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Knowledge, perceptions and practices adopted by a university community in Southeastern Brazil in the face of the COVID-19 pandemic.

Conhecimentos, percepções e práticas adotadas por uma comunidade universitária no sudeste do Brasil frente à pandemia de COVID-19.

Conocimientos, percepciones y prácticas adoptadas por una comunidad universitaria en el sureste de Brasil frente a la pandemia de COVID-19.

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ABSTRACT

Introduction: Faced with the most serious public health threat of the 21st century, several actions have been suggested worldwide to prevent and control the spread of COVID-19.

Objective: To understand which of these actions have been assimilated, here we evaluated the knowledge, perceptions, and practices acquired and/or improved by undergraduate students.

Methods: This cross-sectional quantitative study was conducted at a public university in Minas Gerais, Brazil. Data were collected via an online questionnaire distributed through university social networks between November 3 and December 18, 2020. The questionnaire, comprising 64 questions, assessed students' knowledge, perceptions, and practices related to COVID-19. Descriptive statistics and chi-square tests were used for analysis.

Results: Of 207 participants, 59.4% have worked outside the home during the study period. However, most students claimed to have respected social isolation, worn masks, and had appropriate hygiene practices. Most students intend to maintain prevention/control practices, which were mostly learned from social media, after the pandemic ends. Students were optimistic about the control of COVID-19 in the near future, but many have claimed to be mentally shaken and unmotivated. Most endorse vaccination and are against applying treatments without scientific evidence.

Conclusion: This study provides a novel insight into the perceptions and practices of university students from various academic disciplines in Brazil regarding COVID-19. The findings underscore the ongoing need for targeted interventions addressing both the physical and mental health challenges faced by university students, which remain relevant even after the end of the pandemic.

Keywords: Pandemic; Pre-pandemic habits; Post-pandemic habits; COVID-19; Health education.

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RESUMO

Introdução: Diante da mais grave ameaça à saúde pública do século XXI, diversas ações têm sido sugeridas em todo o mundo para prevenir e controlar a propagação da COVID-19.

Objetivo: Para entender quais dessas ações foram assimiladas, avaliamos aqui os conhecimentos, percepções e práticas adquiridas e/ou aprimoradas por alunos de graduação.

Métodos: Este estudo quantitativo transversal foi realizado em uma universidade pública em Minas Gerais, Brasil. Os dados foram coletados por meio de um questionário online distribuído através das redes sociais da universidade entre 3 de novembro e 18 de dezembro de 2020. O questionário, composto por 64 perguntas, avaliou o conhecimento, as percepções e as práticas dos estudantes relacionadas à COVID-19. Estatísticas descritivas e testes de qui-quadrado foram utilizados para a análise.

Resultados: Dos 207 participantes, 59,4% trabalharam fora de casa durante o período do estudo. No entanto, a maioria dos alunos afirmou respeitar o isolamento social, usar máscaras e ter práticas de higiene adequadas. A maioria dos alunos pretende manter as práticas de prevenção/controle, que foram aprendidas principalmente nas redes sociais, após o fim da pandemia. Os alunos estavam otimistas com o controle da COVID-19 em um futuro próximo, mas muitos afirmaram estar mentalmente abalados e desmotivados. A maioria aprova a vacinação e é contra a utilização de tratamentos sem comprovação científica.

Conclusão: Este estudo oferece uma nova visão sobre as percepções e práticas de estudantes universitários de diversas áreas do conhecimento no Brasil em relação à COVID-19. Os resultados ressaltam a necessidade contínua de intervenções direcionadas que abordem tanto os desafios de saúde física quanto os de saúde mental enfrentados pelos estudantes universitários, os quais permanecem relevantes mesmo com o fim da pandemia.

Palavras-chave: Pandemia; Hábitos Pré-pandêmicos; Hábitos pós-pandêmicos; COVID-19; Educação em Saúde.

RESUMEN

Introducción: Ante la amenaza de salud pública más grave del siglo XXI, se han sugerido varias acciones en todo el mundo para prevenir y controlar la propagación de COVID-19.

Objetivo: Para comprender cuáles de estas acciones fueron asimiladas, evaluamos aquí los conocimientos, percepciones y prácticas adquiridas y/o perfeccionadas por los estudiantes de pregrado.

Métodos: Este estudio cuantitativo transversal se realizó en una universidad pública en Minas Gerais, Brasil. Los datos se recolectaron mediante un cuestionario en línea distribuido a través de las redes sociales de la universidad entre el 3 de noviembre y el 18 de diciembre de 2020. El cuestionario, compuesto por 64 preguntas, evaluó el conocimiento, las percepciones y las prácticas de los estudiantes relacionadas con la COVID-19. Se utilizaron estadísticas descriptivas y pruebas de chi-cuadrado para el análisis.

Resultados: De los 207 participantes, 59,4% trabajaban fuera del hogar durante el período de estudio. Sin embargo, la mayoría de los estudiantes dijeron que respetan el aislamiento social, usan mascarillas y tienen prácticas adecuadas de higiene. La mayoría de los estudiantes tiene la intención de mantener las prácticas de prevención/control, que fueron aprendidas principalmente en las redes sociales, después del final de la pandemia. Los estudiantes se mostraron optimistas sobre el control de la COVID-19 en un futuro cercano, pero muchos dijeron que estaban mentalmente perturbados y desmotivados. La mayoría aprueba la vacunación y se opone al uso de tratamientos sin evidencia científica.

Conclusión: Este estudio ofrece una nueva perspectiva sobre las percepciones y prácticas de los estudiantes universitarios de diversas disciplinas académicas en Brasil con respecto al COVID-19. Los hallazgos subrayan la necesidad continua de intervenciones específicas que aborden tanto los desafíos de salud física como mental que enfrentan los estudiantes universitarios, los cuales siguen siendo relevantes incluso con el fin de la pandemia.

