COVID-19 pandemic was a factor of change in the social behavior of Brazilian population?

The pandemic caused by SARS-CoV-2, whose disease was named by the WHO as coronavirus disease 2019 (COVID-19), transformed Society, as biosecurity measures to prevent the spread of that virus in the population were adopted. These measures, social isolation had the greatest impact on people's perception and well-being. Therefore, the objective of this work was to carry out a psychosocial survey associated with the mental and physical health of the Brazilian population during the period of social isolation proposed by the health authorities. The study was conducted by a virtual questionnaire and the target audience of this work corresponds to individuals of Brazilian nationality, aged over eighteen years, who are willing to voluntarily participate in the study, with no other inclusion criteria or exclusion. Data were collected, organized and analyzed in spreadsheets prepared in a Microsoft Excel® computer program (Microsoft, USA) and the Google Forms platform (Google LLC, USA), which provided the number of responses and the percentages of each alternative, for each question. The average of each response was compared statistically using one-way ANOVA test followed by Tukey post-hoc test (α ≤0.05), using the Graph Pad Prism software version 7.00 (GraphPad Software, USA). The variable correlation test was also performed. As a result, it was possible to understand the consequences that the period of social isolation caused to Brazilian individuals, such as increased unemployment, new skills for income generation, increased sedentary lifestyle, increased virtual entertainment and greater interaction between people and companion animals. This study allowed us to understand how people adapt and transform themselves to go through an adverse moment, and with that, it is possible to direct actions to prevent or mitigate the impairment of people’s health in pandemics.

Keywords: SARS-CoV-2; Social isolation; Mental health; Social Behavior.

COVID-19 foi um fator de mudança no comportamento social da população Brasileira?

A pandemia causada pelo SARS-CoV-2, cuja doença foi nomeada pela OMS como doença coronavírus 2019 (COVID-19), transformou a sociedade, pois foram adotadas medidas de biossegurança para evitar a disseminação desse vírus na população. Dentro dessas medidas, o isolamento social, teve o maior impacto na percepção e no bem-estar das pessoas. Portanto, o objetivo deste trabalho foi realizar um inquérito psicossocial associado à saúde mental e física da população brasileira durante o período de isolamento social proposto pelas autoridades sanitárias. O estudo foi realizado por meio de questionário virtual e o público-avo deste trabalho corresponde a indivíduos de nacionalidade brasileira, com idade superior a dezoito anos, que se dispõem a participar voluntariamente do estudo, sem outros critérios de inclusão ou exclusão. Os dados foram coletados, organizados e analisados em planilhas elaboradas em programa de computador Microsoft Excel® (Microsoft, EUA) e plataforma Google Forms (Google LLC, EUA), que fornecem o número de respostas e os percentuais de cada alternativa, para cada questão. A média de cada resposta foi comparada estatisticamente por meio do teste ANOVA de uma via seguido do teste post-hoc de Tukey (α ≤0,05), por meio do software Graph Pad Prism versão 7.00 (GraphPad Software, EUA). O teste de correlação de variáveis também foi realizado. Com isso, foi possível compreender as consequências que o período de isolamento social causou aos brasileiros, como aumento do desemprego, aumento da sedentarismo, aumento do entretenimento virtual e maior interação entre pessoas e animais de companhia. Este estudo permitiu compreender como as pessoas se adaptam e se transformam para passar por um momento adverso e, com isso, é possível direcionar ações para prevenir ou mitigar o comprometimento da saúde das pessoas em pandemias.

Palavras-chave: SARS-CoV-2; Isolamento social; Saúde mental; comportamento social.
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INTRODUCTION

At the end of 2019, several cases of respiratory failure have been observed in the Chinese city of Wuhan. According to a report by the World Health Organization (WHO), between December 31, 2019, to January 3, 2020, 44 patients with pneumonia of unknown etiology were reported in this region. A detailed investigation by China Health Commission identified a new type of coronavirus associated with exposure in a seafood market in Wuhan (HAO et al., 2020).

