

## Pandemic Psychology: Information, trust and affects during COVID-19 management

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### Abstract

The present study aimed to observe the relationship between access to information about COVID-19 (frequency and accuracy), trust in social sectors in the management of the pandemic and affects during this period. To this end, 210 volunteers from all Brazilian regions, mostly women (69%) with an average age of 29.5 years ( $SD = 11.5$ ), participated. Descriptive analyses, bivariate correlations, multiple regression, and mediations were performed through R Studio. The results showed indirect effects of the frequency of information about COVID-19 on its accuracy and positive affects. These effects were mediated by confidence in health (indirect effect on the quality of information:  $\lambda = 0.163$ , 95% CI = 0.049 - 0.278,  $p < 0.01$ ; in positive affects:  $\lambda = 0.094$ , 95% CI = 0.032 - 0.155,  $p < 0.01$ ). Besides, negative affects were predicted by confidence in health, age, confidence in both media and government institutions.

**Keywords:** COVID-19; emotions; health; communications media.

### Resumo

*Psicologia da pandemia: informação, confiança e afetos durante o enfrentamento da COVID-19.* O objetivo do presente estudo foi observar as relações entre o acesso à informação acerca do COVID-19 (frequência e acurácia), a confiança em setores sociais no manejo da pandemia, e os afetos nesse período. Para tal, contou-se com 210 voluntários de todas as regiões brasileiras, majoritariamente mulheres (69%) com idade média de 29,5 anos ( $DP = 11,5$ ). Realizaram-se análises descritivas, correlações bivariadas, regressão múltipla e mediações através do R Studio. Os resultados apontaram efeitos indiretos da frequência da informação acerca do COVID-19 na acurácia desta e nos afetos positivos. Esses efeitos foram mediados pela confiança na saúde (efeito indireto na qualidade da informação:  $\lambda = 0,163$ , IC 95% = 0,049 - 0,278,  $p < 0,01$ ; nos afetos positivos:  $\lambda = 0,094$ , IC 95% = 0,032 - 0,155,  $p < 0,01$ ). Adicionalmente, os afetos negativos foram preditos pela confiança na saúde, a idade, confiança na mídia e nas instituições governamentais.

**Palavras-chave:** COVID-19; emoções; saúde; meios de comunicação.

### Resumen

*Psicología pandémica: Información, Confianza y Afecto durante el Enfrentamiento del COVID-19.* El objetivo fue observar la relación entre el acceso a la información sobre COVID-19 (frecuencia y precisión), la confianza en los sectores sociales en el manejo de la pandemia y los efectos durante este período. Para eso, 210 voluntarios brasileños, en su mayoría mujeres (69%) con una edad promedio de 29.5 años ( $DE = 11.5$ ), participado. Se realizaron análisis descriptivos, correlaciones bivariadas, regresión múltiple y mediaciones a través de R Studio. Los resultados mostraron efectos indirectos de la frecuencia de información sobre COVID-19 sobre su precisión y efectos positivos. Estos efectos fueron mediados por la confianza en la salud (efecto indirecto en la calidad de la información:  $\lambda = 0.163$ , IC 95% = 0.049 - 0.278,  $p < 0.01$ ; en efectos positivos:  $\lambda = 0.094$ , IC 95% = 0.032 - 0.155,  $p < 0.01$ ). Además, los efectos negativos se predijeron por la confianza en la salud, la edad, la confianza en los medios y las instituciones gubernamentales.

**Palabras clave:** COVID-19; emociones; salud; medios de comunicación.

Georg Christoph Lichtenberg, the first German professor of experimental physics, said: "Sickness is mankind's greatest defect." As much as this seems an obvious phrase, from time to time we are reminded of the weight of such a statement. In December 2019, the symptoms presented by people in Wuhan, China, caught the world's attention, leading to the discovery of a new type of virus that a few months later would plague the globe. Known as Novel Coronavirus or COVID-19, it is a new variation of SARS-Cov (Coronavirus related to severe acute respiratory syndrome) (N. Zhu et al., 2020). COVID-19 can cause multiple symptoms, such as fever, fatigue, dry cough, and breathing difficulties, which with complications can lead to death (Yang et al., 2020).