Palabras clave: Pandemia; Hábitos previos a la pandemia; Hábitos pospandemia; COVID-19; Educación para la salud.

INTRODUCTION

At the end of 2019, the World Health Organization (WHO) was notified of a pneumonia outbreak in the city of Wuhan, in the Hubei province, China (WHO, 2020a). The etiological agent of this disease was quickly identified as a new species of coronavirus, which due to its genetic similarity with the Severe Acute Respiratory Syndrome Coronavirus (SARS-CoV), was named as SARS-CoV-2 (ZHU et al., 2020).

Due to its rapid worldwide spread, the WHO officially characterized the COVID-19 (Coronavirus Disease 2019) outbreak as a pandemic state in March 2020, treating it as a serious threat to global public health (WHO, 2020b). In Brazil, the first case of the disease was diagnosed on February 26, 2020, in the city of São Paulo, in a 61-year-old man who had returned from a trip to Italy. In the second half of March 2020, the first cases of community transmission of SARS-CoV-2 were detected in the capitals of São Paulo and Rio de Janeiro. To contain the spread of the disease in the country, the Ministry of Health regulated criteria for social isolation and quarantine of patients (NEIVA et al., 2020; FELÍCIO et al., 2021).

Facing a new disease and with no scientifically supported treatments to protect or cure people, the main precautionary COVID-19 recommendations by the WHO were the use of face mask, social distancing and avoiding crowded and/or poorly ventilated environments, and the use of alcohol-based hand sanitizers (JIN et al., 2020). Although these measures were rigorously implemented by many countries, adherence was not universal, being largely related to public social responsibility (MASAI, 2021; TANG et al., 2022).

Due to the obscurity of this new disease, there were a lot of confusion and misunderstanding about the virus itself, its spreading, and ways to prevent infection (AZLAN et al., 2020). As if the confusion in the face of the unknown wasn't enough, people's knowledge of COVID-19 was still heavily undermined by the large amount of misinformation shared on social media (GARCIA & DUARTE, 2020; AGLEY & XIAO, 2021). Previous studies indicated that public knowledge and attitude towards the COVID-19 pandemic has varied from region to region and sector of society (AZLAN et al., 2020; TANG et al., 2022).

Although this was not the first, but the biggest pandemic faced by modern society, it is important to point out that the COVID-19 control measures are also necessary to control other infectious diseases that affect humans.

As described above, the COVID-19 pandemic, triggered by the novel coronavirus SARS-CoV-2, has profoundly impacted global health and society, including higher education institutions. As it happened in other universities worldwide, the professionals of our institution have faced unique challenges in adapting their teaching methods and supporting students during this unprecedented crisis. This study examined the perceptions and responses of university students to the COVID-19 pandemic. Conducted at a public university in Minas Gerais, Southeastern Brazil, our research sought to address a gap in the literature by exploring how university students have navigated and adapted to this global health emergency. By shedding light on their experiences and behaviors, the study aimed to contribute insights that can inform future interventions and policies aimed at supporting students during similar health crises. In this context, the objective of this study was to evaluate the knowledge, perceptions, and practices that were acquired and/or improved in the fight against COVID-19 by undergraduate students from a public university located in the State of Minas Gerais, Southeastern Brazil.

METHODS

A cross-sectional study, with a quantitative approach, was carried out through the application of a questionnaire prepared on the Google® Forms platform, disclosed via university social networks (Facebook, Instagram, and WhatsApp, all properties of the Meta Platforms™), comprising 64 questions related to the knowledge, perceptions, and practices of prevention and control of COVID-19. Data collection took place between November 03rd and December 18th, 2020, with anonymous voluntary participation of undergraduate students from different areas of knowledge from the Universidade do Estado de Minas Gerais, Carangola campus, a public university located in the State of Minas Gerais, Brazil. The research was approved by the Research Ethics Committee of the Universidade do Estado de Minas Gerais (CAAE 34724820.8.0000.5525/Approval report nº 4.343.080).

When opening the questionnaire, the students initially had access to the Informed Consent Form regarding the study. Students aged 18 years or older, who consented to voluntarily participate in the research, were directed to start filling out the self-administered questionnaire. The assessment questionnaire was organized into six sections, developed in accordance with the works of Azlan et al. (2020) and Kebede et al. (2020) as follows: I) personal information, including gender, age, and course in which the student was enrolled; II) student's habits and routines during the COVID-19 pandemic; III) general knowledge on COVID-19; IV) knowledge on COVID-19 transmission; V) knowledge on COVID-19 prevention and control; and VI) expectations and attitudes related to COVID-19 (Supplementary material).

The quantitative variables obtained with the application of the questionnaire were organized in a Microsoft Excel spreadsheet, where descriptive statistical analyses were conducted. These analyses included calculations of sum, mean, standard deviation, and percentage. Data were stratified by specific groups defined by gender, age, and area of expertise to explore distinct behavioral patterns. Statistical comparisons between groups were performed using the chi-square or Fisher's exact test, facilitated by GraphPad Prism Software version 8.0.1. The significance level for all tests was set at $p < 0.05$.

The participants' knowledge about COVID-19 was analyzed according to Kebede and collaborators (2020), where the rate of each information provided correctly, was first analyzed, item by item. Then, a multi-dimensional knowledge score was calculated by summing up the items and calculating the percentage of correct answers. Hit rates $\geq 78\%$ were considered high, while those between 77% and 57% were considered moderate, and those $\leq 56\%$ were labeled as having low knowledge.

