# Depressive symptoms and associated factors in older people during the COVID-19 pandemic in the city of São Paulo-SP

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## Abstract

*Objective:* To determine the presence of depressive symptoms and their associated factors in the elderly living in the city of São Paulo during the isolation of the covid-19 pandemic. *Method:* This is a quantitative, descriptive and cross-sectional study carried out with 411 elderly people living in the city of São Paulo. Demographic profile instruments, the Geriatric Depression Scale and a list of physical and psychological symptoms and substance use were used. *Results:* There was a predominance of females, between 60 and 69 years old, with a partner, higher education, and with no change in income. In addition, not having a partner (p=0,02), psychological symptoms such as lack of hope (p=0,001), fear (p=0,008) and desire to die (p=0,003), and physical symptoms such as tremor (p=0,03) and tiredness (p<0,0001) were associated with depressive symptoms. On the other hand, not using illegal substances (p=0,03) was considered a protective factor against the presence of these symptoms. *Conclusion:* It is necessary to be alert to any signs or symptoms that may indicate some mental suffering, suggesting the adoption of socialization measures.

**Keywords:** Depression. Elderly. Pandemics. Covid-19. Geriatric Nursing.

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## INTRODUCTION

The World Health Organization, on March 11, 2020, characterized the epidemiological situation of COVID-19 as a pandemic[1], which brought with it a new scenario, where society began to perceive more intensely the lack of security regarding political decisions, especially, regarding the effective control of the disease in the world and in Brazil[2].

Under this lens, on the national scene, several measures were adopted, such as the Government of São Paulo, which decreed quarantine throughout the state, in order to restrict activities and limit social contact in order to prevent the spread of the virus[3]. In this context, total or intense social distancing was more pronounced in the older population, being more evident in females and retirees[4].

The mental health of the general population, especially in older people, has caused concerns, since they are more vulnerable to mental illness. This vulnerability comes not only because of the repercussions resulting from the physiological conditions inherent to the aging process[5], but also due to issues surrounding socialization, which has become notably compromised due to physical distancing adopted as the main security measure to prevent the transmission of COVID-19[6].

In addition, the mental health of the older population within the pandemic context has been the focus of studies. This scenario can be observed in studies carried out with older people living in the community, which showed that the prevalence of depressive symptoms (25%[7] - 39%[8]) and anxiety increased significantly during the pandemic[7,8] due to the risk of transmission of the virus to themselves and their family members and the lack of a treatment for the virus[9].

During the COVID-19 pandemic, emotions such as fear and anger increased the rate of manifestation of depressive symptoms and high levels of anxiety and stress in older people[10]. Furthermore, previous epidemics have shown that such conditions require more attention because they can cause depression, anxiety, mental illness and can lead to suicide in severe cases[8].

Therefore, the role of health professionals, especially nurses, in the prevention, identification, treatment and recovery of the older person who has depressive symptoms, especially after isolation and loss of family and friends due to COVID-19, becomes essential. In addition, the implementation of actions to prevent depressive symptoms and promote mental health are of great value to prevent the older population from having such symptoms, as well as providing an improvement in their quality of life.

Therefore, the objective of the study was to determine the presence of depressive symptoms and their associated factors in older people living in the city of São Paulo during the isolation of the COVID-19 pandemic.

## METHOD

Quantitative, descriptive and cross-sectional study that is part of a larger study entitled "COVID-19 infodemic and its repercussions on the mental health of older people: a Brazil/Portugal/Spain/Italy/Chile/Peru multicenter study" carried out with older people who live in the city of São Paulo, between the months of July 2020 and January 2021.

The sample size was estimated considering the older population in the city of São Paulo, using the formula: $n= N.Z^2.p.(1-p)/Z^2.p.(1-p). + e^2.(N-1)$, where "n" is the calculated sample, "N" is the population, "Z" the standardized normal variable associated with the confidence level, "p" the true probability of the event (P=(1-P)=0.5, assumption of maximum variation), and "e" the sampling error. A sampling error of 5% and a confidence level of 95% were also used, based on IBGE projections for the older population in the city of São Paulo, thus estimating the number of 411 older people.

To participate in the study, participants had to meet the following inclusion criteria: age 60 years or older, internet accessibility, use of mobile devices or computers, and having answered all questions on the instrument. The exclusion criterion was living in a Long-Term Institution for Older People.