As of January 21, 2020, there have already been 314 confirmed cases spread across Hubei province (HAO et al., 2020), showing that the new virus identified had its direct way of transmission between individuals. Thus, because of the large movement of people and the intense local commercialization, there was a rapid spread of the new coronavirus, which was later named by the International Committee on Taxonomy of Viruses (ICTV) as SARS-CoV-2 (Severe Acute Respiratory Syndrome 2).

SARS-CoV-2 is a highly contagious virus with a high rate of recombination (BONI et al., 2020), and on March 11, 2020, there were already 118,000 confirmed cases in the world according to the World Health Organization (WHO) (HAO et al., 2020). In Brazil, Law No. 13,979 of February 6, 2020, was enacted, which deals with measures adopted to fight the disease of coronavirus 19 (COVID-19), since the epidemiological situation in the country was on alert since the beginning of January that same year. The new coronavirus pandemic has been one of the biggest sanitary challenges ever faced in Brazilian territory, totaling until June 11, 2021, 17,296,118 accumulated cases and 484,235 deaths, according to the Ministry of Health of Brazilian Federal Government, with a mortality rate of 230.4% and lethality of 2.8%.

In addition to the loss of close people and fear of their own physical integrity, the current epidemiological scenario, which led to the implementation of measures such as social isolation, has had a great impact on the population. As an example, there was the suspension of classroom in schools and universities, meetings in churches and temples, public transport, social and sporting events, the increase in unemployment in the country, closing of trade and services in general. Additionally, a new reality has been faced with great concern by society, because during epidemics, the number of people who become infected generally tends to be smaller than people who suffer from mental problems resulting from the situation they experience (REARDON, 2015). Given the established situation, individuals who present any flu symptoms have shown feelings such as fear and anxiety regarding the possibility of being infected by SARS-CoV-2, which generates great mental suffering and tends to worsen psychiatric symptoms (PARK et al., 2020; WANG et al., 2020).

There were several physical and psychological damages, as people live with great uncertainty about this new virus since adequate treatment for the disease has not been established. The United States of America was one of the first countries that managed to vaccinate a large part of its population, while some countries, such as Brazil, the vaccination process took a long time to start and progressed more slowly. In Brazil, until June 2, 2021, according to the Ministry of Health, only 32.01% of the Brazilian population had been vaccinated against coronavirus 19, a percentage far from ideal for establishing her immunity. This
generated even more emotional strain of the population, which is also aggravated by the great demographic density and social inequality, in which many people live in precarious housing, with difficulty to keep their distance and with insufficient levels of basic sanitation (WERNECK, 2020).

Society has adopted measures to minimize the wear and tear caused by social distancing and the entire pandemic scenario, such as increased consumption of social media. Another way to promote health at this time is the relationship with pets, which promote social support that became scarce with social isolation. Although there is no significant evidence in relation to pets with the transmission of SARS-CoV-2, research focused on animal health and effects of the pandemic is essential (YOUNG et al., 2020).

In this context, considering that this theme was not discussed by researchers, there are many doubts about the impairment of daily life, physical and mental health of individuals inserted in this new reality. Furthermore, the objective of this work is to carry out a psychosocial survey about the mental and physical health of Brazilian individuals during the period of social isolation proposed by the health authorities to face the pandemic.

**METHODOLOGY**

The study was carried out by the Study Group of Immunobiology (NEIMBIO), a student organization affiliated with the Department of Veterinary Medicine (DMV) of the Federal University of Lavras (UFLA). The work submitted to Humans Ethics Committee of UFLA and approved with registration number 38806720.2.0000.5148.