RESULTS

A total of 207 undergraduate students participated in the study, representing 16.9% of the students enrolled in the investigated university campus. The mean age of the participants was 24 years (S.D = 7.4), with a minimum age of 18 and a maximum of 58 years. Most participants, 141 (68.1%) identified as female, while 66 (31.9%) identified as male. Of them, 52 (25.1%) were from the Biological Sciences, while 30 (14.5%) and 125 (60.4%) were from the Exact Sciences and Human Sciences, respectively.

Habits and routines during the COVID-19 pandemic

About 59.4% ($n = 123$) of the participating students worked outside the home during the period in which social distancing was recommended, and only 23.6% ($n = 29$) of these were away from the workplace and/or working from home during the COVID-19 pandemic. The frequency of students who worked outside the home during the pandemic was significantly higher among those over 24 years old ($p = 0.0096$).

As in Table 1, a significant percentage of the participants claimed to have increased the frequency in the act of washing their hands with soap and water (91.7%, $n = 190$) and to have used 70% alcohol to sanitize their hands during the pandemic (95.6%, $n = 198$). Regarding physical contact, 84.0% ($n = 174$) of the participants stated that they stopped shaking hands as a form of greeting, and 84.5% ($n = 175$) avoided proximity to other people, including during the greetings; which was

significantly more frequent among female individuals ($p = 0.0428$). Most (96.1%, $n = 199$) of the participants said to have used face masks outside the house; which was again significantly more frequent among female individuals ($p = 0.0396$). However, only 58.9% ($n = 122$) claimed to have sanitized their masks correctly, when they were not disposable.

Of the participants, 77.7% ($n = 161$) avoided touching their eyes, nose, and mouth before washing their hands. This practice was significantly more frequent among female students ($p = 0.0436$). In addition, 85.8% ($n = 178$) of the participants claimed to have practiced respiratory etiquette, covering their mouth and nose with the elbow when coughing or sneezing. A significantly higher adherence to those habits was observed among students aged over 24 years ($p = 0.0303$).

The habit of sanitizing goods with 70% alcohol or washing them with soap and water when returning from shopping was practiced by 53.6% ($n = 111$) of the participants. This practice was significantly higher ($p = 0.0165$) among females (59.5%, $n = 84$) than among males (40.9%, $n = 27$). Most participants (96.6%, $n = 200$) claimed to have respected social isolation for some time, but only 53.2% ($n = 110$) said to have performed for a longer period, until the questionnaire was answered.

Table 1: Student's responses on habits and routines practiced during the COVID-19 pandemic.

Habits and routines practiced by undergraduate students during the COVID-19 pandemic.	All participants n = 207	Male n = 66	Female n = 141	Age ≤ 24 n = 141	Age > 24 n = 66
Worked outside the home.	123 (59.4%)	40 (60.6%)	83 (58.8%)	75 (53.2%)	48 (72.7%)**
Increased the frequency of hand washing with soap and water.	190 (91.7%)	61 (92.4%)	129 (91.5%)	129 (91.5%)	61 (92.4%)
Used alcohol 70% to sanitize their hands.	198 (95.6%)	61 (92.4%)	137 (97.1%)	136 (96.4%)	62 (93.8%)
Stopped shaking hands with people as a way of greeting.	174 (84.0%)	48 (72.7%)	126 (89.3%)	117 (82.9%)	57 (86.3%)
Avoided proximity to other people, including during the greeting.	175 (84.5%)	47 (71.2%)	128 (90.7%)*	118 (83.7%)	57 (86.3%)
Frequented crowded places.	30 (14.5%)	15 (22.7%)	15 (10.6%)	24 (17.0%)	6 (9.0%)
Wore a mask when leaving the house.	199 (96.1%)	59 (89.4%)	140 (99.2%)*	137 (97.1%)	62 (93.8%)
Always used the mask correctly (protecting mouth and nose).	186 (91.3%)	55 (83.3%)	131 (92.9%)	126 (89.3%)	60 (90.0%)
Cleaned the mask with bleach.	122 (58.9%)	34 (51.5%)	88 (62.4%)	83 (58.8%)	39 (59.1%)
Avoided touching their eyes, nose, and mouth before washing their hands.	161 (77.7%)	46 (69.7%)	115 (81.5%)*	107 (75.8%)	54 (81.8%)
Covered mouth and nose with their elbow when coughing or sneezing.	178 (85.8%)	56 (84.4%)	122 (86.5%)	116 (82.2%)	62 (93.8%)**
Sanitized the goods with 70% alcohol or washed them with soap and water, upon returning from shopping.	111 (53.6%)	27 (40.9%)	84 (59.6%)*	79 (56.0%)	32 (48.4%)
Respected social isolation.	200 (96.6%)	61 (92.4%)	139 (98.6%)	135 (95.7%)	65 (98.5%)

* significant difference when considering gender $p < 0.05$

** significant difference when considering age $p < 0.05$

P -value obtained by chi-square test or Fisher's exact test.

Habits that will be maintained after the COVID-19 pandemic

Figure 1 shows which habits of hygiene and infectious disease prevention were already practiced by the participants before the COVID-19 pandemic, and which ones will be maintained even after the disease is controlled. Most participants (77.3%, $n = 160$) stated that washing hands with soap and water was a frequent habit before the COVID-19 outbreak. This practice was significantly higher ($p = 0.0012$) among older students (>24 years old) than among younger students (≤ 24 years old). Most participants (89.4%, $n = 185$) stated intention to keep this habit after the pandemic ends.

The use of alcohol gel 70% was not a very common practice before the pandemic, with only 12.6% ($n = 26$) of the participants claiming to have practiced this habit previously. However, most students (66.2%, $n = 137$) stated that they will continue with this practice. There were no significant differences regarding this practice between student gender or age.

