore, it is essential to develop valid and reliable tools to assess the perception of stress in women during the perinatal period[15,16].

Based on this premise, a Dutch cohort study involving pregnant women was conducted to assess stress levels before and during the COVID-19 pandemic. The results did not indicate significant differences in anxiety and depression levels between the groups. However, when participants who responded to the questionnaires during the pandemic were asked about their stress levels, they reported a significant increase compared to women who were not associated with this period ($p<0.001$)[18]. These findings suggest that, although anxiety and depression may not have varied significantly, the experience of stress was clearly exacerbated during the pandemic.

The findings of the present study corroborate the results of another research conducted with 210 Brazilian pregnant women, which used the same assessment instrument. When investigating perceived stress during the pandemic, this study revealed that the stress level of the participants ranged from moderate to high, with an average of 18 ± 6.59[17]. Additionally, a Polish study with 262 pregnant women[5] also identified a significant increase in stress levels during the pandemic compared to pre-pandemic data, with an average score of 20.95 ± 8.05. These results highlight the magnitude of the impact of the pandemic context on the mental health of pregnant women.

The study revealed a significant negative correlation between the age of pregnant women and perceived stress, corroborating the literature that indicates that advanced maternal age may act as a protective factor against stress and anxiety[19]. Research shows that stress is more prevalent among participants under the age of 25[20], and a systematic review indicated that younger women are more likely to experience psychological distress due to the pandemic context[14]. In contrast, a study by Stepowicz et al.[17] found no significant differences in anxiety levels concerning the age of pregnant women. Thus, the influence of maternal age on stress and anxiety during the pandemic remains controversial.

Regarding the association between reduced physical activity and poorer sleep quality, it is known that the relationship between these variables is well established in the literature, as the hormonal effects of physical activity promote better sleep quality[21]. Changes in sleep patterns are common among pregnant women, with episodes of insomnia and nighttime awakenings being characteristic[22]. In light of this, it is believed that moderate physical activity during pregnancy helps reduce levels of stress, depression, and anxiety[17]. From this perspective, considering the relationship between physical activity and reduced stress levels[23], the inability to exercise during the pandemic contributed to changes in lifestyle habits, as well as to increased perceived stress and decreased sleep quality.

The COVID-19 pandemic led to changes in the daily routines of women during the perinatal and postnatal periods, such as the regularity and level of physical activity and proper nutrition[24,25]. In this sense, a study involving 1,987 Canadian pregnant women during the pandemic found that 37% of participants reported symptoms of depression and 57% reported symptoms of anxiety. It also showed that physical activity was able to reduce the occurrence of these symptoms and was associated with fewer psychological symptoms[18,26]. Thus, the authors concluded that exercise appears to act as a resilience factor in the social context arising from the COVID-19 pandemic. Furthermore, a study with

740 Polish pregnant women found that participants reduced their overall energy expenditure in physical activity during the pandemic[11], highlighting changes in exercise practices, with pregnant women in their third trimester exhibiting significantly lower levels of overall physical activity during the pandemic compared to pregnant participants before the pandemic. This demonstrates the role of exercise in quality of life during pregnancy, and the negative impact of stress during the COVID-19 pandemic can be minimized through moderate-intensity physical activity[27].

Despite the potential identified by the study, it is important to consider the limitation of self-administered questionnaires, which prevented clarification of doubts among participants. Additionally, the cross-sectional design hinders the identification of causality. When analyzing the differences in perceived stress between pregnant women who practiced isolation and those who did not, no significant differences were found, suggesting that other factors may influence the experiences of pregnant women during the pandemic.

Therefore, the potential of this study regarding the sampling method used should be emphasized. The application of social media expanded the reach to the target audience, allowing for data collection that can support public health initiatives. Moreover, it is noteworthy that the sample size was adequate to support conclusions about the stress faced by pregnant women. Thus, this information aims to mitigate the impacts of the pandemic on the quality of life of pregnant women and promote the development of public policies focused on maternal and child health.

CONCLUSION

This study demonstrates that perceived stress during the COVID-19 pandemic had a negative impact on the lifestyle habits of pregnant women. Additionally, younger women faced significant psychological challenges, and the reduction in physical activity compromised sleep quality. These findings can inform public policies aimed at promoting mental health and well-being among pregnant women in contexts of instability.

Contribuição dos autores

Conflito de interesses

L.F.F.; E;M;O and J.P.L.O conception and study design; analysis and interpretation of data; writing the manuscript, critical review, and final approval; L.F.F and L.G.T analysis and interpretation of data; writing the manuscript, critical review, and final approval. All authors reviewed the manuscript.

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