In Brazil, cases of COVID-19 increased considerably, and the number of deaths in the national territory surpassed China, the initial epicenter of the disease, on April 27, 2020. Most cases concentrated in the Southeast, which accumulated 50.2% of confirmed cases one day after the previously mentioned milestone (Ministério da Saúde, 2020a). Days before, through Ordinance 639/2020, the Ministry of Health had already disclosed the strategic action "Brazil Counts with Me - Health Professionals", aiming to train numerous categories of health professionals to face COVID-19 (including psychologists in this list) (Portaria nº 639, de 31 de Março de 2020). Thus, the question arises, how can psychology assist in crisis management?

In this context, psychology can not only contribute on the front line, providing support for society in general in coping with suffering but also from a research perspective. As pointed out by Jiang et al. (2020), the role of psychology in the current crisis is to use its tools to implement epidemic prevention and control strategies, both aiming to minimize damage and provide assistance when necessary. As health is much more than the absence of disease, psychology can also contribute to health promotion during the pandemic, seeking to implement appropriate public policies for the time, reinforcing the community role and the development of personal skills to face the virus and social distance (Bezerra & Sorpreso, 2016). Thus, it is necessary to know the characteristics of the relationship that the subjects establish with this context, to provide information that increases prevention effectiveness.

A first point to consider is the affects, that is, the emotions and/or feelings experienced by the subjects (Galinha & Pais-Ribeiro, 2005). Usually divided between positive and negative affects, these psychological

constructs represent the emotional components of subjective well-being (Von Humboldt & Leal, 2017). As introduced by Watson and Tellegen (1985), and demonstrated by more recent studies (eg. Ekkekakis, 2013; Zhang, Cole, Mick, Lovette, & Gabruk, 2020), variations in valence (the subjective notion of "how much" we are doing well) and arousal (energy level used in the emotional state) together give rise to different linguistic forms that we know of affections (eg. nervous or excited). Therefore, understanding affects becomes essential in the experience of a pandemic.

This is because experiencing negative health-related issues can produce intense emotional responses. Those can impact psychological well-being and the management of a pathological condition (Uskul & Horn, 2015); additionally, the dominance of the experience of positive affects compared to negative ones is one of the key indicators of mental health (Vaillant, 2012). Besides, isolation itself and the practice of social distancing in general (a protocol that has been applied both in Brazil and worldwide) can intensify negative affects, even in subjects not infected with COVID-19 (Chatterjee & Chauhan, 2020).

Some recent research already provides information about the affective experience during the pandemic. Rajkumar (2020), for example, indicates that symptoms of anxiety and depression, in addition to a significant increase in stress, have been commonly reported since the beginning of the pandemic, indicating an increase in negative affects and a decrease in positive affects. Zhao and Huang (2020) and Huang and Zhao (2020) corroborate these results, adding that younger people tend to present issues related to anxiety and depression more significantly, and that the more time spent focusing on thinking about the COVID-19, the more these symptoms are intense.

But what other specific aspects impact the way we feel during the pandemic? Bao, Sun, Meng, Shi and Lu (2020) and Ho, Chee and Ro (2020) point out that access to quality information is one of the most effective coping strategies in the general population. According to these authors, the information empowers the subjects to deal with the situation in the most appropriate way possible, reducing collective panic and paranoia about unfounded forms of contamination (Bao et al., 2020; Ho et al., 2020). Thus, if on one hand spending too much time thinking about the pandemic can lead to distress, a reasonable amount of time researching about it can relate to less negative affects.

Information can also impact the relationship established between patients and health professionals. McMullan (2006) describes that in the information age, professionals have to adapt to the relationship with a subject who is no longer passive, being necessary to help the patient to critically explore a network of information, which is not always reliable, until finding adequate information sources. This is because, as noted by Waszak, Kasprzycka-Waszak and Kubanek (2018), 40% of the most popular links containing information about diseases contain some type of erroneous information.

