Covid-19 infodemic on older people with access to digital media: factors associated with psychopathological alterations

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Abstract

Objective: to analyze the sociodemographic profile and COVID-19 infodemic's repercussions on psychopathological alterations in older people with access to digital media. *Method:* cross-sectional study by web-based survey in the population over 60 years old who use digital media. Descriptive analysis considered sociodemographic variables and other variables related to exposure to information about COVID-19; a set of signs and symptoms to psychopathological alterations due to this exposure were analyzed. Data analyzed by the Mann-Whitney, Kruskal-Wallis tests and Spearman's correlation coefficient. *Results:* a total of 470 older people were included in the survey, 61.3% aged 60 to 69 years, 67.2% female, 71.1% white race/color and 41.3% with higher education. 89.4% of respondents be exposed to news and information about COVID-19 on television, and 71.3% on social network. The most cited psychic symptoms were feeling worried (76.9%), fear of death of dear people (76.8%) and fear of getting sick (74%). Psychopathological alterations were observed in 3.8% of women and 5.9% of men. These sign and symptoms were associated with a lower level of education, a decrease in post-pandemic income and felt affected by the news about COVID-19 on social networks. *Conclusion:* COVID-19 infodemic is associated with psychopathological alterations in older people. Even with the increase in access to social networks, the main media used by older people is television. Strategies for digital inclusion and literacy should be developed, offering tools for older people to fight the COVID-19 infodemic.

Keywords: Aged. Covid-19. Internet and Access to Information. Social Networking. Covid-19 Pandemic.

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INTRODUCTION

The media, both traditional and digital, due to their ability to disperse, reach different audiences and allow citizens to receive and share information quickly, often without checking the veracity of the news[1]. The use of Information and Communication Technologies (ICTs) requires from the current generation of older people the need to acquire new skills without resorting to previous knowledge[2].

Internet use in Brazil, although increasing in all age groups, was faster in older ages. There was an increase in the percentage of people aged 60 or over who used the internet between 2018 (38.7%) and 2019 (45.0%), probably due to the evolution in the ease of use of this technology and its dissemination in the daily life of society since previous decades[3].

In 2020, the pandemic of the disease caused by the new coronavirus (SARS-CoV-2) imposed behavioral alterations in all societies. The greater vulnerability of older people and people with comorbidities to develop the most severe form of the disease and, therefore, to present higher mortality rates, together with the risk of spreading COVID-19 and the concern about the economic, social and health impacts, led to several countries to adopt containment measures, including social isolation[4,5]. In this context, ICTs have become important in communicating with the outside world[6]. A substantial increase in the search for information related to the illness or health services has been observed during the COVID-19 pandemic[7].

Digital media are capable of disseminating information with greater volume, speed and effectiveness than traditional media, either by integrating many users into a single shared network or by propagating information through a wide variety of content types, such as text, audio, image, video[8]. In this context, the infodemic phenomenon can be conceptualized as the excess of information, some accurate and others not, which makes it difficult to find reputable sources and reliable guidelines, generating opinions and social behaviors that can potentially be a risk to people's health[9].

The literature points out the importance of access to ICTs by older people[4], however, the impact of excess information on these subjects at this time of a pandemic should be analyzed, due to their greater vulnerability, whether to the disease and its repercussions[6], or to the low mastery of these technologies and ability to assess the quality of information[10].

Among the main repercussions of the infodemic on the mental health of the adult and older population, a scoping review identified that anxiety (69.7%), depression (51.5%), stress (36.4%) and fear (21.2%) were the most frequent infodemic-related signs and symptoms in 33 publications. It was found that the sources of information play a fundamental role in the development of these and other symptoms and that the increase in anxiety is one of the repercussions of the time of exposure to information conveyed by digital social networks[11]. The gaps pointed out by this review[11] and the lack of Brazilian studies on this topic encourage studies of this nature, aiming to increase the production of scientific evidence on the consequences of the infodemic associated with psychopathological alterations, especially in older people. The vulnerability due to the quantitative increase of information may be more evident in this population group, which does not always know or practice the recommendations of information checking amidst the profusion of wrong news, unrelated to the existing misinformation in cyberspace and potential disseminators of fake news[10].

