

Sociodemographic and emotional factors associated with tolerance in friendship relationships in the covid-19 pandemic

Fatores sociodemográficos e emocionais associados à tolerância nas relações de amizade na pandemia pela covid-19

Factores sociodemográficos y emocionales asociados con la tolerancia en las relaciones de amistad en la pandemia por covid-19

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Abstract: Objective: to analyze the association of sociodemographic and emotional factors with the level of tolerance in friendship relationships in the covid-19 pandemic. **Method:** this is a cross-sectional study conducted with 5,291 individuals from the five Brazilian macro-regions from June to July 2020. A sociodemographic questionnaire, a semi-structured questionnaire and the Instrument for Assessing tolerance in friendship relationships were applied. Linear regression was used for data analysis. **Results:** 88.9% considered tolerance in relationships of friendship satisfactory at home, 82.8% had help from friends to overcome tensions and 73% perceived a change in friendship relationships during quarantine. Being female, white and receiving higher income contributed to higher levels of tolerance in friendship relationships. Higher educational level, receiving help from friends during quarantine, and changing friendship relationships led to lower levels of tolerance. **Conclusion:** some sociodemographic and emotional factors are associated with the level of tolerance in friendship relationships, requiring the development of strategic actions aimed at such factors, especially those modifiable, such as income and schooling.

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Descriptors: Interpersonal relations; Friends; Coronavirus infections; Pandemics; Social isolation

Resumo: Objetivo: analisar a associação dos fatores sociodemográficos e emocionais ao nível de tolerância nas relações de amizade na pandemia pela covid-19. **Método:** trata-se de um estudo transversal realizado com 5291 indivíduos das cinco macrorregiões brasileiras de junho a julho de 2020. Aplicaram-se um questionário sociodemográfico, um questionário semiestruturado e o Instrumento de Avaliação da tolerância nas relações de amizade. Utilizou-se a regressão linear para análise de dados. **Resultados:** 88,9% consideram a tolerância nas relações de amizade satisfatória no domicílio, 82,8% tiveram ajuda de amigos para superar as tensões e 73% perceberam mudança nas relações de amizade durante a quarentena. Ser do gênero feminino, da raça branca e receber maior renda contribuíram para maiores níveis de tolerância nas relações de amizade. A maior escolaridade, receber ajuda de amigos durante a quarentena e a mudança nas relações de amizade levaram a menores níveis de tolerância. **Conclusão:** alguns fatores sociodemográficos e emocionais associam-se ao nível de tolerância nas relações de amizade, o que requer o desenvolvimento de ações estratégicas voltadas a tais fatores, especialmente aqueles modificáveis, como a renda e a escolaridade.

Descritores: Relações interpessoais; Amigos; Infecções por coronavírus; Pandemias; Isolamento social

Resumen: Objetivo: analizar la asociación de factores sociodemográficos y emocionales con el nivel de tolerancia en las relaciones de amistad en la pandemia por covid-19. **Método:** se trata de un estudio transversal realizado con 5.291 individuos de las cinco macrorregiones brasileñas de junio a julio de 2020. Se aplicó un cuestionario sociodemográfico, un cuestionario semiestructurado y el Instrumento para evaluar la tolerancia en las relaciones de amistad. Se utilizó la regresión lineal para el análisis de datos. **Resultados:** el 88,9% consideró que la tolerancia en las relaciones de amistad era satisfactoria en casa, el 82,8% tenía ayuda de amigos para superar las tensiones y el 73% percibió un cambio en las relaciones de amistad durante la cuarentena. Ser mujer, blanca y recibir mayores ingresos contribuyeron a mayores niveles de tolerancia en las relaciones de amistad. La educación superior, recibir ayuda de amigos durante la cuarentena y cambiar las relaciones de amistad llevaron a niveles más bajos de tolerancia. **Conclusión:** algunos factores sociodemográficos y emocionales están asociados con el nivel de tolerancia en las relaciones de amistad, lo que requiere el desarrollo de acciones estratégicas dirigidas a tales factores, especialmente aquellos modificables, como los ingresos y la escolarización.