Only a few participants (7.7%, $n = 16$) used to avoid contact during greetings before the pandemic. However, a higher percentage of people (24.6%, $n = 51$) intend to maintain this habit after the pandemic ends. The same tendency was observed regarding the avoidance of crowded places, with 18.3% ($n = 38$) of the participants claiming to have already avoided agglomerations before the pandemic, while 33.8% ($n = 70$) intended to maintain this practice. There were no significant differences regarding this practice between student gender, age, or area of knowledge.

Most students (60.8%, $n = 126$) claimed to have practiced respiratory etiquette before the pandemic and a higher percentage (72.4%, $n = 150$) said that the practice will continue after the pandemic. There were no significant differences regarding this practice between gender, age, or area of knowledge of the student.

The practice of sanitizing goods before use and/or consumption was already performed by some participants before the pandemic (17.9%, $n = 37$). This practice was significantly more common among female individuals than males ($p = 0.0312$). Regardless of that, a greater number of participants (41.0%, $n = 85$) stated that the method will be maintained, and among these, female individuals also showed significantly greater adherence than male individuals ($p = 0.0346$).

Some participants (32.8%, $n = 68$) were already careful when touching their eyes, nose, and mouth with unwashed hands, with this practice being more significant among females than males ($p = 0.0195$). However, in the overall analysis, a high percentage of participants (72.0%, $n = 149$) said that care will continue after the pandemic.

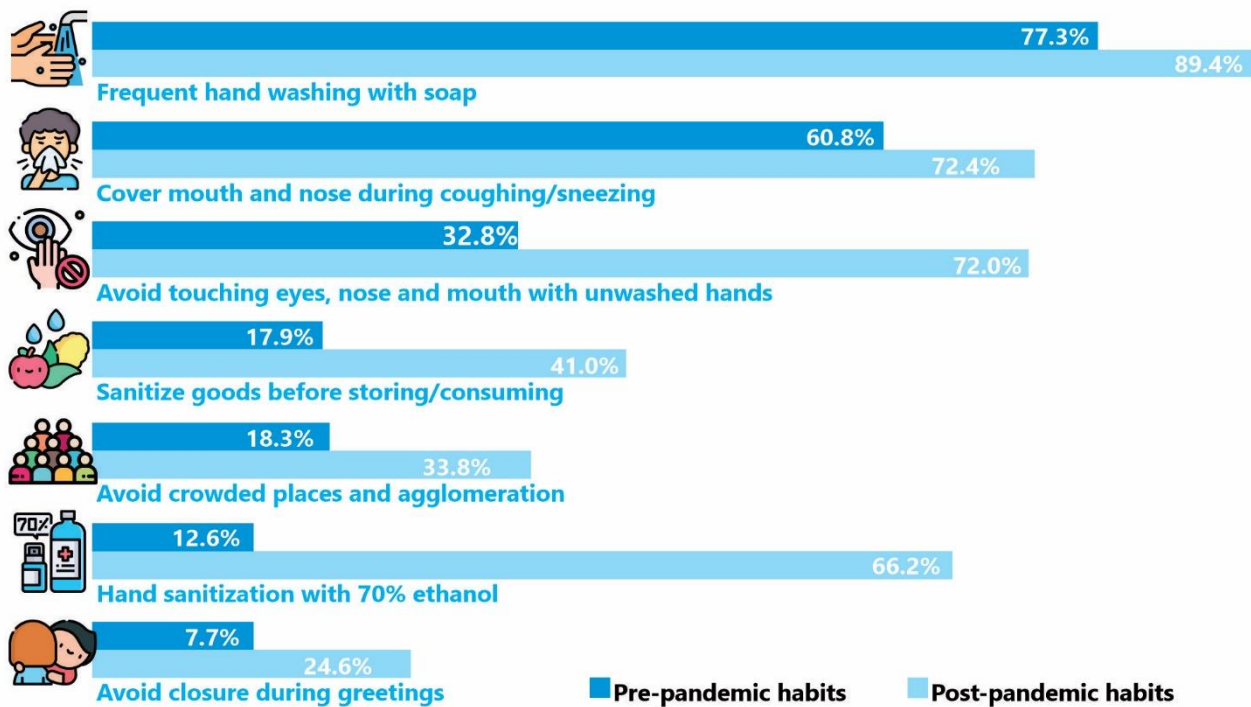


Figure 1. Student’s habits that were already practiced and will be maintained in the daily life of after the COVID-19 pandemic ends. The icons used here were obtained from the Freepik and freeicons.io databases.

Knowledge acquired about COVID-19

As summarized in Figure 2, when asked about the main means of obtaining information about COVID-19, most students reported that social networks were the main source of information (81.6%, n = 169), followed by television (65.7%, n = 136), newsletters released health authorities (59.4%, n = 123), newspapers (30.0%, n = 62), and the family (19.8%, n = 41). Only 6.3% (n = 13) of the respondents claimed to have obtained information about COVID-19 through radio.

