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Original Research

Psychological distress, low-income, and socio-economic vulnerability in the COVID-19 pandemic



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ARTICLE INFO

Article history:

Received 17 April 2021

Received in revised form

26 July 2021

Accepted 19 August 2021

Available online 27 August 2021

Keywords:

COVID-19

Psychological distress

Urban slum

Food insecurity

Socio-economic vulnerability

ABSTRACT

Objectives: Although literature broadly reports the impact of COVID-19 on global mental health, little is known about the extent of its deleterious impact on the most vulnerable individuals. The present study aimed to evaluate the level of psychological distress of adult's residents of two urban shantytown communities located in São Paulo city, Brazil.

Study design: This was a cross-sectional study.

Methods: An online questionnaire was divided into four sections: (1) informed consent, (2) socio-economic data, (3) 12-item general health questionnaire, and (4) Brazilian food insecurity scale was applied.

Results: Of the 495 family headship (448 females and 47 males), the mean age was 36.1 years, 85% have an indication of psychological distress, 61.4% had a monthly income less than or equal to \$70, and the incidence of households experiencing moderate or severe food insecurity was 40%. Multivariate logistic regression revealed that respondents who experienced moderate or severe food insecurity (odds ratio [OR] = 2.701, confidence interval [CI] 95% = 1.265–5.769; $P = 0.010$) and lower monthly income (OR = 2.031, CI 95% = 1.056–3.908; $P = 0.034$) had a higher risk of psychological distress. On the other hand, having an employment is a protective factor against the stressful situations caused by COVID-19 pandemic ($P = 0.029$).

Conclusion: The present study identified low-income younger women residents of urban slums who suffer from food insecurity as high-risk groups to have psychological distress. Our findings are of particular importance because they showed the intersection of vulnerabilities during the COVID-19 outbreak.

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Introduction

In December 2019, a new coronavirus was identified: SARS-CoV-2.¹ The first discovery was made in Wuhan, China, and quickly spread to other continents, becoming a pandemic in March 2020. In an effort to contain the spread of SARS-CoV-2, quarantine measures and social distancing were used globally.¹ In several populations

around the world, this atypical situation has generated great psychological distress, fears, and worries related to social and economic consequences.^{2–5} This mental strain, however, may be more evident in highly vulnerable socio-economic populations.

In normal conditions, socio-economically vulnerable individuals are already exposed to highly stressful situations, leading to poor mental health.^{6–8} There is evidence that the high prevalence of the common mental disorders among the population most exposed to socio-economic vulnerability manifests a pattern, wherein greater social inequality and lower income are related to higher psychological distress.^{6–8}

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Considering the negative economic, social, and health impact of the COVID-19 pandemic, low-income individuals with high socio-economic vulnerability may be more susceptible to stressors related to the pandemic than the general population.^{9,10} To evaluate COVID-19-related psychological distress in populations with socio-economic inequalities, we launched an online questionnaire to family headship residents in two urban shantytown communities located in São Paulo city, Brazil. São Paulo is a megacity with a high prevalence of mental disorders and severe socio-economic inequalities, evidenced by the approximately 623,000 individuals living below the poverty line.⁸ Several social isolation measures have been implemented in São Paulo city from March 16, 2020. These measures include closing school and non-essential public services, companies have shifted their employees to the home-office system, and individuals were asked to stay at home.¹¹

Methods

This cross-sectional study used data from an online survey of adult residents of two urban shantytown communities with a high population density, poor living conditions, and low-income levels located in São Paulo, Brazil. One of these communities is called Heliópolis, located close to the downtown area of São Paulo city, and estimated that 61,000 people live in an area of approximately 1.2 km² in 15,200 households.¹² The other community is Vila São José, located in the peripheral region of São Paulo city. According to the last census estimate, the local population had about 353 households in an area of approximately 134 km².¹²

The online questionnaire was divided into four sections: (1) informed consent, (2) sociodemographic characteristics (e.g. age, gender, education level, employment status, and monthly income), (3) 12-item general health questionnaire (GHQ-12),¹³ and (4) a short version of the Brazilian food insecurity scale.¹⁴ Data were collected between June 5 and June 16, 2020, almost 3 months after the start of restrictive measures of the quarantine (e.g. social distancing and closure of most institutions and shops). Online invitations enclosed with the questionnaire were sent to 1000 family headship randomly selected from community center resident registry. Among these, 495 completed and returned the survey.

