

Female students are the most psychologically affected by the COVID-19 outbreak: a case study in an academic community in Brazil

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SUMMARY

OBJECTIVE: The study evaluates psychological responses to the COVID-19 outbreak in the students, professors, and staff due to the social distancing and transition of the classroom activities through online learning.

METHODS: 518 participants from a University community in Brazil answered an online survey with questions related to demographic data, psychological responses, and preventive measures. Absolute and relative frequencies described the sample, Chi-square and z-tested associations between the variables, adopting $p < 0.05$.

RESULTS: Female (71.20%), young age -18 to 35 years (82.60%), students (76.10%), living in a family with 1 to 3 members during quarantine (55.40%) were more prevalent respondents. Women, young age, and students had a significantly higher rate of negative feelings in all psychological questions. Curiously, negative feelings during social distances affect the participants, independent of living quarantine alone or with family/friends during the COVID-19 outbreak.

CONCLUSIONS: Our findings demonstrated that the COVID-19 outbreak affected the psychological responses in the Brazilian academic community, also, women, young age, and students appear to be a risk group to negative psychological responses. The long-term quarantine due to the COVID-19 pandemic may cause further worsening in the psychological responses, especially in those in the risk group.

KEYWORDS: COVID-19 pandemic. Disease Outbreak. Quarantine. Psychological stress. Students.

INTRODUCTION

Nowadays, a severe acute respiratory syndrome (SARS), known as Coronavirus disease 2019 (COVID-19) quarantined the majority of countries. SARS-COVID-19 was first identified in December 2019 in the city of Wuhan, located in central China, and had spread worldwide¹. Because of its widespread transmission, recognized as a pandemic disease by World Health Organization (WHO), measures to limit viral transmission and minimize contact with people infected by COVID-19, such as social distancing, have been recommended worldwide and imposed in some countries.

Based on the negative effect of quarantine, as reported elsewhere^{2,3} and its uncertain ending date, the scientific community has published valuable recommendations and strategies regarding the possible effect of quarantine and social isolation on mental health^{4,5} and psychological impact⁶. Moreover, recent studies demonstrated psychological responses to the COVID-19 outbreak in Chinese⁷, Italian^{8,9} and students from South India¹⁰, Bangladeshi¹¹ and so on¹².

The academic environment *per se* has already demonstrated to be stressful for professors and both graduate and undergraduate students, demonstrating a negative relationship with

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Conflicts of interest: the authors declare there is no conflicts of interest. Funding: none.

Received on February 10, 2021. Accepted on March 14, 2021.

wellbeing and mental health¹³⁻¹⁵. Consequently, considering the quarantine and social isolation condition plus a new challenge of online learning, the psychological responses could be exacerbated in the University community. The main aim of this study was to evaluate the psychological responses to the COVID-19 outbreak in students, professors, and staff from a Brazilian University.

METHODS

Participants

A total of 526 respondents participated in the survey, and 518 were part of the final sample. Inclusion criteria were: being a member of the University selected (student, professor, or staff), being home-quarantined, and 18 years older. The local ethics committee approved the study (protocol number 4,002,656). Informed consent was acquired online, in the first part of the survey.

Procedures

An online survey platform with a designated link was sent to the University community after one month of quarantine. We used social media and institutional email to reach a large number of university members. The survey was completed from 1st to May 30th, 2020. This study is a part of a more comprehensive research project intituled "COVID-19: Psychological and behavioral impacts of social isolation in the university community in a Midwest State of Paraná – Brazil".

Measures

Descript data from sociodemographic questions were obtained through open and close-ended questions regarding the

participants' age, biological sex, position (student, professor, or staff), number of members living together during quarantine, and contact with someone diagnosed with COVID-19. Moreover, behavioral responses as food consumption, sedentary behavior, and physical activities also were asked.