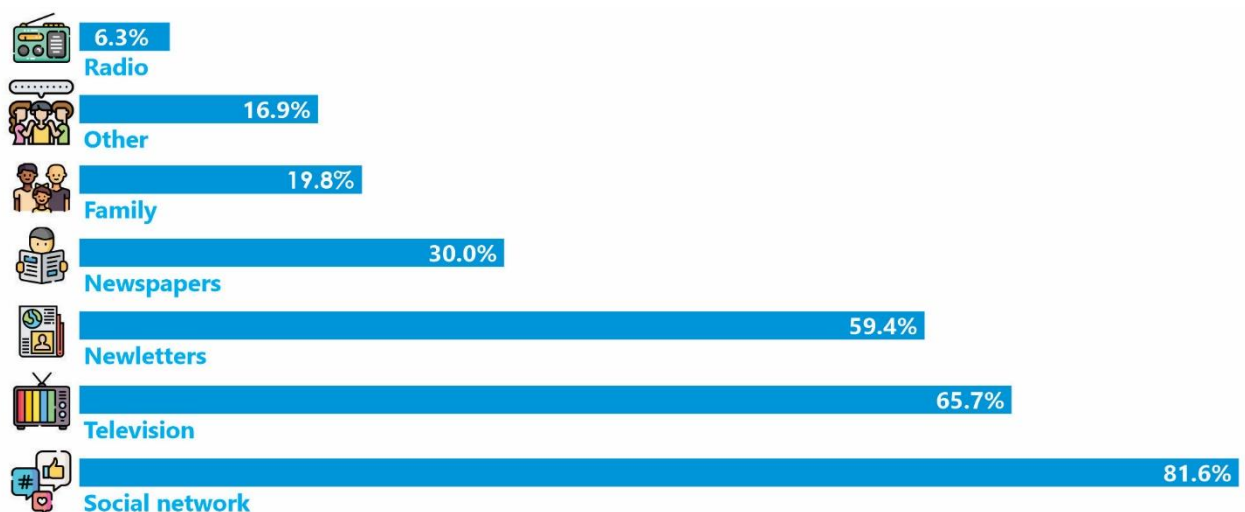


Figure 2. Ways through which the student community learned about the COVID-19 pandemic. The icons used here were obtained from the Freepik and freeicons.io databases.

General knowledge about the new coronavirus and COVID-19, as well as the ways of transmission, prevention and control of the disease, were evaluated by the answers to three specific questionnaires. This panorama of university students' knowledge about COVID-19 is shown in Figure 3. A higher amount (81.2%, $n = 168$) of participants had a high rate of general knowledge about COVID-19, while 16.9% ($n = 35$) had moderate knowledge, and only 1.9% ($n = 4$) had low knowledge about general aspects of the virus and the disease.

The ways of transmission of COVID-19 were highly understood by 65.3% ($n = 135$) of the participants, while 29.9% ($n = 62$) had moderate knowledge, and only 4.8% ($n = 10$) had low knowledge on the subject.

Among the topics evaluated with the questionnaire applied, the academic community showed greater knowledge about the prevention and control of COVID-19, with 95.6% ($n = 198$) of the participants showing a high average of knowledge, while 3.9% ($n = 8$) had moderate knowledge, and only 0.5% ($n = 1$) had low knowledge.

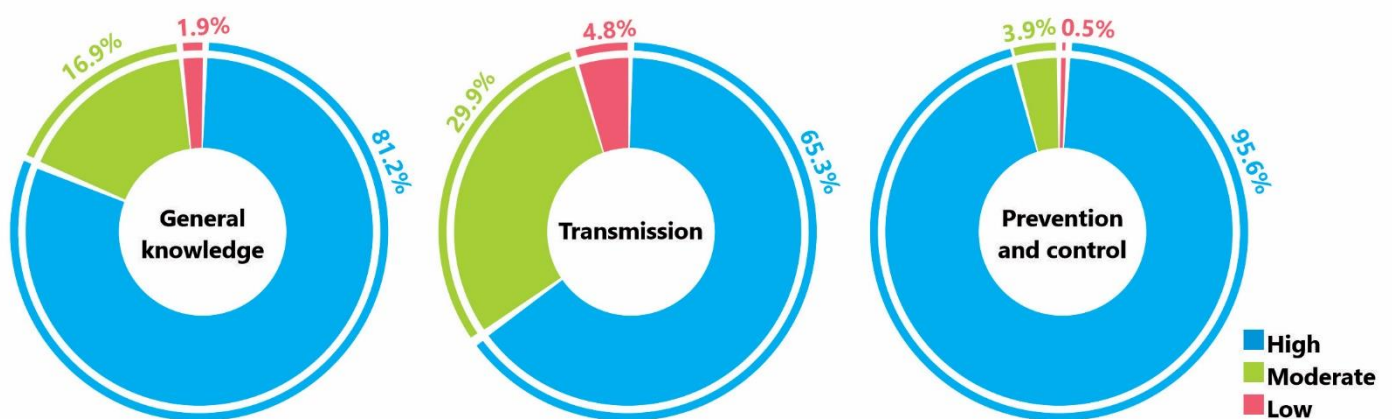


Figure 3. Assessment of general knowledge, transmission, prevention and control of COVID-19.

Expectations and attitudes towards COVID-19

The expectations and attitudes towards the pandemic period are summarized in Figure 4. Regarding the expectations of controlling the COVID-19 pandemic in the near future, 50.7% ($n = 105$) of the students were optimistic. The percentage of optimism for the Brazilian reality was similar (50.2%, $n = 54$).

When questioned about willingness to be vaccinated and whether the vaccination should be mandatory, positive responses represented 83.6% ($n = 173$) and 71.0% ($n = 147$) of the total, respectively.

Within the theme of social isolation, 93.2% ($n = 193$) of the participants stated that they believed in the importance of this practice for the control of COVID-19.

When questioned about their beliefs on the effectiveness of hydroxychloroquine in the fight against COVID-19, a debate that was conducted for a long time by Brazilian politicians, the general percentage of credibility was 18.4% ($n = 38$). Credibility regarding the use of hydroxychloroquine was significantly higher among older students (>24 years old) than among younger students (≤ 24 years old) ($p = 0.0332$).

When the question about the use of medicines or alternative therapies without scientific evidence to support their use was extended with the question "Have you taken or are using any medicine, or alternative therapies (teas, specific foods such as garlic, among others) as a way to prevent against COVID-19?" the percentage of positive answers was 11.1% ($n = 23$).