On the topic of relationships and their importance in health contexts, the level of trust that the subject develops can change their experience during the pandemic. Trust can be defined, in general, as a belief that the other's actions will occur according to our expectations (Shahbari, Gesser-Edelsburg, & Mesch, 2020). Some dimensions most commonly studied in this theme are trust in individuals (person-person relationships) and in institutions/ social sectors (which implies believing that said social organization is competent, capable of fulfilling its obligations and acting responsibly) (Devos, Spini, & Schwartz, 2002). In the present study, confidence in four major social sectors will be investigated: Health representatives, the Media, government institutions, and economic services.

Although no research was found on the level of trust specific to COVID-19, Shahbari et al. (2020) observed, for example, that trust in health professionals increased positive attitudes towards vaccination. Huynh and Dicke-Bohmann (2020) also indicate relationships between a positive interpersonal relationship with medical professionals, satisfaction, and the level of health perceived by the patient. Therefore, it is possible to hypothesize that, during the pandemic, trusting health professionals can predict an increase in positive affects. Thus, it is relevant to investigate what leads to such trust.

However, it is not only the trust in health professionals that can impact the variables already mentioned. Confidence in the media itself can be related to the frequency that subjects seek information and how they feel about it. Although numerous aspects can also affect these relationships, as pointed out by Warner-Søderholm et al. (2018) trust is the basis of any human communication, including the media. Even with this statement, the role of media in contemporary health is still a poorly studied topic.

Trust in governmental bodies (municipal, state, and federal) is also a relevant variable, but little

addressed in empirical studies. Despite this, Z. Zhu, Liu, Kapucu and Peng (2020) indicate that relying on government structures is essential in crisis management, influencing the population's resilience and behavior. Finally, although the literature on the importance of trust in services (such as supermarkets and pharmacies) in the context of health is scarce, their inclusion is relevant, given the role of issues such as price variation in the pandemic period.

Combining the presented variables, it is possible to come up with some questions: What leads to an increase in negative or even positive affects during the pandemic? Does information play a role in these variations? If so, what is more striking, the frequency of information access or the quality of it? Or is it the trust you have in the media that communicate this data? Still, talking about trust, would trusting health professionals increase positive affects or not? Even though it may not be possible to answer these and other questions with 100% accuracy, it is necessary to address them, to better understand the psychosocial aspects of coping with a pandemic in the information age.

Based on the aforementioned discussion, and emphasizing the need for investigations about psychosocial aspects in pandemic management, the present study aimed to observe the relationships between access to information about COVID-19 (frequency and quality), trust in social sectors in the management of the pandemic, and the positive and negative affects during this period. The specific objectives were to observe prediction and mediation relationships between the proposed variables, thus wishing to provide data that serve as a basis for prevention and maintenance strategies in the mental health field.

## Method

The present study used a quantitative and cross-sectional design, with the individualized collection, to measure the data presented.

### **Participants**

Two hundred and ten ( $N = 210$ ) volunteers participated in the study, mostly women (69%), single (49.5%), with an average age of 29.5 years ( $SD = 11.5$ ). Although subjects from all regions of Brazil participated, these were mostly from the Northeast (51%) and Southeast (39%) regions. As for the pandemic-related sociodemographic information, 58.6% of respondents lived with someone who is part of the COVID-19 risk

group, and 66.2% had their main activities (e.g., work, study) temporarily suspended during the quarantine. All participants needed to be 18 years or older and be able to answer the study through an electronic device (e.g., computer, phone, etc.).

### **Instruments**

To measure the affects experienced by the respondents, the Positive and Negative Affects Scale (PANAS) was used. This instrument was developed by Watson, Clark and Tellegen (1988) and validated in Portuguese by Galinha and Pais-Ribeiro (2005). The measure consists of 20 adjectives that describe feelings and emotions and are divided into two factors: Positive affects ( $\alpha = 0.85$ ) and negative affects ( $\alpha = 0.88$ ). The instrument asks the subject to report through the response scale how often they had experienced the twenty affective states described in the items in the last month period. Examples are item seven “scared” and item 17 “determined”.