Thus, one of the current concerns is to analyze the way in which older people consume the media and the repercussions of these in the course of aging itself[12]. In addition, knowing the profile of the older population regarding the use of the media and the association of this use with the needs, motivations, attitudes and interests in this period of life[12] is fundamental for decision-making and the development of public policies[13].

The aim of this study was to analyze the sociodemographic profile and repercussions of the COVID-19 infodemic on psychopathological alterations in older people with access to digital media.

METHODS

Cross-sectional study, carried out by web-based survey, conducted between the months of July 2020 and December 2020, with the population aged 60 years or older, residing in Juiz de Fora, in the interior of Minas Gerais, Brazil, who said they had access to social media and e-mail and/or telephone, and with the ability to answer the questionnaire using digital media or even the telephone. The phenomenon of population aging in this municipality can be observed with a 45% increase in the number of older people between 2000 and 2010, a percentage greater than that of Minas Gerais (42%) and Brazil (41%)[14]. According to estimates by the João Pinheiro Foundation for the Intermediate Geographical Region of Juiz de Fora, the relative share of the age group aged 65 and over in the total population is expected to rise from the 10% achieved in 2010 to 21% in 2040[15].

This is one of the studies of phase 1 of the mixed multicenter investigation, with a sequential transformative strategy, entitled "COVID-19 infodemic and its repercussions on the mental health of older people: a multicenter Brazil/Portugal/Chile/Mexico/Colombia/Peru study". It had a non-probabilistic sample calculated from the finite population over 60 years old residing in the city of Juiz de Fora, estimated for the year 2019, a prevalence of 50% of psychopathological alterations, with a 5% sampling error and a 95% confidence level.

Pilot interviews were carried out to adapt the questionnaire, minimizing potential sources of bias. The approach to the population was made by sending the link to access the electronic questionnaire by email or through social networks (Whatsapp, Facebook and Instagram), in addition to using telephone calls to invite them to receive the link or answer the questionnaire over the phone, if they said they used digital media. The virtual snowball strategy[16] was used requesting the sharing of the link to networks that contained contacts of older people. The web-based survey, made up of mandatory questions in order to follow up, was also sent to municipal scientific societies of geriatrics and gerontology, as well as to retirees' associations in the city of Juiz de Fora.

The criteria for inclusion in the study were 60 years of age or older and access to digital media; for exclusion, declaring not to have the ability to answer the questionnaire using digital media or even by phone. Only participants who accepted the digital Free and Informed Consent Form (ICF) were directed to the questionnaire.

Demographic and socioeconomic data were collected: sex (male, female and undeclared), age group (60-69 years, 70-79 years, 80 years or older), marital status (with a spouse, without a spouse), race/color (white, others), number of people living in the household (lives alone, with 1 to 2 people, with 3 or more people), condition of the residence (own, other type), region of residence (urban area, rural area), education (elementary, high school, higher education or more), use of health services (only SUS, private and private+SUS), number of income dependents (no dependents, 1 to 2, 3 or more), source of income (up to 1 source of income, more than 1 source of income), change in income with the COVID-19 pandemic (equal or higher income, lower income).

Other data collected refer to exposure to news and information about COVID-19: hours of exposure per day on social networks, television and radio, frequency in the last week (exposed, not exposed) in different media (social networks, TV, radio), equipment most used to access news and information (social networks, television, radio, newspapers or printed magazines), information from social networks, TV or radio has affected (analyzed dichotomized into yes and no and also categorized into not feeling affected, feeling affected physically, psychologically, physically and psychologically), fear responses, awareness, stress, security and/or anxiety that this information generated (some response, no response) when referring to the number of infected and dead by COVID-19, about fear related to the disease, photos, videos and fake news about COVID-19, broadcast on social networks, TV and radio, frequency of signs and symptoms observed when exposed to information about COVID-19, in the last 15 days, being evaluated by the summation of questionnaire points and dichotomized from positive screening for psychopathological alterations through exposure to information about COVID-19 (case and non-case).