Instruments

The GHQ-12—a self-administered questionnaire most extensively used for screening of the psychological distress—was first formulated by Goldberg & Williams¹³ and has been adapted for use in the Brazilian population.¹⁵ The GHQ-12 contains an equal number of positively and negatively worded items. We adopted the four-point Likert scale, with scores from 0 to 3: 0 represented the most positive health aspects and 3 poor psychological distress. For positive items (1, 3, 4, 7, 8, and 12), 0 indicated better than usual, 1 the same as usual, 2 worse than usual, and 3 much worse than usual. Conversely, for negative items (2, 5, 6, 9, 10, and 11), 0 indicated not at all, 1 less than usual, 2 the same as usual, and 3 more than usual. The total score ranges from 0 to 36, with scores greater than 12 being classified as experiencing psychological distress.¹⁶

Food insecurity was assessed using the short version of the Brazilian food insecurity scale.¹⁴ Respondents were given 1 point if they reported any experience of food insecurity and 0 points if they did not, with a maximum total score of five points. The questions were assessed the perception or experience of food intake in the household since restrictive measures of the quarantine. A score of 1 indicated anxiety and worry about the ability to obtain food, 2 indicated being too poor to buy more food, 3 asked if the quality and variety of food had been compromised, 4 indicated quantity reduction, and 5 indicated respondents were skipping meals. The total score classifications

of the food insecurity grade were 0 for no insecurity, 1–2 for mild insecurity, 3–4 for moderate insecurity, and 5 for severe insecurity.

Statistical analysis

Categorical variables were presented as frequencies and percentage distributions and continuous variables as means, standard deviations, and ranges. To assess the isolated influence of sex, age, food insecurity, and low income on the psychological distress, their relative risks (odds) with 95% confidence intervals (95% CI) were estimated using the univariable logistic regression models. All variables showing significance in the univariable analysis were presented to the multivariable model. Data were expressed as odds ratios (ORs) and 95% CI. Statistical analyses were performed using SPSS version 22 (IBM, Armonk, New York, USA).

Results

Of the 495 family headship (448 females and 47 males) who participated in the online survey, the mean age was 36.1 years (SD = 9.3 years; range: 17–69 years), with most of the sample population aged between 17 and 47 years (87.5%). Among them, 283 lived in Heliópolis and 212 in Vila São José communities. Most of the respondents (61.8%) had a low level of education, 26.4% were unemployed, and 61.4% had a monthly income less than or equal to \$70. Regarding food insecurity, we found that 38% reported lack of food, 29.4% skipped a meal, 42.4% were unable to eat healthy and nutritious food, and the incidence of households experiencing moderate or severe food insecurity was 40%.

The mean score of the overall GHQ-12 was 21.6 (SD = 7.09; range: 4–36). We found an inverse correlation between age and GHQ score ($r = -0.222$; $P < 0.001$), indicating that younger individuals had a higher overall GHQ-12 score. Among the respondents, 85% scored >12, which is an indication of psychological distress. Also, we found that the mean score of items 7 (2.12) and 9 (2.38), which indicated that the most respondents were unable to enjoy daily activities and felt depressed (Table 1). In addition, we found that 64.6% failed to concentrate, 75.6% lost sleep, 67.7% felt pressured or stressed, and 75.6% felt unhappy (Table 1). Thus, our current data indicated that the psychological health of the respondents after almost 3 months of social isolation was in poor condition.

We performed logistic regression models to identify risk factors for psychological distress. As shown in Table 2, univariate analysis revealed that age between 17 and 47 years, lower monthly income, and presence of food insecurity increased almost four times the risk

Table 1
Summary scores for GHQ-12 items in the study population.

GHQ-12 items	Mean	SD	Response frequencies (%)			
			0	1	2	3
1. Able to concentrate	1.91	0.90	5.3	30.1	33.5	31.1
2. Loss of sleep over worry	2.06	0.88	5.9	18.6	39.4	36.2
3. Playing a useful part	1.68	0.87	6.3	40.4	32.7	20.6
4. Capable of making decisions	1.64	0.93	9.5	38.8	29.5	22.2
5. Felt constantly under strain	1.98	0.94	6.5	25.9	30.9	36.8
6. Couldn't overcome difficulties	1.81	0.97	9.7	28.7	32.1	29.5
7. Able to enjoy day-to-day activities	2.12	0.85	1.8	25.7	31.7	40.8
8. Able to face problems	1.68	0.82	4.0	43.0	34.1	18.8
9. Feeling unhappy and depressed	2.38	0.90	3.5	17.6	35.6	43.4
10. Losing confidence	1.31	1.03	31.9	26.3	21.2	20.6
11. Thinking of self as worthless	1.45	1.04	27.3	26.5	20.5	25.7
12. Feeling reasonably happy	2.06	0.88	5.9	18.6	36.2	39.4

Data expressed as mean, standard deviation, and percentage. GHQ-12 positive items are 1, 3, 4, 7, 8, and 12, and negative items are 2, 5, 6, 9, 10, and 11.

Table 2
Logistic regression analysis for the presence of the psychological distress.