Descriptor: Relaciones interpersonales; Amigos; Infecciones por coronavirus; Pandemias; Aislamiento social

Introduction

Since the emergence of the new coronavirus (SARS-CoV-2) in China in December 2019, humanity has faced a serious global health crisis. In Asian countries such as Thailand, Japan, South Korea and Singapore, new cases spread rapidly to Europe and other continents, leading the World Health Organization (WHO) to issue a major public health emergency decree. It occurred internationally on January 30, 2020, and evolved to pandemic on March 11, 2020.¹

According to data available on August 2 of this year, 213 countries and regions around the world reported 18,056.296 million confirmed cases of covid-19, with over 689,590 deaths.²

On February 3, the Brazilian Ministry of Health declared a state of Public Health Emergency of National Concern (PHENC) due to human infection by the new coronavirus, which occurred 33 days after the initial notification in China, and four days after WHO declaring covid-19 as an international emergency.³

In Brazil, conflicts between technical and political institutions have affected the federal response to the pandemic. The narratives of the president's speeches further exacerbated the tension between the implementation of horizontal social isolation measures and the functioning of the economy, which soon favors the economy over disease prevention measures.⁴

Moreover, pandemics are associated with a series of social and clinical stressors that create severe disorders at various levels. The pandemics are related to confusion, fears, uncertainties and the probable deaths of friends and loved ones. Furthermore, in these situations, several social stressors are present, such as: economic and job loss; social isolation; collapse of health systems; as well as drastic changes in lifestyle and mood, including meal times, sleep quality and time. In this sense, there was an increase in death due to coronavirus followed by psychological disorders, such as stress, fear and anxiety in the population.⁵

Thus, the response approach to the pandemic situation of covid-19 must be clarified concerning not only the number of cases and transmissibility, but also the impact of the epidemic regarding human relations. Through scientific research, it is necessary to identify the factors associated with infection, severity or death, which groups are most likely to evolve unfavorably and whether it is possible to concentrate efforts in preventing that negative clinical outcome and/or death, and thus, possible social impacts.⁶

In the absence of important interpersonal relationships, anxiety and depression may appear or worsen. Similarly, quarantine becomes difficult for many people to receive

psychotherapeutic interventions and additives. Those findings highlight the importance of social connections in minimizing the negative impact of covid-19 isolation.⁵

When it comes to construct, friendships can be established from four factors. The first is the Environmental, which is related to the physical and residual proximity between people. Then, there is the Situational factor, conceptualized as the relationship between interaction and sequence. The Individual factor includes inclusion and exclusion rules that are practiced in the pre-selection of candidates for friends. Finally, the Dyadic factor involves the reciprocal and mutual appreciation of initial judgments made by one individual about the other. It is noted, then, that friendship involves factors such as age, sex, religion, ideologies, education, ethnicities and race.⁷ In view of the current isolation of people as measures to prevent covid-19 contagion, social relations may be impaired, with a direct impact on the level of tolerances in friendship relationships.⁸

In this context, the following question arises: Are sociodemographic and emotional factors associated with the level of tolerance in friendship relationships during the covid-19 pandemic? Therefore, the aim of this study was to analyze the association of sociodemographic and emotional factors with the level of tolerance in friendship relationships in the covid-19 pandemic.

Method

This is a cross-sectional study conducted with the Brazilian population of the five macro-regions (North, Northeast, Southeast, South and Midwest) between June and July 2020. Individuals over 18 years of age, with internet access through registration to digital social relationship platforms or messages, were included. Participants who did not complete the questions of the research instrument were excluded. For this purpose, a non-probabilistic convenience sample was used, which led to the closure of data collection upon obtaining a minimum number of 5,000 people, including all Brazilian macro-regions.

Data were collected using the following self-administered instruments: sociodemographic questionnaire; semi-structured questionnaire on the pattern of interpersonal relationships of each participant regarding the covid-19 pandemic; and Instrument for Assessing tolerance in friendship relationships (ATFR).⁹ Those were typed in the Google® form and submitted by social platforms: Facebook®, Twitter®, WhatsApp® and Instagram®. Those instruments could only be answered after the digital confirmation of acceptance to participate in the study by signing the Informed Consent Form (ICF).

The sociodemographic questionnaire, constructed by the authors, involved the following variables: date of birth, gender, sexual orientation, race, education, higher education institution, monthly income, region of residence and with whom the person resides (alone or not). The semi-structured questionnaire addressed emotions about the covid-19 pandemic and contained the following questions: In your family environment, is friendship tolerance satisfactory? Did your friends help you overcome the tensions experienced during the quarantine/social isolation period of covid-19? Do you believe that there have been changes in your friendship relationships since the beginning of quarantine/social isolation due to the covid-19 pandemic?