To measure the trust level in the four proposed social sectors, the following question was used: “Rate how much you trust the described categories to deal and/or act correctly concerning the COVID-19 issue”. The question was filled out using a scale ranging from 1 (I absolutely don't trust them) to 5 (I absolutely trust them). Four major sectors were described: Health (public and private hospitals, medical professionals, other health professionals, and the World Health Organization), Media (Traditional and Virtual), Government (Municipal, State, and Federal), and Services (banks, supermarkets, pharmacies, large and small companies). With a similar response format, the use of ten information sources about COVID-19 was investigated (e.g., social media, television). This variable was labeled “Information Frequency”.

The quality of information about COVID-19 was measured through ten true or false questions. These were statements about issues such as contagion and prevention (e.g., “One of the ways of prevention is not to share personal objects, such as cutlery and dishes, even if there is no certainty of contamination from the other person”). All information was taken from the Brazilian Ministry of Health website (Ministério da Saúde, 2020b) and only adapted to the questionnaire format of true or false. Finally, questions about age, gender, social class, profession, and Internet usage habits were included at the end of the questionnaire, to characterize the sample.

### **Procedures**

Initially, it is important to note that the project followed all the recommendations established in Resolution 510/16 of the National Health Council regarding research with human beings, highlighting voluntariness and confidentiality. The data collection was carried out exclusively in the virtual environment, using a form shared through the researchers' social networks (Facebook, Instagram and Whatsapp). The form was available between April 10 and 20, 2020. It is reiterated that the participants could contact the researchers at any time via email, phone, or the social network where they received the questionnaire.

The virtual questionnaire contained, in addition to the researchers' information, the Consent Form. On the last page of the questionnaire, indications of pages from the Ministry of Health were included, where the participants could obtain appropriate information about COVID-19, such as prevention strategies and details about governmental actions in each state.

### **Data Analysis**

The collected data were analyzed using R Studio, using additional packages to carry out the necessary analyses. Were performed: Descriptive statistics, to characterize the sample through sociodemographic questions; Pearson's bivariate correlation, to observe the relationships between constructs; and regression and mediation analysis, seeking to test predictive models. The statistical packages used in R Studio were Hmisc (Harrell, 2020), psych (Revelle, 2017), and semPlot (Epskamp & Stuber, 2017), for correlations, regression, and mediation analysis, and the elaboration of figures.

## **Results**

### **Bivariate Correlations**

Initially, the correlations between the proposed constructs were observed, as can be seen in Table 1. Regarding information relevant to specific objectives, positive affects were more strongly related to trust in health ( $r = .27$ ); negative affects, on the other hand, showed a stronger correlation with information frequency ( $r = .18$ ), trust in health ( $r = .20$ ) and in government ( $r = -.18$ ) such as with age ( $r = -.21$ ); all with  $p < .01$ . Trust in health was related, in addition to those already mentioned, with frequency ( $r = .37$ ) and quality ( $r = .22$ ) of information and with trust in media ( $r = .49$ ), in the government ( $r = .44$ ); and in services ( $r = .31$ ), all with  $p < .01$ .



**Table 1.** Bivariate Correlations, Mean and Standard Deviation

	Mean	SD	PA	NA	IF	IQ	TH	TM	TG	TS	A
PA	2.13	0.70	-								
NA	2.47	0.85	0.14*	-							
IF	2.45	0.70	0.16*	0.18**	-						
IQ	8.61	1.32	-0.02	0.10	0.07	-					
TH	4.02	0.81	0.27**	0.20**	0.37**	0.22**	-				
TM	2.87	1.01	0.12	0.16*	0.39**	0.11	0.49**	-			
TG	2.76	0.89	0.15*	-0.18**	0.18**	0.11	0.44**	0.46**	-		
TS	2.33	0.91	0.09	-0.02	0.11	-0.02	0.31**	0.30**	0.42**	-	
A	29.55	11.50	-0.09	-0.21**	0.09	0.05	-0.15*	0.01	0.05	0.01	-

Note. \* =  $p < 0,05$ ; \*\* =  $p < 0,01$ ; PA = Positive Affects; NA = Negative Affects; IF = Information Frequency; IQ = Information Quality; TH = Trust in Health; TM = Trust in Media; TG = Trust in Government; TS = Trust in Services; A = Age.