Data collection took place through a web-based survey, which was sent to participants through different means, such as Facebook, WhatsApp, among other social networks. In addition, the Dean of Culture and Extension at USP was asked to publicize the study through the USP 60+ Program.

To reach the sample, the virtual snowball technique was used, in which the researcher asks participants to refer to new informants with similar characteristics[12] (Flick, 2009). It is noteworthy that in the context of the pandemic, the older people were in isolation and, therefore, difficult to access in person. Thus, the older people identified by the researchers were asked to indicate other older people or to forward the invitation to their respective contacts.

For the collection of information, the following instruments were used:

- Demographic profile: in order to identify data, such as gender (male and female), age (in years), marital status (with and without a partner), education (without studies, elementary, high school and higher education), people who live with the older person (in number) and income modification during the pandemic (no, decreased and increased).

- Geriatric Depression Scale (GDS): instrument for tracking depressive symptoms in older people[13], validated for Portuguese[14], consisting of 15 items. It is an instrument that aims to assess the presence of depressive symptoms in the older population. The scale used presents dichotomous answers (yes and no), in which "yes" and "no" range from 0 to 1 point, depending on the question. The scale has a cutoff point of 5/6 points to categorize the older person with and without the presence of depressive symptoms.

- Self-reported symptoms: list of symptoms related to the psychological and physical changes that older people experienced during the COVID-19 pandemic. Thus, each symptom had a Likert-type response (no, few times, sometimes and many times). The symptoms were based on the impact that the person can suffer from fear according to the literature[15]. In addition, the consumption of illegal substances, alcohol and psychotropic drugs during the pandemic was questioned.

A descriptive analysis was performed, presented through absolute and relative frequencies for the categorical variables, and measures of central tendency (mean and standard deviation) for the continuous ones.

To analyze the depressive symptoms outcome variable (yes and no), multiple logistic regression was used, with the demographic variables (sex, age, marital status, education, people living with the older person and change in salary) as independent variables. On the other hand, the psychological, physical and substance use symptoms self-reported by the older person, which had four levels of response, were grouped as follows: yes (few, sometimes and many times) and no (never). All statistical analyzes have a $p<0.05$ significance.

The study was approved by the Ethics Committee of the School of Nursing at the University of São Paulo, with opinion Nº. 4,134,050. Upon accessing the link, participants were first directed to the digital Free and Informed Consent Form, where they could read and accept or not participate in the study. The acceptance or not to participate in the study was automatically registered in the database generated by the *web-based survey*.

## RESULTS

It was identified that the prevalence of depressive symptoms in the older population was 39.7%. There was a predominance of females, those aged between 60 and 69 with a mean of 67.38 (SD ±6.8) years, with a partner, higher education and no change in income. In relation to the number of people who live with the older person, the average was 1.58 (SD = 1.37) people (Table 1).

**Table 1.** Sociodemographic characteristics of older people living in São Paulo (N=411). São Paulo, SP, 2021.

| Variable | Category | Total n (%) | No symptoms n (%) | With symptoms n (%) |
|---|---|---|---|---|
| Sex | Female | 314 (76.4) | 190 (60.5) | 124 (39.5) |
| | Male | 97 (23.6) | 58 (59.8) | 39 (40.2) |
| Age | 60 – 69 | 287 (69.8) | 177 (61.7) | 110 (38.3) |
| | 70 – 79 | 97 (23.6) | 57 (58.8) | 40 (41.2) |
| | 80+ | 27 (6.6) | 14 (51.9) | 13 (48.1) |
| Marital Status | With partner | 232 (56.4) | 146 (62.9) | 86 (37.1) |
| | Without partner | 179 (43.6) | 102 (57.0) | 77 (43.0) |
| Education | No education | 12 (2.9) | 7 (58.3) | 5 (41.7) |
| | Elementary School | 91 (22.1) | 48 (52.7) | 43 (47.3) |
| | High school | 70 (17.0) | 44 (62.9) | 26 (37.1) |
| | Higher | 238 (57.9) | 149 (62.6) | 89 (37.4) |
| People who live with the older person (Average; SD) | | 1.58 (1.37) | 1.52 (1.39) | 1.67 (1.34) |
| Income Change | No | 292 (71.0) | 183 (62.7) | 109 (37.3) |
| | Decreased | 109 (26.5) | 59 (54.1) | 50 (45.9 |
| | Increased | 10 (2.4) | 6 (60.0) | 4 (40.0) |

The psychological symptoms that the older people showed most during the pandemic identified in the category were often: fear of family members dying (27%), worry (25.9%), fear of getting sick (18.1%) and anxiety (17.4%). (Table 2).