ATFR⁹ was built in 2019 to assess tolerance in friendship relationships. Its structuring was based on the semantic analysis of evidence and based on the process of construction of psychometric scales.¹⁰⁻¹¹ It is composed of 21 items arranged on a five-point Likert scale, in which: 1 – strongly agree, 2 – partially agree, 3 – neither agree nor disagree, 4 – partially disagree and 5 – strongly disagree. As it is an inverse scale, there is need to reverse it in all items before data analysis. From the sum of the scores indicated in each item, the scores of the degree of friendship tolerance are obtained, and the lower the score, the greater the tolerance of friendship relationships. Based on the general mean for the surveyed population, the friendship tolerance is dichotomized in high tolerance (when the individual has a tolerance score in relation to friendship higher than the population mean) and low tolerance (when the individual

has a friendship tolerance score below the population mean). The highest average items represent the situations in which there is greater tolerance in friendship relationships.⁹ Thus, the outcome analyzed was the level of tolerance in friendship relationships.

For data organization and analysis, a database was built in the Excel program (Office 2019) and the Statistical Package for the Social Sciences (SPSS) program was used, version 25.0. The qualitative variables were presented in absolute (n) and percentage (%) values. The quantitative variables were exposed in descriptive measures: minimum and maximum values, mean and standard deviation. Data normality was assessed using the Kolmogorov-Smirnov test. For the analysis, simple linear regression was used, with backward method for the selection of variables, as well as Adjusted R² as model adjustment indicator and ANOVA (F Test) as its significance indicator. The partial correlation and the respective p-value were used as exclusion criteria for variables in the tested models. In each model, variables with the lowest partial correlation were excluded until obtaining the final model. The effect of each predictor on the outcome level of tolerance in friendship relationships was evaluated using Beta values, with statistical significance of 5%. The assumptions of linearity of the relationships and normality of errors to define the final model were evaluated. The possible existence of multicollinearity was evaluated in each variable of the models using the Variance Inflation Factor (VIF), and values from 1 to 10 were accepted as adequate.¹²

This project is part of a larger study entitled: Tolerance in friendship relationships in the context of the COVID-19 pandemic. The project was submitted, by the Brazil platform, for consideration of the Research Ethics Committee (REC), being approved under opinion number 4.113.127 on June 26, 2020. In addition, in compliance with the Guidelines and Regulatory Standards for Research Involving Human Beings (CNS Resolution 466/12), the Informed Consent Form was presented and signed (in online version) by those who agreed to participate in the research before answering the instruments.

Results

Of the 5,315 people who were invited to the study, 24 did not agree to participate, which led to an access population of 5,291 participants. Cronbach's Alpha analysis showed a value of 0.80 for the 21 items of the ATFR, which attests to satisfactory reliability of the instrument. Table 1 shows the sociodemographic characterization data of the surveyed population.

Table 1- Sociodemographic characterization of the surveyed population (n=5291). Brazil. 2020.

Variables	Categories	Absolute Frequency (n)	Relative Frequency (%)
Age range	18 - 29 years	3403	64.3
	30 - 49 years	1450	27.4
	50 - 59 years	196	3.7
	≥60 years	242	4.6
Total		5291	100.0
Gender	Female	4310	81.5
	Male	956	18.1
	Other	25	0.4
Total		5291	100.0
Sexual Orientation	Heterosexual	3768	71.2
	Homosexual	621	11.7
	Bisexual	786	14.9
	Others	89	1.7
	Uninformed	27	0.5
Total		5291	100.0
Higher Education Institution	Public	1743	32.9
	Private	2135	40.4
	No current education institution	1413	26.7
Total		5291	100.0
Schooling	Primary Education	55	1.0
	Secondary Education	1212	22.9
	Higher Education	2717	51.4
	Post-graduation	946	17.9
	MSc	265	5.0
	PhD	96	1.8
Total		5291	100.0
Living Alone	Yes	693	13.1
	No	4598	86.9
Total		5291	100.0

Race	Yellow	149	2.8
	White	2685	50.7
	Indigenous	20	0.4
	Brown	1777	33.6
	Black	615	11.6
	Other	45	0.9
Total		5291	100.0
Monthly Income	20 or more minimum wages	204	3.9
	Between 10 and 20 minimum wages	632	11.9
	Between 4 and 10 minimum wages	1647	31.1
	Between 2 and 4 minimum wages	1549	29.3
	Up to 2 minimum wages	1259	23.8
Total		5291	100.0
Household region	Midwest	1789	33.8
	South	528	10.0
	Southeast	1760	33.3
	Northeast	984	18.6
	North	182	3.4
	Outside Brazil	48	0.9
Total		5291	100.0