### Regression and Mediation Analysis

Initially, predictive models were tested through simple and multiple regression, seeking to explain positive and negative affects, confidence in health, and information quality. Positive affects were significantly predicted only by trust in health ( $R^2 = .07$ ,  $F = 18.81$ ,  $p < .01$ ). Information quality had the same unique predictor ( $R^2 = .05$ ,  $F = 11.39$ ,  $p < .01$ ). Negative affects were also predicted by trust in health, in addition to trust in the media and government, and by age ( $R^2 = .19$ ,  $F = 12.58$ ,  $p < .01$ ), as shown in Table 2. Thus, younger people who are less trustful in the capacity of government institutions to manage the pandemic tend to experience

more negative affects during this period, especially when they trust the media and health professionals.

But, after all, what was able to predict trust in health, which was the common predictor in all the variables mentioned above? The best model included the frequency of access to information about COVID-19, trust in the media and services, and age ( $R^2 = .34$ ,  $F = 26.78$ ,  $p < .01$ ), as is shown in Table 2. Therefore, the younger the subject is and the more he trusts the media and other services in the management of the pandemic, and the more that person is informed, the more likely he is to trust health professionals during this period.

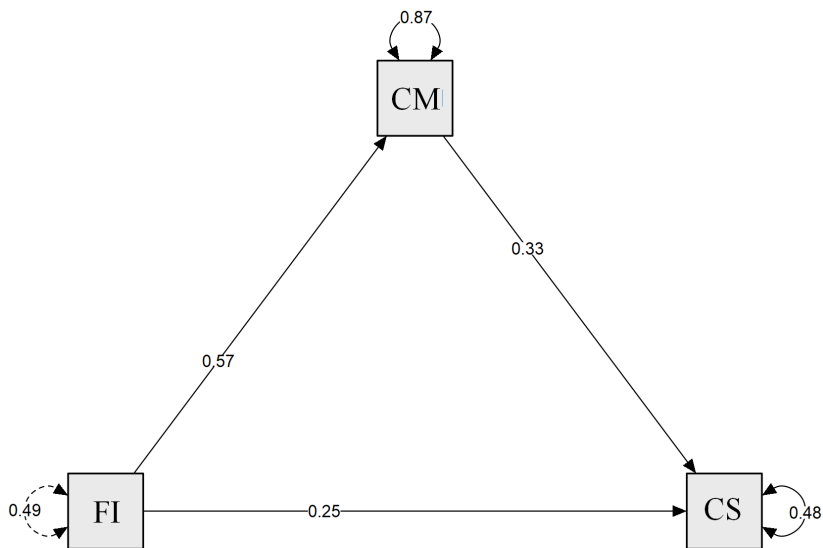
**Table 2.** Multiple Linear Regression for Trust in Health and Negative Affects

Model	R2	F	sig (F)	$\beta$	Df	t	sig (t)
1	0.34	26.78	0.001	TM: 0.34	205	TM: 5.34	0.001
DV				IF: 0.23		IF: 3.76	0.001
Trust in Health				A: -0.18		A: -3.15	0.002
				TS: 0.18		TS: 3.14	0.002
2	0.19	12.58	0.001	TH: 0.24	205	TH: 3.14	0.002
DV				TM: 0.23		TM: 3.05	0.003
Negative Affects				TG: -0.39		TG: -5.32	0.001
				A: -0.16		A: -2.57	0.011

Note. IF = Information Frequency; TH = Trust in Health; TM = Trust in Media; TG = Trust in Government; TS = Trust in Services; A = Age.