As for the physical symptoms that the older people presented during the pandemic more frequently according to the category, they were often: sleep problems (13.2%), decreased libido (11.9%), tiredness and lack of energy (10.1% each) and muscle pain (9.9%) (Table 3).

As for the use of substances self-reported with the category many times, the use of psychotropic drugs (7.7%) and illegal substances and tobacco (4.9% respectively) were identified (Table 4).

In the regression analysis, it was identified that risk factors such as not having a partner ($p$=0.02), presenting psychological symptoms such as hopelessness ($p$=0.001), fear ($p$=0.008) and the desire to die ($p$=0.003) were associated with the presence of depressive symptoms. Furthermore, physical symptoms such as tremor ($p$=0.003) and tiredness ($p$<0.001) were also associated with depressive symptoms. On the other hand, not using illegal substances ($p$=0.03) was considered a protective factor against the presence of these symptoms in older people during the pandemic (Table 5).

**Table 2.** Psychological symptoms self-reported during the pandemic by older people living in São Paulo (N=411). São Paulo, SP, 2021.

| Psychological symptoms | Never n (%) | Few times n (%) | Some times n (%) | Many times n (%) |
|---|---|---|---|---|
| Will to die | 346 (85.0) | 19 (4.7) | 18 (4.4) | 24 (5.9) |
| Panic | 285 (70.9) | 49 (12.2) | 37 (9.2) | 31 (7.7) |
| Want to be alone | 253 (62.2) | 67 (16.5) | 59 (14.5) | 28 (6.9) |
| Lack of will | 227 (55.8) | 80 (19.7) | 65 (16.0) | 35 (8.6) |
| Lack of interest | 225 (55.3) | 98 (24.1) | 49 (12.0) | 35 (8.6) |
| Fear | 201 (49.6) | 91 (22.5) | 72 (17.9) | 41 (10.1) |
| Rage | 196 (48.2) | 78 (19.2) | 69 (17.0) | 64 (15.7) |
| Fear to die | 179 (44.1) | 90 (22.2) | 80 (19.7) | 57 (14.0) |
| Nervousness | 176 (43.7) | 101 (25.1) | 71 (17.6) | 55 (13.6) |
| Irritation | 161 (39.8) | 90 (22.2) | 96 (23.7) | 58 (14.3) |
| Discouragement | 158 (38.8) | 137 (33.7) | 61 (15.0) | 51 (12.5) |
| Hopelessness | 158 (38.8) | 86 (21.1) | 117 (28.7) | 47 (11.5) |
| Anxiety | 145 (35.6) | 111 (27.3) | 80 (19.7) | 71 (17.4) |
| Sadness | 115 (28.2) | 123 (30.1) | 103 (25.2) | 67 (16.4) |
| Fear family members die | 85 (20.9) | 84 (20.6) | 128 (31.4) | 110 (27.0) |
| Fear of getting sick | 76 (18.6) | 134 (32.8) | 125 (30.6) | 74 (18.1) |
| Worry | 56 (13.9) | 124 (30.8) | 118 (29.4) | 104 (25.9) |

**Table 3.** Physical symptoms self-reported during the pandemic by older people living in São Paulo (N=411). São Paulo, SP, 2021.

| Physical symptoms | Never n (%) | Few times n (%) | Some times n (%) | Many times n (%) |
|---|---|---|---|---|
| Tremor | 338 (83.5) | 18 (4.4) | 24 (5.9) | 25 (6.2) |
| Cold sweat or chills | 326 (80.9) | 31 (7.7) | 28 (6.8) | 18 (4.5) |
| Palpitations | 312 (77.0) | 39 (9.6) | 24 (5.9) | 30 (7.4) |
| Difficulty breathing | 306 (75.4) | 53 (13.1) | 23 (5.7) | 24 (5.9) |
| Dry mouth | 295 (72.7) | 41 (10.1) | 39 (9.6) | 31 (7.6) |
| Chest tightness | 289 (71.2) | 43 (10.6) | 42 (10.3) | 32 (7.9) |
| Digestive problems | 275 (67.7) | 60 (14.8) | 48 (11.8) | 23 (5.7) |
| Headache | 274 (67.5) | 63 (15.5) | 37 (9.1) | 32 (7.9) |
| Nutritional problems | 249 (61.3) | 65 (16.0) | 56 (13.8) | 36 (8.9) |
| Decreased libido | 249 (60.3) | 49 (11.9) | 52 (12.7) | 49 (11.9) |
| Muscle pain | 233 (57.4) | 68 (16.7) | 65 (16 .0) | 40 (9.9) |
| Tiredness | 216 (53.1) | 84 (20.6) | 66 (16.2) | 41 (10.1) |
| Lack of energy | 207 (51.0) | 105 (25.9) | 53 (13.1) | 41 (10.1) |
| Sleep problems | 196 (48.0) | 85 (20.8) | 73 (17.9) | 54 (13.2) |