This screening was carried out from a set of questions that make up a scale, still in the validation process, prepared by the research group[17] and developed with questions related to the frequency with which 34 signs and symptoms of psychopathological alterations manifested in the last 15 days, for the older person to have contact with information about COVID-19 (news on TV or on the internet, WhatsApp messages, Youtube videos, among others). A four-point Likert scale was used (0 – never, 1 – a few times, 2 – sometimes, and 3 – often), where higher scores indicate a greater burden of psychopathological alterations resulting from exposure to information about the pandemic. The total score ranges from zero to 102, computed by adding the score for each item. The instrument showed adequate internal consistency: Cronbach's alpha (α=0.964; 95%CI=0.962–0.966), Greatest Lower Bound (glb=0.981; 95%CI=0.981–0.983), mean inter-item correlation (r=0.441; 95%CI=0.427–0.456) and corrected item-total correlation (0.346≤0.798). Regarding validity evidence based on the internal structure, robust exploratory factor analysis attested that it is a one-dimensional measure. This measure could not yet be subjected to sensitivity and specificity analyses. However, according to Crawford and Garthwaite, percentile classifications express scores more relevantly than other metrics, allowing to describe how common or uncommon the measured constructs in the investigated sample are[18]. Based on this framework, the authors suggest that the 95 percentile of the gross total score be considered as a cut-off point for the suggestion of psychopathological alterations. Thus, in the first analyzes for validation, a difference was observed in the mean score between men (M=20.30; SD=19.94; 95%CI=19.03≥21.57) and women (M=26.54; SD=21.81; 95%CI=25.59≥27.49).

The collected data were submitted to exploratory analysis in order to obtain descriptive statistics of sociodemographic indicators and variables related to the infodemic. The Kolmogorov-Smirnov test indicated that the data distribution did not follow a normal pattern, so non-parametric tests such as Mann-Whitney or Kruskal-Wallis were used in the bivariate analysis, with a 95% confidence interval. To analyze the correlation between the signs and symptoms of psychopathological alterations and the amount of hours of exposure to the media (social networks, television and radio), Spearman's correlation coefficient was used. Variables that presented p≤0.10 were taken to the multiple linear regression by the backward method, while variables with p<0.05 were kept in the final model.

The present research complied with ethical criteria and was approved by the National Research Ethics Commission (CONEP) under protocol number 4.134.050.

RESULTS

A total of 517 questionnaires were received which, after excluding duplicates (19) and residents in a Long-Term Institution (28), resulted in a sample consisting of 470 respondents. This sample was mainly characterized by female respondents (67.2%), white race/color (71.1%), with a spouse (56.2%), in their own residence (81.5%), located in the urban area (97.0%) and living with 1 to 2 people (55.5%). Among the survey participants, 40.6% reported having a college degree or higher education and 41.3% said they used both paid and unpaid health services. As for income, they reported living with only one source of income (81.5%), having 1 to 2 dependents (57.2%) and not having their income changed due to the COVID-19 pandemic (78.3%). The mean age of the respondents was 68.82 years (sd±6.97) and most were aged between 60 and 69 years (61.3%).

With regard to daily exposure to news and information about COVID-19, it was found that, on average, the older people reported 3.72 hours (median=2.00; P25=1.00; P75=6.00) on television, 3.08 hours (median=1.00; P25=0.00; P75=4.00) through social networks (Whatsapp, Facebook, Youtube, Instagram and others) and less than 1 hour (median=0.00; P25=0.00; P75=2.00) by radio. They said they were exposed to news or information about COVID-19 during the last week, 89.4% on television, 71.3% on social networks and 42.8% on radio.

The items most cited as used to access news and information about COVID-19 were: television (82.55%), Whatsapp (44.04%), radio (32.76%), Facebook (31.70%), websites (31.70%), printed

newspapers or magazines (23.83%), Youtube (18.29%), Instagram (13.61%), Twitter (1.91%) and Telegram (1.91%).