Variables	Univariate regression analysis OR (95% CI)	P value	Multivariate regression analysis OR (95% CI)	P value
Female sex	1.057 (0.492–2.272)	0.887		
Age 17–47 years	3.466 (1.778–5.635)	0.001	1.621 (0.741–3.545)	0.226
Monthly income ≤ \$70	3.528 (1.636–5.603)	0.001	2.031 (1.056–3.908)	0.034
Employment	0.290 (0.119–0.711)	0.007	0.323 (0.117–0.893)	0.029
Moderate/severe food insecurity	3.509 (1.681–7.326)	0.001	2.701 (1.265–5.769)	0.010

Data are reported as odds ratio (OR) and 95% confidence interval (95% CI).

for a case-level score. Conversely, persons with an employment have minor chance of developing psychological distress symptoms (Table 2). Multivariable logistic regression revealed that respondents who experienced moderate/severe food insecurity and with lower monthly income had a higher risk of having a case-level score, indicating psychological distress in the 3 months after social isolation. On the other hand, having an employment is a protective factor against the stressful situations caused by COVID-19 pandemic (Table 2).

Discussion

This study provided crucial information regarding the high frequency of psychological distress associated with the deleterious effects of the COVID-19 pandemic in adults living in two socio-economic vulnerable communities in São Paulo city, Brazil's largest metropolitan area.

Despite the positive effect of social isolation measures to contain the spread of the SARS-CoV-2, a negative emotional impact was observed in the face of challenges imposed by the pandemic.^{2–5} As we have known, social and economic vulnerabilities also contribute to a more prominent emotional effect and impact the prevalence of mental health problems during COVID-19 pandemic.^{9,10} A survey carried out in June 2020 with 900 adults living in nine slums in inner Bangkok city observed high rates of stress associated with both income loss and self-quarantine measures.¹⁷ Rehman et al. reported increased symptoms of depression and anxiety during lockdown among the female residents of an urban slum in Chandigarh, India.¹⁸ Our data are consistent with these findings. We found high levels of psychological distress after almost 3 months of social isolation, indicating that individuals of low socio-economic status living in urban slums felt unable to concentrate or sleep and felt depressed and unhappy. Most of the family headship were women (90.5%). Moreover, higher GHQ-12 score was inversely correlated with age, indicating that younger women may have experienced greater psychological distress and less resilience in response to challenges imposed by the COVID-19 pandemic. Gender disparities observed in the family headship in these urban slums could promote a substantial burden to women during the pandemic period. This adds more pressure upon the already fragile state of these women, reflecting a more significant psychological distress and increasing the possibility of stigmatization.

It is known that the psychological distress is highly sensitive to social inequalities.^{6,7,19} Our data provided primary evidence that respondents who experienced moderate or severe food insecurity and lower monthly income have a twofold higher risk of having a case-level score indicating psychological distress in the 3 months since social isolation. These data indicate a possible overlap of vulnerabilities (e.g. low income and food insecurity) contributing to a higher frequency of psychological distress in this population. It is known that lack of money, unemployment, and perception of food insecurity are conditions that lead to negative feelings and constant emotional distress.^{6,7,8,19} There is evidence that the COVID-19

pandemic triggered economic downturn and losses worldwide.²⁰ Although the Brazilian government has allocated financial aid of almost \$120/monthly to disadvantaged families, most of the respondents still reported food insecurity. Despite the efforts taken by the government, this pandemic promoted aggravation of the economic instability and social disparities in Brazil, resulting in an increased mental burden for low-income women residents in urban slums.

Although these findings are important to better understand the negative impact of the COVID-19 pandemic on psychological distress in low-income individuals living in urban slums, we recognize some critical limitations. The sample of participants was small, possibly because of difficulty accessing the internet. The study design was an online survey and may have experienced bias, thus skewing the results. Moreover, information on the adverse impact due to socio-economic status or food insecurity before the pandemic were not determined in the study.

In conclusion, the present study identified low-income younger women residents of urban slums who suffer from food insecurity as high-risk groups to have psychological distress. Our findings are of particular importance because they showed the intersection of vulnerabilities during the COVID-19 outbreak. This aspect must be considered when implementing public policies to be a better understanding of how to reduce this distress, support people, and evaluate the long-term impact of the pandemic.

Author statements

Acknowledgments

First, The authors would like to thank the individuals who participated in this study for their cooperation. The authors also thank all members of the “*De Olho na Quebrada*” Observatory, especially André Luis Silva, Gabriel Feitosa, Gabrielle Souza, João Victor da Cruz, Karoline Aparecida, Leonardo da Silva Pimentel, Letícia Avelino, Edgard Barki, Marina Lima, Isabela Lemos, Reginaldo José Gonçalves, and Vila São José's community leader Luiz Alberto F. Alves for their excellent work and engagement.

Ethical approval

This study was approved by the local research ethics committee, and online informed consent was obtained from all participants.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Competing interests

None declared.

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