The last questions of Section VI were directed to understand the impact of the COVID-19 pandemic on the mental health of the university community investigated. Faced with the questions, 76.8% (n = 159) of the participants said they were feeling sadness, anger, fear, and discouragement during the COVID-19 pandemic. Younger students (≤ 24 years old) were significantly more shaken than the older ones (> 24 years old) ($p = 0.0220$). During the pandemic period, 80.7% (n = 167) of students said to have been they were unmotivated.

Less than half (46.4%, n = 96) of the participants believed that life would return to normal after the pandemic. Optimism was significantly more evident among younger students ($p = 0.0255$).

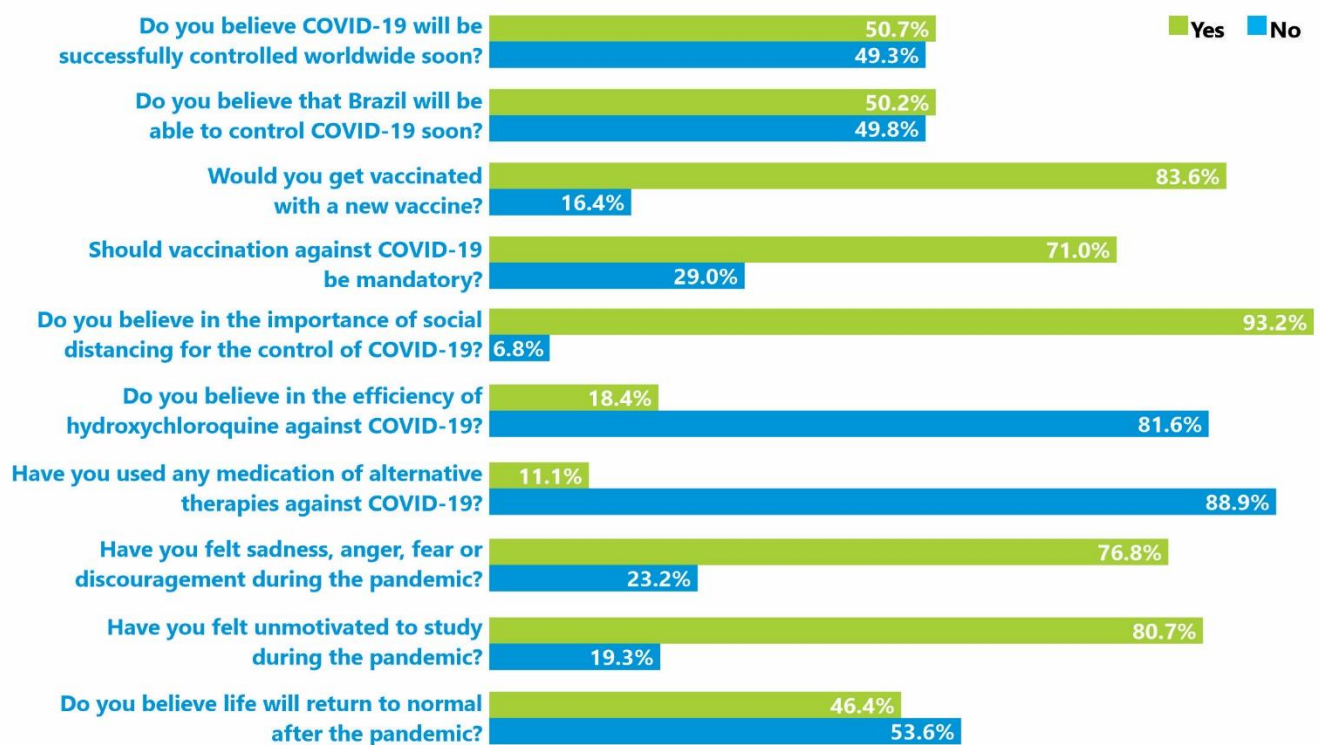


Figure 4. Expectations and postures of the university community in the face of COVID-19.

DISCUSSION

Brazil was an epicenter of the COVID-19 pandemic between 2020 and 2021, and although the epidemiological situation was controlled in 2022, mostly because of vaccination, new strains of SARS-CoV-2 continued to emerge, threatening Brazilian public health (NEIVA et al., 2020; COSTA et al., 2021; VOGEL, 2022). Faced with this continuous risk, following different segments of society, and understanding how they have been receiving and assimilating their knowledge for the prevention and control of COVID-19 became an important task (AZLAN et al., 2020; TANG et al., 2022), hence the goals of this study, to evaluate these perceptions and habits among a community of university students mostly composed of young people working outside the home.

Social isolation was among the main recommendations for controlling COVID-19, supported by the control of population mobility, the closing of academic centers, schools, offices, non-essential commerce, public and leisure areas (AQUINO et al., 2020). This practice was possible among most students working outside their homes. With this practice, many Brazilians moved away from their study and workplaces and carried out their activities remotely for a long period. However, this was not the reality of the vast majority of the low-income community, which was directly linked to essential services that could not stop during the pandemic (BEZERRA et al., 2020). According to Albuquerque and Ribeiro (2020), with social isolation and the possibility of leaving work, Brazilian social inequalities were even

more evident.

Even with a portion of university students who kept their obligations away from home during the pandemic, most participants respected social isolation, although this habit decreased over the first five months of the pandemic. This decrease was also noted in other studies, and in view of this, it is reasonable to assume that a part of these individuals who failed to respect social isolation, suffered socioeconomic pressure. On the other hand, failure to comply with the isolation measures may also be related to denialism and supporting the "back to the new normal" discourse (MALINVERNI & BRIGAGÃO, 2020; BEZERRA et al., 2020).