Psychological responses were measured using some items from the SELF-Reporting Questionnaire (SRQ-20) described in Table 1. The SQR-20 is a reliable tool in Portuguese¹⁶ that assess mental disorder such as depression and anxiety, include the questions Q1, Q2, Q3, Q4, Q7, and Q9. Also, questions regarding preventive measures were asked (Q5 and Q8). Participants should answer "frequently," "sometimes," or "never" for each question.

Statistical analysis

We used absolute and relative frequencies to describe demographic characteristics, psychological responses, and preventive measures. Chi-square and z-test tested the association between psychological responses and demographic characteristics. All the statistical analyses were performed using SPSS version 25.0, adopting $p < 0.05$.

RESULTS

The majority of the respondents were female (71,2%), aged between 18 and 35 years (82,6%), students (76,1%), living in a family with 1 to 3 members during quarantine (55,4%). 37% left the city at the beginning of the quarantine, and only 10 (all students) had a family or friend diagnosed with COVID-19.

The behavioral and preventive responses overall are displayed in Figure 1. At least 5% of the sample were quarantined alone; 52% of the women were eating more than normal, and 9-11% of the participants increased alcohol consumption. Women reported 2h more in front of the TV and cell phone compared to men. The majority of respondents answered "sometimes" for the presence

Table 1. Psychological and preventive questions.

Question number	Question
Q1	Do you feel nervous, tense, or worried more than usual?
Q2	Do you have trouble thinking clearly?
Q3	Do you find it difficult to enjoy your daily activities?
Q4	Do you find it difficult to make decisions?
Q5	Are you using preventive measures such as wearing masks, using hand sanitizer, and washing hands and clothes when you go outside?
Q6	Do you find it difficult to work home-office?
Q7	Have you lost interest in things?
Q8	How often are you going outside?
Q9	Do you feel tired more than usual?

of psychological parameters in all questions. Questions about feeling nervous, tense, or worried (Q1) and feeling tired more than usual (Q9) had the highest frequencies of “frequently” amongst the psychological questions. For preventive measures, almost all respondents are using preventive measures such as wearing masks, using hand sanitizer, and washing hands “frequently” (Q5), and the majority are going outside “sometimes” (Q8).

Table 2 shows the association between psychological responses and preventive measures with sex, age, education,

and quarantine living environment. Considering the biological sex, females demonstrated a significantly higher frequency of negative feelings for all psychological questions than men. Similar responses were shown by the youngest (18–35 years old) compared to the oldest (more than 35 years old), and graduate and undergraduate students compared to professors and staff. No significant association was found regarding living quarantine conditions for the number of family members and psychological responses.



Figure 1. Infographic of the overall responses.

Table 2. Psychological and preventive measures separated by sex, age, education, and quarantine living condition (n=518).