**Table 4.** Self-reported substance use during the pandemic by older people living in São Paulo (N=411). São Paulo, SP, 2021.

| Substance use | Never n (%) | Few times n (%) | Some times n (%) | Many times n (%) |
|---|---|---|---|---|
| Illegal substances | 367 (90.4) | 6 (1.5) | 13 (3.2) | 20 (4.9) |
| Alcohol and tobacco | 326 (80.3) | 32 (7.9) | 28 (6.9) | 20 (4.9) |
| Psychopharmaceuticals | 301 (74.3) | 36 (8.9) | 37 (9.1) | 31 (7.7) |



**Table 5.** Association between depressive symptoms and demographic factors, physical and psychological symptoms and substance use in older people living in São Paulo during the pandemic (N=411). São Paulo, SP, 2021.

| Variable | Beta | p-value | 95%CI |
|---|---|---|---|
| Marital status (with partner) | 0.58 | 0.02 | 1.06 – 3.10 |
| Hopelessness (no) | 1.049 | 0.001 | 1.55 – 5.24 |
| Fear of dying (no) | 0.76 | 0.008 | 1.22 – 3.92 |
| Will to die (no) | 2.34 | 0.003 | 2.18 – 50.23 |
| Tremor (no) | 1.57 | 0.003 | 1.74 – 13.45 |
| Tiredness (no) | 1.19 | <0.001 | 1.92 – 5.69 |
| Use of illegal substances (no) | -1.99 | 0.03 | 0.02 – 0.82 |

## DISCUSSION

In the study, it was identified that the presence of depressive symptoms in older people during the pandemic may be associated with demographic factors such as marital status, presence of psychological and physical symptoms and substance use.

The data showed a greater number of women, with a partner and higher education. Similar results were identified in national[16] and international[17,18] research. In addition, it was identified that 39.7% of the participants had depressive symptoms, similar results were found in a Chinese study (30.8%)[16] and in Bangladesh (40.1%)[17].

The high prevalence of depressive symptoms in older people is an alert for health professionals, including nurses, since their identification during the evaluation aims, in addition to identifying them early, to recognize the associated risk factors, promote mental health in this population and, consequently, reduce the incidence of diseases[18].

In relation to marital status, older people with partners had a lower score of depressive symptoms. Similar results were identified in a population-based study carried out in southern Brazil, in which the factors associated with the occurrence of depression among older people were being female, being separated and being widowed during the pandemic[16]. However, this association, before the pandemic, was already a concern, as identified in the study carried out with 388 older people in Mato Grosso[19].

The older person who does not have a partner experiences, in the aging process, continuous losses that can lead to negative feelings, such as discouragement and sadness. In addition, not having consolidated social support influences the emergence of depressive symptoms[20], which can be aggravated by social isolation during the pandemic.

In the study, it was identified that older people presented some psychological symptoms such as hopelessness, fear of dying and desire to die, which significantly increase the risk of the older person to

develop depressive symptoms. With the beginning of the COVID-19 pandemic, there were measures, such as social isolation, to prevent the infection and spread of the virus, which brought great concern regarding the emotional state of older people due to the sudden interruption of their activities[21].

In a study carried out in Nepal with 847 older people, the authors identified that the factors associated with fear of getting sick from COVID-19 were: being considered older, having comorbidities, receiving fake news from the media and social networks, having a lot of concern, feeling overwhelmed and hopelessness for the advancement of the disease[22].