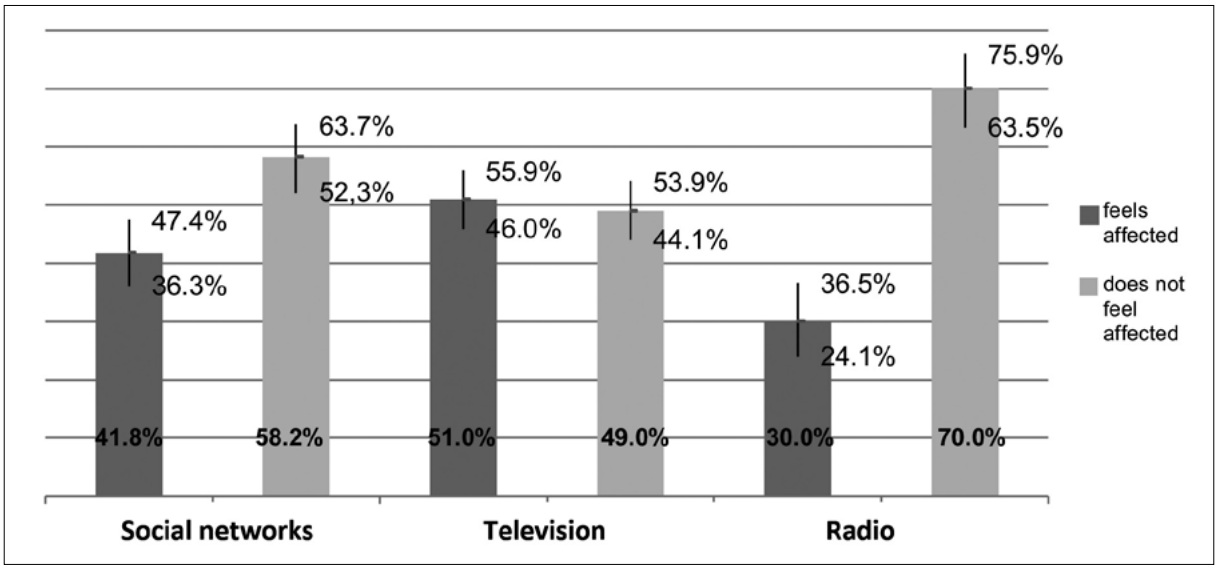
Regarding the self-perceived impact of information about COVID-19, most of the older people answered that they did not feel affected by the information broadcast on social networks (58.2%) and on the radio (70%). However, for the media most used by the older people, television, 51.0% felt physically or psychologically affected by this information (Figure 1).

The analysis of the repercussions of news about COVID-19 regarding the number of infected, number of deaths, fear related to the disease, photos, videos and fake news, disseminated in different media (social networks, television and radio), generated in the older people surveyed awareness responses (33%), fear (24.6%), anxiety (16.5%), stress (14.4%) and security (2.1%). The most cited answer may indicate that the contact with the information provided did not affect the emotional condition, being a reason to become aware of the pandemic, its risks and forms of prevention.

When having contact with information about COVID-19 (news on TV or on the internet, Whatsapp messages, Youtube videos, among others) the older people reported responses such as concern (76.9%), fear that loved ones would die (76.8%) and fear of getting sick (74.0%) (Table 1).

These signs and symptoms of psychopathological alterations had a mean score of 22.89, with a median of 17.00 (IQ=27.00). A significant difference ($p>0.01$) was found between women (median=20.00; P25=9.00; P75=37.00) and men (median=13.00; P25=5.00; P75= 24.00), being positive for 3.8% of women and 5.9% of men.

An association of these psychopathological alterations with demographic and socioeconomic variables and with those related to exposure to information about COVID-19 was also found (Table 2). The demographic and socioeconomic variables associated with the outcome were: female gender, elementary schooling level, residence in non-own property, use of private health services and the SUS, 1 to 2 dependent on their income, lower post-pandemic income. The associated variables referring to exposure to news and information about COVID-19 were: greater number of hours per day and greater frequency of exposure to news and information about COVID-19 broadcast on social networks and TV, feeling affected by this information via social networks, TV and radio and the responses generated in the older people when exposed to information about COVID-19 (number of infected, dead, fear related to the disease, photos, videos and fake news) in the researched media.



95% confidence interval.

Figure 1. Self-perceived impact of information about COVID-19 in the media (n=470). Juiz de Fora, Minas Gerais, Brazil, 2020.

Table 1. Signs and symptoms of psychopathological alterations due to exposure to information about COVID-19 in the last 15 days. Juiz de Fora, Minas Gerais, Brazil, 2020.