		Sex			Age			Position			Quarantine			
		Female	Male	p	18-35	>35	p	Student	Prof/ staff	p	Alone	1-3	>4	p
Q1	F	48.0*	22.8*	<0.001	43.2*	28.9*	0.011	42.6	34.7	0.123	37.9	40.1	42.1	0.895
	S	45.5	52.3		46.5	52.2		47.0	49.2		44.8	48.4	46.5	
	N	6.5*	24.8*		10.3*	18.9*		10.4	16.1		17.2	11.5	11.4	
Q2	F	24.1*	10.1*	<0.001	22.2*	10.0*	<0.001	23.6*	8.9*	<0.001	17.2	20.6	19.8	0.249
	S	50.9*	40.9*		50.5*	36.7*		48.7	46.0		51.7	43.9	53.5	
	N	24.9*	49.0*		27.3*	53.3*		27.7*	45.2*		31.0	35.5	26.7	
Q3	F	37.9*	25.5*	0.002	38.3*	15.6*	<0.001	37.8*	23.4*	0.011	34.5	35.9	32.2	0.683
	S	46.9	47.7		45.8	53.3		44.2*	56.5*		55.2	45.3	48.5	
	N	15.2*	26.8*		15.9*	31.1*		18.0	20.2		10.3	18.8	19.3	
Q4	F	26.3*	12.8*	<0.001	25.5*	7.8*	<0.001	27.2*	7.3*	<0.001	13.8	24.4	20.8	0.658
	S	50.7	43.0		50.5*	38.9*		48.5	48.4		51.7	46.7	50.5	
	N	23.0*	44.3*		24.1*	53.3*		24.4*	44.4*		34.5	28.9	28.7	
Q5	F	95.7	94.6	0.759	95.3	95.6	0.806	95.2	96.0	0.721	93.1	95.8	95.0	0.935
	S	4.1	4.7		4.2	4.4		4.3	4.0		6.9	3.8	4.5	
	N	0.3	0.7		0.5	0.0		0.5	0.0		0.0	0.3	0.5	
Q6	F	36.0*	22.8*	<0.001	33.6	25.6	0.318	35.3*	22.6*	0.028	34.5	32.4	31.7	0.129
	S	45.3	45.6		44.6	48.9		42.9*	53.2*		27.6	48.1	44.1	
	N	18.7*	31.5*		21.7	25.6		21.8	24.2		37.9	19.5	24.3	
Q7	F	38.2*	22.8*	0.002	38.8*	10.0*	<0.001	40.9*	11.3*	<0.001	34.5	34.8	32.2	0.979
	S	41.2	47.0		43.5	40.0		41.4	47.6		41.4	42.5	43.6	
	N	20.6*	30.2*		17.8*	50.0*		17.8*	41.1*		24.1	22.6	24.3	
Q8	F	2.7	6.0	0.165	3.3	5.6	0.071	4.1	2.4	0.063	6.9	3.1	4.0	0.670
	S	70.7	70.5		69.2	77.8		68.0	79.0		69.0	72.8	67.8	
	N	26.6	23.5		27.6	16.7		27.9	18.5		24.1	24.0	28.2	
Q9	F	42.5*	21.5*	<0.001	39.7*	21.1*	<0.001	39.1*	28.2*	0.012	48.3	39.0	31.2	0.137
	S	41.5	37.6		40.4	40.0		40.6	39.5		24.1	38.3	45.5	
	N	16.0*	40.9*		19.9*	38.9*		20.3*	32.3*		27.6	22.6	23.3	

p: Chi-square. *Significant differences by z-test for sub-groups; F: Frequently; S: Sometimes; N: Never.

DISCUSSION

The main aim of the present study was to evaluate the psychological responses due to COVID-19 outbreak in students, professor, and staff from a Brazilian University and the main findings were:

- 1) Female, young age (18–35 years old) and students were most sensible to present frequently negative psychological responses compared to their counterparts;
- 2) Independently of spend quarantine alone or with more than 4 people, the psychological responses are similar; and
- 3) Majority of the academic population are using preventive measures (wearing mask, washing hands...) and going outside “sometimes”.

The results of the current study indicated that females, young age, and students were associated with “frequently” negative psychological responses. This finding has been presented in recent studies during the COVID-19 outbreak. Female and younger than 30 years appeared to be risk factors for negative psychological responses in Italy’s population^{8,9}. In China, data suggest that females and students suffered significant psychological impacts and a higher level of stress, anxiety, and depression⁷. Indeed, women tend to be more vulnerable to experiencing psychological distress as well as more change to developing post-traumatic symptoms, as evidenced in the literature¹⁷. Therefore, during the quarantine period, it seems that women suffer more distress than men, and this gender difference

can be explained for several reasons, from behavioral to physiological factors, as discussed by Song et al.¹⁸.