The COVID-19 pandemic scenario mobilized part of the society to adopt hygiene habits and respiratory etiquette that, until then, went unnoticed by most people (KEBEDE et al., 2020). The university community studied here rethought about their health practices, and showed a change in personal hygiene and disease prevention habits, such as increased frequency of hand washing with soap and water, use of alcohol gel 70%, covering mouth and nose when coughing or sneezing, use of masks and hygiene of goods.

Some habits and routines developed during the face of COVID-19 proved to be more practiced by female individuals, such as sanitizing goods with 70% alcohol or soap and water after returning from shopping, care when touching the eyes, nose, and mouth before washing hands and the use of masks. Studies have shown that women exhibited more protective behaviors and follow protection guidelines more closely, greatly reducing their chances of infection (CHANG, 2020; LEONG et al., 2021). Furthermore, a study carried out by Lima and collaborators (2020) showed that females believed more in the severity of COVID-19 than male individuals, showing a greater sense of self-care.

Although this is not the first pandemic faced by the modern world, the measures necessary to control COVID-19 are also applicable to control other infectious diseases that affect humans (KEBEDE et al., 2020). Therefore, the present study showed that the academic population investigated recognizes the importance of maintaining certain personal hygiene habits and preventing infectious diseases even after the end of the COVID-19 pandemic.

A study carried out by Milanesi and collaborators (2011) revealed that the Influenza A (H1N1) pandemic provided a change in health habits by part of a population in southern Brazil. In this cited study, it was observed that part of the population incorporated good habits related to the prevention of Influenza A, and that preventive measures such as the use of alcohol gel for hand hygiene and social distancing increased with the H1N1 pandemic. However, the same study indicated that the information received, and the practices adopted during a pandemic, over time, could be devalued by the population, due to the decrease in the incidence of the disease or the existence of a vaccine. Therefore, it is important that public health policies continue to encourage non-pharmacological measures to prevent the transmission of infectious diseases, as these habits constitute important ways of controlling most communicable diseases.

In Brazil, since the beginning of the COVID-19 pandemic, governmental and non-governmental agencies have been responsible for disseminating information on disease prevention and control measures, using different means of communication (XAVIER et al., 2020; NEIVA et al., 2020). With the development of this present study, we observed that, for the investigated university community, social networks were the main way to obtain information about COVID-19.

The importance of social networks in spreading information about COVID-19 was highlighted by Souza et al. (2020), which observed that the social networks most frequently used to obtain information about COVID-19 were WhatsApp and Instagram. However, the participants of the study, most of them university students, considered the information transmitted by the Ministry of Health, WHO and television news to be more reliable. Therefore, although social networks are considered efficient tools for the dissemination of information, they are still discredited by the population, due to the large amount of untrue information that is transmitted by them (CINELLI et al., 2020). However, due to the important role of social networks in the propagation of information about COVID-19, it is evident that they should be explored as tools by Higher Education Institutions to promote health education in an efficient and reliable way.

Knowledge of the symptoms, mode of transmission, control and prognosis of COVID-19 are of paramount importance to contain the pandemic (KEBEDE et al., 2020). In this work, the average of correct answers related to general knowledge and prevention and control COVID-19 was high when compared to other studies similar to this one, but with different audiences (KEBEDE et al., 2020; AZLAN et al., 2020). However, when the knowledge about the mode of transmission of COVID-19 was evaluated, only 65.3% of the participants had an average of knowledge considered satisfactory. This data is of great concern, as the lack of knowledge about transmission may contribute to the increase in the number of cases among the investigated academics.

A study produced by Kebede and collaborators (2020) sought to understand the perceptions and prevention practices adopted by visitors to a medical center in Ethiopia during the onset of the COVID-19 pandemic. Such analysis, carried out through a cross-sectional study with 247 participants, aged between 19 and 60 years of both sexes, showed that although knowledge reached the investigated group, it was not transferred to practice. In addition, practices differ drastically between participants, which may be related to the different educational levels of the population interviewed.

Another similar study developed by Azlan and collaborators (2020), aimed to assess the knowledge, prevention practices and perspectives of the population regarding COVID-19. This study, developed in Malaysia, involved 4,850 participants of both sexes, with ages ranging from 18 to 50 years, with different levels of education and incomes. The results suggested that the population had an acceptable level of knowledge about COVID-19 and were generally positive about their prospects for overcoming the pandemic. However, the research highlighted that consistent messages from health authorities and government, as well as the development of health education programs tailored to the population, were critical to improving levels of knowledge and prevention practices related to COVID-19.

Since the beginning of the COVID-19 pandemic, Brazil has faced a difficult time in the political sphere, marked by discredit and failure to comply with WHO recommendations and consecutive replacements of the minister of health, which generated doubts and influenced a large part of the population to assume habits that are incompatible with the global reality (NEIVA et al., 2020; COSTA et al., 2021).

In the present study, most of the investigated academic community refuted the use of alternative methods or methods without scientific support for the treatment of COVID-19. This demonstrates a high level of knowledge among the students, and how this community is attentive to the veracity of information and knowledge. This was especially important, since the use of hydroxychloroquine in the fight against COVID-19 was highly endorsed by the president of Brazil. In addition, the dissemination through social networks about the possible use of the drug in the fight against COVID-19 contributed to the self-medication of the population (MENEZES et al., 2020). The use of this antimalarial drug had its efficiency against the new coronavirus largely evaluated, with results pointing out that it did not show satisfactory results in the control of COVID-19, and was still responsible for undesirable clinical outcomes (GHAZY et al., 2020).