A virtual questionnaire was carried out with questions about health and well-being, which was made available on the Google Forms platform (Google LLC, USA) at electronic address https://www.google.com/forms/about?utm_source=gaboutpage&utm_medium=formslink&utm_campaign=gabout, it containing forty-four multiple choice questions, enabling a quick and objective interaction (Annex II). The estimated time for answering the questionnaire was five minutes. The platform chosen was completely free online tool, available to all users who have an email address associated with the Google provider (Google LLC, USA), which can be accessed through various devices, including mobile devices (WANG et al., 2020). The target public of this study was individuals of Brazilian nationality, aged over eighteen, who are willing to voluntarily participate in the study, with no other inclusion or exclusion criteria.

To evaluate the questions, present in that questionnaire, in relation to objectivity, the absence of terms that could possibly be offensive or cause discomfort to the subject and other pertinent observations, a pilot study as initially carried out, lasting one week and with the participation of nineteen members of NEIMBIO.

After validating the questions, the objectives of this work, as well as the questionnaire, were disseminated through social media linked to NEIMBIO, and as an additional way of dissemination, the departments, and deans of higher education institutions, as well as associations of undergraduates and graduate students from universities, university centers and federal institutes were asked to disseminate the
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Participants agreed with the terms explained in the free and informed consent form (Appendix I) and could withdraw from the study at any time. It is important to note that this was an observational study in which the participant was exempt from answering any question that might make them feel embarrassed, and they had the right to contact the responsible team for any manifestations of dissatisfaction or clarification of doubts regarding the study and the questionnaire, through the electronic address: neimbio.ufla@gmail.com. The responses obtained from the participants are completely confidential. To participate in the research, the individual provided a valid e-mail address that was only used by the researchers responsible for this research, with the sole purpose of providing information that is deemed pertinent to its development, without disclosing the contact address participant to third parties or their use for any other unjustified purposes.

The individual who fully participated in the research received via e-mail a newsletter (Annex II) on the topic: “Physical and mental health in the period of social isolation” to provide the participant with information that may be useful in times of social isolation. The data that made up this newsletter were carefully selected by the researchers involved in this work, ensuring the reliability of its sources, as well as its clear and objective presentation.

To calculate the minimum number of questionnaires answered for the purpose of validating the statistical analysis of the study, the calculation of the “Population Survey” tab EpilInfo software (version 7.2.4.0) was used. Moreover, in this study it is not possible to calculate the prevalence of a certain disease, due to its objectives, therefore, for the calculation, the prevalence is standardized at 50% and the Brazilian population, with approximately 209 million inhabitants. With an error of p < 0.05%, the minimum number of questionnaires needed for this study was 384.

The collected data were organized and tabulated in spreadsheets prepared in a Microsoft Excel® computer program (Microsoft, USA) and the Google Forms platform (Google LCC, USA), which provided the number of responses and the percentages of each alternative, for each question. The means of each response will be statistically compared using the ANOVA-oneway test followed by the post-hoc Tukey test (α <0.05), using the Graph Pad Prism version 7.00 software (GraphPad Software, USA). The variable correlation test will also be performed.

RESULTS AND DISCUSSION

SARS-CoV-2 is a virus of the Coronavirus Family identified in late 2019, causing a severe acute respiratory syndrome in humans, called Coronavirus-19 (COVID-19), which has infected and killed thousands of people in 215 countries worldwide (REARDON, 2015). The rapid evolution of the disease drastically changed people’s lives, in which the uncertainties and fears of the pandemic, associated with measures of social isolation, economic recession, among other factors, led to various mental disorders,
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even increasing the rates of suicide (WERNECK, 2020). For this reason, studies are needed to determine the psychosocial aspects.