Regarding young people, participants who are 18 to 35 years old showed a higher frequency of “frequently” negative psychological responses than those with more than 35 years old. A similar response was found in the Chinese population, where younger participants (<35 years) were more likely to develop anxiety and depressive symptoms during the COVID-19 outbreak than older participants (≥35 years) (AOR=1.65, 95%CI 1.49–2.02)⁷. As discussed elsewhere⁸, the negative psychological responses and higher anxiety in younger people may be explained due to easy and great access to information through social media¹⁹. Literature demonstrated that in normal conditions, the communication load resulting from internet multitasking is significantly related to increasing perceived stress²⁰; therefore, these amounts of information can trigger negative psychological responses.

Lastly, our results showed that graduates and undergraduates present “frequently” negative psychological responses compared to professors and staff. This finding corresponds with those students in Bangladesh (n=505 college and university) in which 69.3% of students reported mild to severe level of psychological impact due to the COVID-19 outbreak, and additionally, university students had higher psychological impacts than college students¹¹. Among Indian pharmacy students, 18 % reported extremely severe depression, and about 27.5 % with severe anxiety, and about 12.5 % with severe stress¹⁰. This response can be explained by uncertainty of academic progression and postponement of examinations, leading to a stressor factor in students mind²¹, especially in graduating final year students due to uncertainty about the pandemic effect may have increased their worry about graduating, finding a job, or enrolling in further study²².

Taken together, females and students have demonstrated a considerable risk of adverse psychological responses in normal conditions. Recently, a longitudinal study with Chinese college students reported that female students suffered from significantly higher levels of anxiety than their male counterparts on average²³. In Brazil, a recent study with university students (n=1,827) also demonstrated that 32% of students presented a major depressive episode. The major depressive episode was more frequent among females, aged between 21 and 23 years, showing a risk of 60% to present depressive episode²⁴. Therefore, the need for intervention in this specific group is necessary to promote a possible understanding of the situation.

Despite the present study be one of the first to evaluate the psychological effect of the COVID-19 outbreak in a Brazilian University community, it is not without limitations and caution regarding the generalization of our findings is recommended. We used an online convenience sampling strategy, which required participants’ access to the internet. It limited the participation of those who do not have internet access. The sample does not represent all the University community, limiting the generalizability of our findings. Finally, this study does not use a specific tool to evaluate psychological distress or

anxiety and depression; therefore, we cannot classify the severity of these domains during the quarantine period. However, the current data, together with recent studies, suggest that the recent quarantine due to COVID-19 outbreak affect the psychological responses in people, especially in female, young aged, and students.

CONCLUSIONS

During almost two months of quarantine and social isolation due to COVID-19, in Brazil, an academic community demonstrated to be affected by negative psychological responses. Female gender, young age, and student seem to be the group with the major psychological impact of the outbreak. The results present a general picture of the psychological impact of the COVID-19 outbreak on students, professors, and staff in Brazil. Attention is required from public health authorities and members of the academic community, to cope with this situation.

ACKNOWLEDGMENTS

The authors wish to acknowledge the University’s support and the committed participation of all students, professors, and staff.

AUTHORS’ CONTRIBUTIONS

ACP: Conceptualization, Funding acquisition, Investigation, Methodology, Project administration, Resources, Supervision, Visualization, Writing – original draft, Writing – review & editing. **MPS:** Conceptualization, Funding acquisition, Investigation, Methodology, Project administration, Resources, Supervision, Visualization, Writing – original draft, Writing – review & editing. **JP:** Conceptualization, Methodology, Visualization, Writing – review & editing. **DG:** Conceptualization, Writing – review & editing. **MPT:** Conceptualization, Writing – review & editing. **TC:** Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Writing – original draft, Writing – review & editing. All authors have read and agreed to the published version of the manuscript.

ETHICAL ASPECTS

The project was reviewed and approved by the Research Ethics Committee of the UNICENTRO – University (protocol number 4.002.656).

DATA AVAILABILITY STATEMENT

Data associated with this publication is archived in the Git hub Integration Platform by link: https://github.com/timcavazzotto/Psycho_Response_Covid19_Unicentro.

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