Moving on to the mediation models, to better understand the relationships between the constructs, the first variable to be analyzed was trust in health. Among the predictive models tested, the most significant relied on information frequency as an independent variable and trust in media as a mediator. This relationship had both direct ( $\lambda = .247$ , 95% CI = .103 - .392,  $p < .01$ ) and indirect effects ( $\lambda = .187$ , 95%

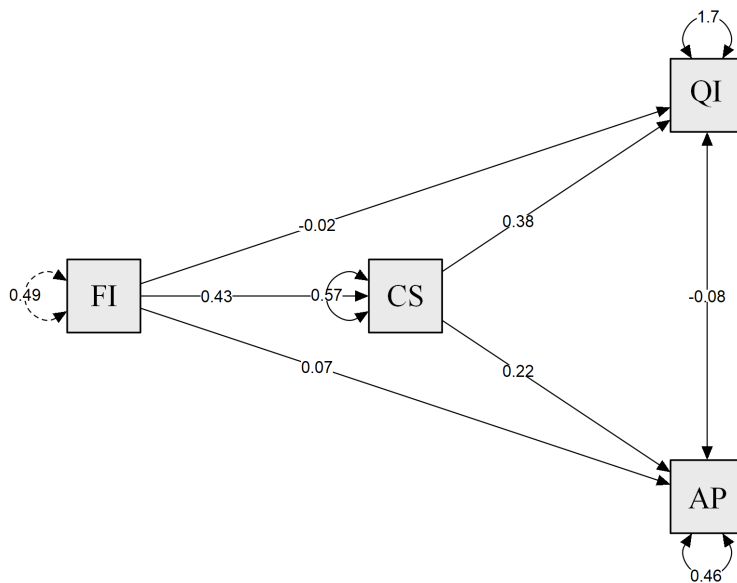
CI = .105 - .269,  $p < .01$ ) through the variable mediator (Figure 1), thus being a partial mediation. Therefore, trust in health professionals and institutions is predicted by the frequency that a person accesses information about COVID-19 through different means of communication. This relationship intensifies as the subject's confidence in the media used to obtain this information increases.



**Figure 1.** Explanatory Model of Trust in Health.  
 Note. FI = Information Frequency; CM = Trust in Media; CS = Trust in Health.

Positive affects and the information quality were predicted using information frequency as the independent variable and trust in health as a mediator. Testing this model, which can be seen in Figure 2, indirect effects were observed in both dependent variables as the best predictive model (indirect effect on information quality:  $\lambda = .163$ , 95% CI = .049 - .278,  $p < .01$ ; indirect effect on positive affects:  $\lambda = .094$ , 95% CI = .032 - .155,  $p < .01$ ).

This means that alone, the frequency that a subject is informed about COVID-19 is not sufficient to guarantee the quality of this information or the positive affects experienced. This relationship only exists when considering the trust that the health area will face the pandemic properly. Thus, the greater the trust in health, the more intense are the positive affects, and the more the information accessed by the subjects has a quality and scientific basis.



**Figure 2.** Explanatory Model of Information Quality and Positive Affects.  
 Note. FI = Information Frequency; CS = Trust in Health; QI = Information Quality; AP = Positive Affects.

## Discussion

The present study aimed to observe the relationship between access to information about COVID-19 (frequency and quality), trust in social sectors in the management of the pandemic, and the positive and negative affects during this period. The study also had specific objectives to seek predictive and mediation models between the variables addressed.

The results obtained correspond to these goals, highlighting trust in the health sector to adequately face the pandemic as an important issue when talking about well-being and information during the fight against COVID-19. This statement is evidenced by the fact that only when considering trust in this area that the frequency that an individual seeks information about COVID-19 can impact positive affects during the pandemic and the quality and basis of the information possessed. But how to explain this phenomenon?

These results corroborate studies such as those by Shahbari et al. (2020), and Huynh and Dicke-Bohmann (2020) about the importance of trust in health professionals for the well-being in health care contexts. However, the present study differs in that it does not consider direct relationships (patient-professional), but a broader trust in the institutions and professionals involved in the exercise of health. Even with these differences, the results highlight the significant role of trust in achieving positive results in health-related topics (in this case, positive affects and quality information) (Martin, Feig, Maksoudian, Wysong, & Faasse, 2018). Besides, the relationship between trust and positive affects reported here also corroborates the study on information sharing by Wakefield (2013), demonstrating that these two topics impact individual behavior and should be further addressed in future studies.