For this, an online questionnaire was applied, disseminated through social networks, answered by a total of 407 people, from different locations in Brazil, aged over 18 years, without distinction of sex, marital or economic status. It is 83.79% [341/407] were between 18 and 35 years old, 13.02% [53/407] were between 36 and 60 years old, 1.72% [7/407] were over 60 years old and 1.47% [6/407] did not wish to inform their age. Also, 68.55% [279/407] of respondents were female, 30.71% [125/407] were male and 0.74% [3/407] did not wish to inform. Most of the study participants were from the southeast region of the country, equivalent to 91.4% [372/407], the rest belonged to the northeast region, 3.19% [13/407] of respondents, 2.21% [9/407] from the Southern region, 1.96% [8/407] from the central-west region and 1.22% [5/407] from the Northern region. Besides that, 59.70% [243/407] self-declared white, 27.08% [98/407] self-declared black, 12.04% [49/407] self-declared brown, 1.72% [7/407] self-declared yellow and 2.46% [10/407] did not wish to inform. Respondents’ educational levels are described in table 1.

Table 1: Levels of education of respondents during the COVID-19 pandemic in 2020.

<table>
<thead>
<tr>
<th>Education degrees</th>
<th>N° of people</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master’s and Doctorate</td>
<td>9,6% [39/407]</td>
</tr>
<tr>
<td>Graduated</td>
<td>23,3% [95/407]</td>
</tr>
<tr>
<td>Incomplete higher</td>
<td>44,5% [181/407]</td>
</tr>
<tr>
<td>Full high school</td>
<td>17,9% [73/407]</td>
</tr>
<tr>
<td>Incomplete high school</td>
<td>3,4% [14/407]</td>
</tr>
<tr>
<td>Complete Elementary</td>
<td>0,25% [1/407]</td>
</tr>
<tr>
<td>Elementary incomplete</td>
<td>0,25% [1/407]</td>
</tr>
<tr>
<td>I do not want to inform</td>
<td>0,7% [3/407]</td>
</tr>
<tr>
<td>Total</td>
<td>100% [407/407]</td>
</tr>
</tbody>
</table>

According to the respondents, 18.43% [75/407] lost their jobs and 37.1% [151/407] claimed that their income declined during the pandemic. It can be attributed to the global economic recession caused by the spread of SARS-Cov-2, which included a reduction in the demand for goods and services, with a consequent increase in unemployment rates and decrease in income (MOTA, 2019). There are also factors influenced by the loss of productivity of individuals, caused by short and long-term absences from work, due to the health consequences of those affected by disease (KHAN et al., 2021). It is confirmed in this study, in which people who became ill were 1.8152 times more likely (p = 0.02) of being unemployed when compared to people who were not affected by clinical respiratory signs [CIC 95% (1.0851 – 3.0352)], characteristic of COVID-19. Conditions like these can induce the development of mental disorders, especially symptoms of depression and stress (AMMAR et al., 2020) which, at extreme levels, can be considered important risk factors for the intensified use of legal or illegal substances. The use of these substances can be associated with emotional support for individuals subjected to disaster situations, economic crises and pandemics (RASHEED et al., 2021).

So, the consumption of medications and other psychoactive substances, used to alleviate suffering (NURCHIS et al., 2020) and reduce negative feelings such as anger, sadness (XIONG et al., 2020), irritation, helplessness, fear (MOURA et al., 2021), was reported by 78.13% [318/407] of respondents. Thus, people
who reported negative feelings during the pandemic are 103.95 times more likely (p < 0.01) to have started using drugs to moderate signs of psychological impairment [IC 95% (32,27-334,75)]. It also noticed that people who increased their use of these drugs are 1.87 times more likely (p < 0.01) to have negative feelings [IC 95% (1,0066 – 3,4693)] and that individuals who started those who use medication to control psychological disorders are 36.3941 times more likely (p < 0.01) to already use other medications for these disorders, when compared to those who have not started new treatments [IC 95% (17,0494-77,6880)].