There is a predominance of participants aged between 18 and 29 years (64.3%), females (81.5%), heterosexuals (71.2%), white race/color (50.7%), who receive between 4 and 10 minimum wages (31.1%). They are linked to private educational institutions (40.4%), have complete higher education (51.4%) and come from the Midwest (33.8%) and Southeast (33.3%). Table 2 shows the evaluation of the pattern of interpersonal relationships and the emotions of each participant regarding the covid-19 pandemic.

Table 2- Pattern of interpersonal relationships and emotions of each participant regarding the covid-19 pandemic, Brazil. (n=5291).

Description		Absolute Frequency (n)	Relative Frequency (%)
In your family environment, is friendship tolerance satisfactory?	Yes	4704	88.9
	No	587	11.1
Did your friends help you overcome the tensions experienced during the quarantine/social isolation period of covid-19?	Yes	4382	82.8
	No	909	17.2
Do you believe that there have been changes in your friendship relationships since the beginning of quarantine/social isolation due to the covid-19 pandemic?	Yes	3863	73.0
	No	1428	27.0

There is a predominance of individuals who consider the tolerance of friendship in the home environment satisfactory (88.9%); whose friends helped overcome the tensions experienced during the quarantine/social isolation period (82.8%); and who believe there has been a change in friendship relationships since the beginning of the quarantine (73%). Table 3 shows the adjustment indicators and exclusion process of variables between the initial and final models tested.

Table 3- Adjustment Indicators and process of exclusion of variables between the initial and final models tested (n=5291). Brazil, 2020.

Tested models	Adjusted R ²	Variable excluded at each model	Partial correlation*	ANOVA (F Test) for the Model
Initial Model	0.290	-	-	p<0.001
Model 2	0.290	Sexual Orientation	0.006	p<0.001
Model 3	0.290	Living alone	-0.011	p<0.001
Model 4	0.290	Education Institution	-0.017	p<0.001
Final Model	0.280	Household Region	0.018	p<0.001

*Parâmetro de exclusão da variável.

In the regression model initially obtained, gender, race, schooling, monthly income, receiving help from friends in quarantine and change in friendship relationships during quarantine were the variables that contributed significantly to tolerance in friendship relationships. However, due to p values above 0.05 and low partial correlation, some variables were excluded until obtaining the final model: sexual orientation, living alone, higher education

institution and household region. The VIF values ranged from 1.004 to 1.147 for the predictor variables inserted in the final model, which implies the absence of multicollinearity of the variables in the explanation of the outcome. This model was statistically significant ($p < 0.05$) and the set of predictors explained 40% of the outcome (Table 4).

Table 4- Final linear regression model of the sociodemographic and emotional factors on the tolerance level in friendship relationships during the covid-19 pandemic (n=5291). Brazil, 2020.

Predictor variables	β	P value	Variance Inflation Factor (VIF)
(Constant)	3.473	0.000	-
Gender (Female)	0.100	<0.001*	1.005
Race (White)	0.018	0.009*	1.048
Schooling	-0.053	<0.001*	1.103
Monthly income	0.033	<0.001*	1.147
Receiving help from friends during the quarantine (Yes)	-0.079	<0.001*	1.013
Change in friendship relationships during the quarantine (Yes)	-0.113	<0.001*	1.004

* Value statistically significant ($p < 0.05$).

Table 4 shows that being female, white and receiving higher income were factors that contributed significantly to higher levels of tolerance in friendship relationships. On the other hand, higher schooling, receiving help from friends during quarantine and change in friendship relationships during the pandemic led to lower levels of tolerance in friendship relationships.