Meyer, Ward, Coveney and Rogers (2008) also argue that a low level of trust in the health system can lead to the population distancing itself from this type of care, as well as medical complications and a generalized difficulty in health care. Thus, an explanation for the mediating role of trust in health in the relationship between frequency of information and positive affects is that, even if an individual is frequently informed, this information will only lead to well-being when the subject trusts that the health system can support them in properly dealing with the pandemic.

Already dealing with the mediation of the relationship between the frequency of information about

COVID-19 and the quality of information owned by the individual, this phenomenon can be explained in two interconnected ways: 1) In a world where a significant percentage of health information is not completely true (Waszak et al., 2018), subjects who trust the health system may be more motivated to seek and believe in information that corroborates this trust; 2) another related issue is that those who trust health can already use sources recommended and/or developed by professionals involved in the area, thus increasing the quality of the information that is consumed (McMullan, 2006). However, further studies are needed to understand and verify the consistency of these relationships.

However, trust in health (as well as in the media) was also a predictor of negative affects, going against the studies previously mentioned. Nevertheless, it is relevant to note that this may be a consequence of the pandemic, and especially of the context experienced in Brazil: amid false and sometimes contradictory news, for example about improper diagnoses or underreporting of the number of COVID-19 cases (Ministério da Saúde, 2020c). In this way, those who manage to go beyond inadequate information and continue to trust health and journalism professionals to face the pandemic are probably the same people who can perceive the magnitude of the impact of COVID-19 in Brazil, thus causing negative affects thanks to the continuous progress of the disease in the country. However, future studies must seek to understand the possible mediators of this relationship.

But what was able to explain the trust in health, so involved with other constructs? As indicated by models already discussed, the frequency of information was a significant predictor of this trust, especially when mediated by trust in the media to act appropriately during the pandemic. Thus, it is possible to find consonance with the importance of trust for human relations highlighted by Warner-Søderholm et al. (2018): just being informed about health issues is not enough to trust professionals and institutions in this area, it is also necessary to trust the vehicles that disseminate this information. Thus, it is expected that further studies will more frequently address the media/health/well-being relationship.

Age was also a significant predictor of negative affects during the pandemic, according to Huang and Zhao (2020), who analyzed anxiety, depressive symptoms, and sleep quality during the outbreak of COVID-19 in China. These authors noted that younger people

were more likely to develop these psychopathological symptoms (comparing groups over and under 35). This type of result was also found by Su et al. (2007) during a SARS epidemic in Taiwan. Thus, younger people tend to experience bigger impacts on their well-being during a period of crisis. Further studies are needed to understand the causes of this issue, especially considering that the average age of the respondents in the present study (29.5 years) was considerably young.

## Conclusions

Despite this being an innovative study in the Brazilian context, its limitations need to be highlighted: the data were collected in a non-probabilistic sample, and although subjects from all regions of the country participated, there was no equivalence in these samples, since there were more participants from the Northeast and Southeast. Besides, there was also a greater number of female than male participants, which may have affected the results. Thus, it is recommended that future studies address this issue in more diverse populations, even developing instruments that are appropriate for the measurement of phenomena specifically related to COVID-19.

Even with the aforementioned difficulties, the study fulfilled its objectives and contributed to a better understanding of the delicate moment that is being faced in Brazil and the world. The results are shown here highlight the importance of trust in health professionals for psychological well-being during the pandemic, as well as some factors that influence this trust. Also, the effects of excessive information on this well-being are pointed out, a complex issue to deal with at a time when a large portion of the population is at home and in constant contact with the media.

Thus, although some doubts are resolved, others arise: at what point does informing stop helping us and start harming us, bringing anguish and negative feelings? How to practically increase trust in health professionals, thus leading to more positive affects? As this discussion started, disease may be the biggest problem for humanity, but all the factors involved in this relationship, especially in a pandemic, are more complex than one would initially imagine.

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