As an alternative to drug treatments for psychological disorders, practices aimed at alleviating psychological changes such as anxiety, depression and other stress-induced mental illnesses should be encouraged. For this reason, the practice of regular exercise is encouraged, as it can bring benefits to mental health by stimulating the increase in neurogenesis, angiogenesis, and synaptogenesis, also improving physical health, reducing the harmful effects of chronic diseases (REIMERS et al., 2014; STANTON et al., 2020). However, the population has faced difficulties in the practice of physical activity, due to the blocking and closing of sports facilities, which was due to the great concern with the likely dissemination of SARS-CoV-2 (CHEN et al., 2020; DWYER et al., 2020; WOODS et al., 2020). It was found in the present study, in which the practice of physical activities three times a week, among respondents, decreased from 38% [155/407] to 33.43% [136/407] during the pandemic. There was also a change in the percentage of people who stopped exercising, which rose from 42% [171/407], before the start of the pandemic, to 45.45% [185/407], after the start of the pandemic. The decrease in the practice of exercise directly impacts the mental and physical health of individuals, being closely related to the increase in body weight of people (DWYER et al., 2020; WOODS et al., 2020), which was noted in this study, as well as individuals with sedentary habits during the pandemic presented 2.88 times more likely (p < 0.01) to have weight gain than people who practiced regular physical activity [IC 95% (1,79 – 4,62)]. The increase in body weight may also be related to the study population’s forms of entertainment, in which the use of electronics and communication devices may have replaced physical activity and led to a poor diet (OENDAAL et al., 2003), since the people who claimed to have a form of entertainment in the pandemic are 11.4459 times more likely (p<0.01) of being sedentary before the pandemic than those who do not [IC 95% (1,3942-93,9650)].

However, for psychological reasons, it is still recommended that individuals seek forms of entertainment during the COVID-19 pandemic. Since people who sought ways to have fun during social isolation are 28.34 times less likely (p=0.02) of having started using medication to control psychological disorders than those who did not seek [IC 95% (0,0873-0,9203)]. The search for alternative forms of entertainment has increased a lot in times of pandemic, Youtube for example, was accessed by more than 40% of Brazilian population in March 2020, Spotify reached 130 million users, there was increase in subscribers on platform of films and series such as Netflix, adding more than 180 million and Globoplay with 2.5 times more subscribers during pandemic. In addition to the growing demand for virtual and physical games, such as board games and puzzles, they positively contribute to minimizing the lack of spaces and equipment, promoting fun and relaxation (BROOKS et al., 2018).

Besides to social media, another valid way of fun and relaxation is close interaction with pets. A
study showed that the positive interaction between humans and dogs can have the same relaxing effects as calmly reading a book (ROBINSON et al., 2021). They also observed a significant increase in the concentrations of oxytocin, a hormone identified as promoting an intimate bond, after contact. In this study, participants who reported seeking some form of psychological support through pets had 2.7544 more chances (p=0.03) of having adopted a companion animal [IC 95% (1.0388-7.3032)] and 6.2382 more likely (P<0.01) to have had more time to play with their pets during the pandemic [IC 95% (2.8611-13.6016)]. People who reported fewer social contacts, they benefit more from the company of their pets, as unlike human friends, animals are perceived as non-judgmental, becoming great candidates for increasing social support and important allies in the fight against illnesses of a psychological nature (CIRULLI et al., 2011).

**CONCLUSION**

The pandemic brought a change in the lives of people, since social distancing and, at times, home or social isolation was necessary. In this study, it is possible to notice that there was an increase in unemployment, mainly due to the need to be absent from work due to respiratory symptoms, and people improved their skills to generate other way of income.

Furthermore, to all economic strain, this study also showed the emotional and physical strain of individuals who face this pandemic, often due to the loss of loved ones, were severely affected by COVID-19 or discovered chronic diseases when seeking health care. With the need for distance between people, many became more sedentary and aggravated the issue of the development of chronic diseases, which are considered risk factors for the aggravation of this disease.

In this study, it was possible to notice that a small percentage of people managed to remain physically and emotionally stable through physical exercise and healthy eating. Most of the people interviewed sought emotional support in pets to face this troubled period, which generated an increase in interaction and adoption of pets.

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