Discussion

In an analogous study,⁸ also conducted during the pandemic/social isolation, of the 16,440 valid responses in the sample, 69% of the people were female, corroborating the findings. Regarding income ranges, 34% of people reported receiving up to 2 minimum wages as opposed to this study, in which 31.1% receive between 4 and 10 minimum wages.⁸ This can be explained by the fact that the participants are predominantly from the central and southeastern regions of

the country, thus not representing the Brazilian reality in which the average monthly income in the first trimester of 2020 was around 2,398.00 BRL as data from the National Continuous Household Sample Survey.¹³

In the census of higher education conducted by the National Institute of Educational Studies and Research Anísio Teixeira in 2017, most individuals are linked to private educational institutions,¹⁴ corroborating the findings, which were around 40.4%. In this study, there was also a predominance of white women, a finding that is in line with another study conducted in 2015, which showed that the group of white women is the best distributed among workers with higher education and has higher financial incomes.¹⁵

A survey conducted at two private universities, one in Bangkok and the other in Thailand, with 438 employees during the covid-19 pandemic, suggests that social support protects people from the harmful effects of stressful events, influencing what they think and how they deal with events. Thus, social support refers to a provision of the network of psychological and material resources designed to benefit an individual's ability to cope with stress.¹⁶ In this study, individuals who consider their friendship tolerance in the home environment satisfactory and whose friends helped overcome the tensions experienced during the quarantine/social isolation period demonstrate that social support is extremely beneficial for the well-being and mental health in relationships.¹⁷

Another study conducted in 28 higher education institutions in Ukraine and Poland with 690 students also pointed out that protection against possible stress effects in crises is based on training, communication, conversation with friends at social networks. Those factors help face the risks of psychological illness during social isolation measures.¹⁸

This study verified that female gender, white race and monthly income have a significant and direct effect on the level of tolerance in friendship relationships. This can be explained by the fact that the sample is composed of young adults, aged between 18 and 29 years and who recognize,

as predictors for a good friendship, the following aspects: similarity in terms of education, social class, family background or family cycle stage. Therefore, they are sustained in mutual openness and personal weakness, which may justify the adversities experienced during the pandemic/social isolation and the significant contribution of sexual orientation factors, living alone, higher education institution and household region for tolerance in friendship relationships.¹⁹⁻²⁰

Moreover, people with higher schooling have lower levels of tolerance in friendship relationships. This is opposed to other studies, which verified that the university experience influences the social, technical, cognitive and affective aspects of the students, making them adults who present better empathic performances in diverse relationships.²¹⁻²²

Another highlighted factor was receiving help from friends during quarantine at the lowest tolerance levels. This factor often occurs because family and friends do not know how to dispense with this help. Therefore, it is important to give them the chance to do this and name the real needs to be helped.²³ Corroborating those findings, a study conducted in China with 15 young people demonstrated that they are highly educated, they demonstrate not needing professional psychological support.¹⁷ Changes in friendship relationships during the pandemic can be explained by the social narrowness caused by affection, concern, fraternity, mood, longing, friendship or by the solidarity of all people who go through the same evil, caused by the fear of contagion.²⁴⁻²⁵

As limitations of the study, there stands out the fact that it does not equally portray all social and age strata of the Brazilian population according to macro-regions, which would allow possible comparisons of variables and outcome between different Brazilian regions. Moreover, there are not many studies with this approach in the scientific literature, which limited the broad discussion and debate on the subject. In this sense, other national studies should be carried out, with stratified proportional sampling, thus allowing the analysis and comparison of the specificities of macro-regions during the pandemic.

Conclusion

There is a predominance of participants aged between 18 and 29 years, female, heterosexual, white race/color, who receive between 4 and 10 minimum wages. They are linked to private educational institutions, have complete higher education and come from the Midwest and Southeast.

The individuals considered satisfactory the tolerance of friendship in the home environment; friends helped overcome the tensions experienced during the period of social isolation; and they believe there has been a change in friendship relationships since the beginning of quarantine. Moreover, being female, white and receiving higher income were factors that contributed significantly to higher levels of tolerance in friendship relationships. On the other hand, higher education, receiving help from friends during quarantine and changing friendship relationships during the pandemic led to lower levels of tolerance in friendship relationships.

The identification of factors associated with the level of tolerance in friendship relationships during the pandemic will allow the development of strategic actions aimed at such factors, especially those modifiable, such as income and schooling. With the closure of several services, economic difficulties became more intense and isolation changed human relationships that became very dependent on technology. In this regard, health managers and professionals need to adopt policies and programs that consider economic aspects and new ways of relating as elements that influence the physical and mental health of the population.

Thus, changing the care perspective, improving the individual and collective possibilities of care, based on the new adversities experienced in order to maintain a favorable mental health of the population, there is the intention to preserve feelings of esteem and perseverance that helped in coping with the adversities caused by the pandemic.

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