Studies carried out in Brazil, which investigated depressive symptoms in older people in the city of São Paulo[23] and Rio Grande do Sul[24], reported that these symptoms in older people are associated with factors such as impaired quality of life, worse sociodemographic conditions and increased risk of mortality.

The media played a central role in disseminating information about infection, death rates from COVID-19 and vaccination, making people more concerned and resulting in adverse psychological effects[25]. Measures such as social distancing and quarantine have reduced access to mental health services for the population, especially older people, causing an increase in fear, uncertainty, anxiety and anguish during the pandemic[26]. Furthermore, the misinformation surrounding COVID-19 - ranging from a false and misleading narrative of the Chinese virus to the use of disinfectants to cure COVID-19 - affected the mental and physical health and well-being of people[25].

An association was found between depressive symptoms and physical symptoms, such as tremor and tiredness. A study carried out with 145 older people found that 65.5% had depressive symptoms and were influenced by tiredness, fear of bad things happening and memory problems[27]. The presence of depressive symptoms can cause a mental disorder that can be accompanied by sadness, loss of interest or pleasure, feelings of guilt or low self-esteem, disturbed sleep or appetite, feeling tired and lack of concentration[28].

Tiredness is the most prevalent symptom in the presence of depression and about 78% of patients report daily levels of this symptom. In healthy individuals, subjective tiredness has a distinct diurnal time trend: a V-shaped pattern where levels decrease from morning to noon and increase continuously until reaching a peak in the late evening[29].



Another associated physical symptom was the presence of tremor in the older person during the COVID-19 pandemic. Functional tremor is a more common movement disorder and is diagnosed by confirmation of entrainment or total suppression of oscillatory activity, distraction, co-activation or co-contraction signal, tremor pause during contralateral ballistic movements, and variability in tremor frequency, axis and/or topographic distribution[30].

One study identified that the presence of functional tremor was associated with the presence of depressive symptoms with activation in the right cerebellum compared during the motor task, increased activation in the paracingulate gyrus and left Heschl gyrus during the basic emotion task that identifies sad faces[31].

Regarding the use of psychoactive substances related to the manifestation of depressive symptoms, in the study, not using illegal substances proved to be a protective factor in older people. A survey conducted in Brazil on the use of psychoactive substances during the pandemic found that of the 1,145 participants, 32% said they had started using psychoactive substances during the COVID-19 pandemic. It is a consensus that the consumption of illegal substances stimulates the appearance of mental illnesses in the user, as it leads the person to lose control over the will, starting to use the psychoactive substance in a compulsive way[32].

Social isolation due to the pandemic, forced retirement, the loss of loved ones due to the disease, as well as changes in income are considered factors that increase the risk of the older person using psychoactive substances, according to the National Institute on Drug Abuse, while consumption increased from 3.4% to 7% between 2012 and 2018[33], in this sense, these factors must be identified in this population and care should be promoted by the health team to identify the risks of mental health

changes, through constant evaluations in the inter and multi-professional teams.

In addition, with the beginning of the pandemic, cases of stress increased, causing a physical and mental impact on the health of the population. However, older people who used these substances were more likely to relapse or increase their use[34].

The study has limitations, such as not being representative in the city of São Paulo due to the use of the snowball technique, which does not allow inferring the results for the older population that lives in the city. In addition, the use of electronic means to fill in the information led to a differentiated sample when compared to other studies carried out in the older population. However, the findings presented will direct the geriatrics and gerontology professional to reflect on the importance of promoting and maintaining older people's mental health in the post-pandemic, contributing to healthy and active aging.

## CONCLUSION

The results presented in this study demonstrate that, during the COVID-19 pandemic, older people presented depressive symptoms associated with different factors, which aroused in people the fear of dying, of losing a friend or a loved one and that provoked feelings of hopelessness in some people, making them feel like no longer living.

These psychological factors were also expressed through physical symptoms associated with depressive symptoms, as mental changes have symptomatic repercussions of a physical nature, such as the presence of tremors and tiredness. In addition, the results obtained are reinforced by studies that assert the association between the use of substances, such as psychotropic medication, and the manifestation of depressive symptoms in older people for the maintenance of mental health.

Therefore, the study contributes to a better understanding of the effects of a pandemic such as COVID-19 regarding the psychological and physical aspects expressed by the older population in the process of coping with this context. However, it is necessary for the health professional to pay attention to any early signs or symptoms that may indicate some indication of mental alteration in older people, which is important for the promotion of mental health in this population.

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