Symptoms	n (%)
Hopelessness or pessimism	283 (61.0)
Cold sweat or chills	82 (18.0)
Irritation	262 (56.6)
Unwillingness to do daily activities	190 (41.1)
Fear of getting sick	347 (74.0)
Nervousness	276 (59.7)
Panic	126 (27.3)
Higher consumption of alcohol or tobacco	83 (18.0)
Decreased desire for sex	121 (26.5)
Fear of dying	264 (56.7)
Digestive problems	117 (25.3)
Dry mouth	135 (29.0)
Lack of interest in everyday activities	189 (40.6)
Lack of energy	200 (43.2)
Chest tightness	127 (27.4)
Concern	360 (76.9)
Use of illegal substances	16 (3.5)
Willingness to die	47 (10.1)
Anxiety	289 (62.3)
Difficulty breathing	68 (14.7)
Sadness	305 (64.9)
Afraid but I don't know what	212 (45.7)
Dismay	237 (51.0)
Anger	186 (40.1)
Tremor	48 (10.4)
Headache	126 (27.3)
Muscle aches	159 (34.2)
Sleep issues	203 (43.8)
Nutritional problems	144 (30.9)
Palpitation	98 (21.1)
Tiredness	183 (39.5)
Fear that loved ones will die	360 (76.8)
Use of psychotropic drugs	124 (26.7)
Wants to be alone	150 (32.4)

Table 2. Factors associated with signs and symptoms of psychopathological alterations through exposure to information about COVID-19 (n=470). Juiz de Fora, Minas Gerais, Brazil, 2020.

	Median (IQ)	P-value
Demographic and socioeconomic variables		
Sex (n=470)		<0.01
Female	20.00 (28.00)	
Male	13.00 (21.00)	
Age group (years) (n=470)		0.14
60-69	17.00 (28.75)	
70-79	16.00 (22.5)	
≥80	17.00 (29.5)	
Marital status (n=470)		0.11
With spouse	16.00 (24.00)	
No spouse	19.50 (27.25)	
Race (n=470)		0.87
White	17.00 (25.00)	
Others	17.50 (27.75)	
Living status (n=470)		0.65
Alone	16.00 (32.00)	
With 1 to 2 people	17.00 (27.00)	
With 3 or more people	19.00 (24.00)	
Residence status (n=470)		0.01
Own residence	17.00 (24.00)	
Another type	28.00 (35.00)	
Region of residence (n=470)		0.12
Urban	17.00 (26.00)	
Rural	24.50 (43.75)	
Level of education (n=470)		0.04
Basic	17.00 (28.00)	
High school	15.00 (22.25)	
Higher or more	20.00 (26.00)	
Use of health services (n=470)		0.06
SUS only	15.00 (24.50)	
Private and Private+SUS	18.00 (25.50)	
Depends on the income of the older person (n=470)		0.03
No dependents	12.00 (21.00)	
1 to 2 dependents	17.00 (28.00)	
3 or more dependents	17.50 (26.75)	
Source of income (n=470)		0.49
Up to 1 source of income	17.00 (26.00)	
More than 1 source of income	16.00 (24.00)	
Post-pandemic income (n=470)		0.01
Equal or greater	16.00 (24.00)	
Smaller	25.00 (32.00)	

to be continued

Continuation of Table 2

	Median (IQ)	P-value
Variables regarding exposure to news and information about COVID-19		
Hours/day (n=470)		
Social networks	1.00 (4.00)	<0.01
Television	2.00 (5.00)	<0.01
Radio	0.00 (2.00)	0.57
Frequency in the last week (n=470)		
Social networks		<0.01
Exposed	20.00 (27.00)	
Not exposed	11.00 (22.00)	
Television		0.02
Exposed	18.00 (26.00)	
Not exposed	13.50 (17.50)	
Radio		0.69
Exposed	17.00 (23.50)	
Not exposed	17.00 (29.00)	
Affected -Social Networks (n=316)		<0.01
Yes	37.00 (33.25)	
No	13.00 (17.75)	
Affected – Television (n=416)		<0.01
Yes	30.00 (29.00)	
No	10.00 (16.00)	
Affected – Radio (n=223)		<0.01
Yes	34.00 (36.00)	
No	12.50 (20.00)	
GENERATED ANSWERS - SOCIAL NETWORKS		
Number of Infected (n=337)		<0.01
any answer	22.00 (27.00)	
No answer	10.50 (14.50)	
Number of Deaths (n=340)		<0.01
any answer	21.00 (25.00)	
No answer	6.00 (19.50)	
Fear related to COVID-19 (n=324)		<0.01
any answer	24.00 (26.00)	
No answer	13.00 (14.50)	
Photos related to the pandemic (n=321)		<0.01
any answer	13.00 (14.50)	
No answer	13.00 (20.50)	
Videos related to the pandemic (n=326)		<0.01
any answer	23.50 (25.50)	
No answer	13.00 (13.75)	
Fake news (n=318)		<0.01
any answer	24.00 (26.75)	
No answer	13.00 (16.00)	

to be continued

Continuation of Table 2

	Median (IQ)	P-value
GENERATED ANSWERS - TV		
Number of Infected (n=416)		<0.01
any answer	19.00 (26.25)	
No answer	3.00 (5.25)	
Number of Deaths (n=412)		<0.01
any answer	19.00 (27.00)	
No answer	4.00 (5.75)	
Fear related to COVID-19 (n=407)		<0.01
any answer	20.00 (27.00)	
No answer	5.00 (13.00)	
Photos related to the pandemic (n=404)		<0.01
any answer	20.00 (27.75)	
No answer	5.50 (13.50)	
Videos related to the pandemic (n=397)		<0.01
any answer	20.00 (27.00)	
No answer	5.00 (13.00)	
Fake news (n=390)		<0.01
any answer	21.00 (27.00)	
No answer	8.50 (14.25)	
GENERATED ANSWERS - RADIO		
Number of Infected (n=196)		<0.01
any answer	17.00 (23.50)	
No answer	7.00 (17.50)	
Number of Deaths (n=200)		<0.01
any answer	17.00 (25.75)	
No answer	7.00 (17.50)	
Fear related to COVID-19 (n=196)		0.01
any answer	17.00 (27.25)	
No answer	13.00 (18.25)	

The variables that remained significant in the final model ($p<0.05$) after adjustments were: education level (higher or more), post-pandemic income (lower) and feeling affected by news and information about COVID-19 broadcast on social networks (no) (Table 3).

Table 3. Multiple linear regression model predictors of psychopathological alterations upon exposure to information about COVID-19. Juiz de Fora, Minas Gerais, Brazil, 2020.

Adjusted r2	0,61			
Variables	B	95% CI	p	β
Education Level (Higher or more)	-7.52	-13.10 – -1.93	0.01	-0.24
Post-pandemic income (Lower)	9.50	0.74 – 18.26	0.03	0.17
Feels affected by news published on social networks (No)	-25.53	-47.27 – -3.79	0.02	-0.51

Durbin-Watson Test = 2.04, $p>0.01$, $r^2=0.71$.

DISCUSSION

The findings of this study revealed an association between education level, post-pandemic income and the fact of feeling affected by news broadcast on social networks with signs and symptoms of psychopathological alterations due to exposure to information about COVID-19, indicating that a greater burden of these alterations was found in those older people with lower levels of education, decreased income in the post-pandemic period and who reported feeling affected by this information published on social networks.

A scoping review found an association between a higher level of education and the chance of developing anxiety and depression, explaining that the level of education could be related both to understanding the severity of the pandemic situation and to the search for information about COVID-19[11]. However, a study conducted in the older population of the Southeast region of Brazil pointed out that more educated older people had lower rates of depression and loneliness due to greater resilience and social support[19]. The present study corroborates this finding, since it found a greater burden of psychopathological alterations associated with older people with lower levels of education.

Another factor associated with psychopathological alterations found in this study was the decrease in income after the advent of the COVID-19 pandemic. The PNAD COVID-19 reveals that, among the population aged 60 and over, there was a loss of 22% of average earnings from work[20]. Although 73.6% of the older people are retired or pensioners[20], the reduction in income from work ends up impacting their families, since the income of the older person plays an important role in the household where they live and that financial insecurity affects mental health[21].

Also associated with problems related to mental health, social isolation contributed to greater exposure of people to information disseminated by digital social networks[11]. The fact of feeling affected by information about COVID-19 published on social networks was associated, in the present study, with signs and symptoms of psychopathological alterations.

From the exacerbated increase in information and misinformation and the mismatch of public authorities in statements about the pandemic, an environment of insecurity and fear was created for the population. During outbreaks, epidemics and pandemics, the communication process becomes even more important so that accurate information is transmitted and received in a way that does not generate doubt and confusion[22]. The infodemic has abruptly reached people who are unaware of or lack the ability to use and properly criticize information and its sources[23]. A greater number of older female respondents were found, aged between 60 and 69 years, with a spouse, higher education and living with other people, data also found in another web-based survey conducted during the pandemic in Brazil[19]. The sociodemographic profile of this sample may indicate a new pattern among older people who use digital media: well educated, with access and knowledge to use the internet[19]. Thus, the results can be generalized to older people users of social networks.

According to a North American study, limiting factors regarding the use of technology were less perceived by the older population with higher income and education. With increasing age among older people, limitations were perceived as more restrictive[24]. Digital media can minimize the effects of social isolation[25], which further impact families who are economically and socially vulnerable[26].

A higher frequency of television use was found to access news and information about COVID-19. A study among older Brazilians proved the supremacy of the use of this media over the others and addressed the concern about the impact of excessive exposure on the physical health, psychological condition and quality of life of these users[12].

It is noted that, although a greater number of older people use television to search for information, the variable that was associated with psychopathological alterations was that referring to news accessed through social networks. This finding may reflect the expansion of internet access and reveal the greater perception of the infodemic in digital media.

A Brazilian survey, also carried out with the virtual snowball strategy, conducted in 2018, with

384 older people, found that television was the main source of information among older people living in the Southeast and Midwest regions, and the internet among the residents of the North, Northeast and South. In addition, he mentioned that young older people (from 60 to 79 years old) used the internet daily and for more than 2 hours[27].

In 2019, among people aged 60 and over, 45.0% used the internet[28] and of these, 65% accessed it exclusively by cell phone[29]. However, a survey carried out in Brazil found that due to the COVID-19 pandemic, older people adopted social networks in their daily lives (91% with registration in one of them) and increased the length of stay in them (66% increased the frequency of use). The social networks most used by older people were Facebook, Whatsapp and Instagram[30], a result similar to that found in this research, with the most cited being Whatsapp, Facebook, Youtube and Instagram.

The psychic impact generated both by the greater vulnerability to the severity of COVID-19 and by the infodemic, can lead to a mental and emotional overload, leaving individuals anxious and depressed[31]. Regarding the responses generated in the older person due to information about COVID-19 published on social networks, television and radio, it was found that "fear", "anxiety" and "stress" were frequent, although the answer of "awareness" was the most cited, indicating the need for more specific studies on this aspect.

It is estimated that between one-third and one-half of the population exposed to an epidemic may suffer some psychopathological manifestation if no specific care intervention is made for the reactions and symptoms manifested. The most frequently observed reactions in this context are: fear of getting sick, fear of dying and fear of losing loved ones[32]. The findings of the present research corroborate the above, since among the signs and symptoms suggestive of psychopathological alterations, those most cited were "concern", "fear that loved ones die" and "fear of getting sick".

It is noteworthy that cross-sectional studies are limited to infer causality due to the absence of temporality between the occurrence of the events of interest. One of the limitations of web-based surveys is the fact that they end up leaving out a significant portion of people without internet access or less predisposed to participate in online surveys[19]. Other limitations refer to the probabilities of sample selection and the non-response rate that cannot be estimated, in addition to the fact that the connections between the participants are not known, which prevents considering the dependence of observations in the estimation of variance. Among the advantages of a web-based survey, a method that has been widely used, are the lower cost, agility in data collection and the possibility of reaching people with a specific profile and in dispersed locations[33].

CONCLUSION

The infodemic can generate negative implications that compromise the health of the older population and their social relationships, with a greater impact on those with a lower level of education and income, that is, with a greater degree of vulnerability.

Older people therefore carry a triple burden of vulnerability (as they are subject to more severe forms of the disease itself, to infodemics and to psychopathological alterations). In view of this, it is essential that studies and actions, in the field of collective health, to face COVID-19, take into account the particularities of this population.

Strategies to boost access and digital literacy for the older population, enabling the development of search, selection, analysis and decision-making skills[11], as well as the creation of media programs aimed at this age group, combating the spread of misinformation and allow information checking in a simple and practical way, can minimize the health risks arising from the infodemic.

New studies should contemplate mechanisms that increase the resilience of this population and explore the best appropriation of older people to digital technologies and tools that allow the verification of information.

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