Regarding the hope and credibility of a vaccine, most students stated that they would be vaccinated with it as soon as it was available, and most of them defended mandatory vaccination. In this research, it was not possible to find statements that demonstrated an anti-vaccine movement among the students interviewed. The publication of untrue news promoted by anti-vaccine movements can compromise the acceptance rate of a vaccine. This fact was observed during the vaccination campaign against yellow fever, where the goal of the Ministry of Health intended to vaccinate 80% of the Brazilian population, but only reached 55% of adherence to the campaign, due to the impact of untrue news about the vaccine and its effectiveness (SACRAMENTO & PAIVA, 2020). Such movement was also observed with regard to COVID-19 when the vaccine was finally available (BURKI, 2020).

Part of the interviewees showed optimism regarding the process of controlling COVID-19 in Brazil and in the world. And even after so many months of social isolation and a drastic change in lifestyle, many believed in the possibility of a normal life after the control and end of the pandemic. According to Faro and collaborators (2020), an event such as the COVID-19 pandemic causes psychological and social disturbances that interfere with the ability of society as a whole to cope, at varying levels of intensity and spread. Therefore, emergency efforts from different areas of knowledge, such as Psychology, are necessary to propose ways to deal with the context that permeates the crisis.

It is known that the COVID-19 pandemic has caused numerous damages to this academic community, many students do not have a computer or adequate material to attend online classes, which makes the teaching-learning process difficult. This same reality was observed for students at other Brazilian public universities (CAPELLARI et al., 2022; LIMA et al., 2023). Stevanim (2020) highlighted that in Brazil, the pandemic hampered the learning processes due to numerous factors, among which are the lack of internet access of good quality, lack of computers to accompany classes, absence of appropriate places for scholar activities, and also the psychological impacts generated by the COVID-19 pandemic. The author also highlights that the difficulties in accessing education encountered by students from less favored social classes became even more evident in the pandemic scenario.

CONCLUSION

This study has provided a comprehensive insight into the perceptions and practices of university students regarding COVID-19, revealing significant insights into their knowledge, preventive behaviors, and the pandemic's impact on their academic and personal lives. The findings highlight the effectiveness of health education initiatives by university professors in enhancing students' awareness and adherence to preventive measures. This underscores the importance of integrating health education into academic curricula to foster resilient health behaviors beyond the pandemic. Moreover, the study emphasizes the need for tailored university policies that prioritize students' physical and mental well-being, thereby ensuring a safe and supportive learning environment. Moving forward, these insights can inform tailored interventions and policies aimed at sustaining resilient health behaviors and promoting well-being among university communities.

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SUPPLEMENTARY MATERIAL

QUESTIONNAIRE		
Section 1 – Personal Information		
Sex: () Female () Male		
Age:		
Course:		
() Administration		
() Biological Sciences		
() Geography		
() History		
() Letters		
() Mathematics		
() Pedagogy		
() Social service		
() Information systems		
() Tourism		
Period:		
() 1°	() 5°	() 9°
() 2°	() 6°	() 10°
() 3°	() 7°	() 11°
() 4°	() 8°	() 12°
Section 2 – YOUR habits and routines DURING THE COVID-19 PANDEMIC		
1). What is your main source of information about COVID-19?		
() TV		
() Newspapers		
() Social media		
() Radio		
() My Family		
() Newsletters published by public bodies		
() Other		
2). Do you work outside the home?		
() Yes () No		
3). If so, during the pandemic are you away from work and/or working from home?		
() Yes () No		
4). Are you using public transport?		
() Yes () No		
5). Have you increased the frequency of washing your hands with soap and water?		
() Yes () No		
6). Do you use 70% alcohol gel to clean your hands?		
() Yes () No		
7). Have you stopped shaking people's hands as a way of greeting?		
() Yes () No		
8). Have you avoided being close to other people, including during greetings?		
() Yes () No		
9). Have you been going to crowded places?		
() Yes () No		
10). Do you wear a mask when leaving the house?		

<input type="checkbox"/> Yes <input type="checkbox"/> No		
11. If yes, do you always use the mask correctly (protecting your mouth and nose)?		
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not applicable		
12. After use, do you clean your mask with bleach?		
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not applicable		
13. Have you avoided touching your eyes, nose and mouth before washing your hands?		
<input type="checkbox"/> Yes <input type="checkbox"/> No		
14. Do you cover your mouth and nose with your elbow before coughing or sneezing?		
<input type="checkbox"/> Yes <input type="checkbox"/> No		
15. When you return from shopping, do you (or your family) sanitize the goods with 70% alcohol or wash them with soap and water?		
<input type="checkbox"/> Yes <input type="checkbox"/> No		
16. Self-assessment: do you respect social isolation?		
<input type="checkbox"/> Yes <input type="checkbox"/> No		
17. Indicate which habits will be maintained after the COVID-19 Pandemic.		
<input type="checkbox"/> Wash your hands frequently with soap and water;		
<input type="checkbox"/> Use 70% alcohol gel frequently to clean your hands;		
<input type="checkbox"/> Avoid proximity and contact with other people during greetings;		
<input type="checkbox"/> Avoid crowded places and crowds		
<input type="checkbox"/> Cover your mouth and nose with your elbow before coughing or sneezing.		
<input type="checkbox"/> Sanitize goods before storing or consuming.		
<input type="checkbox"/> Be careful when touching your eyes, nose and mouth before washing your hands.		
18. Indicate which habits were already practiced before the COVID-19 Pandemic.		
<input type="checkbox"/> Wash your hands frequently with soap and water;		
<input type="checkbox"/> Use 70% alcohol gel frequently to clean your hands;		
<input type="checkbox"/> Avoid proximity and contact with other people during greetings;		
<input type="checkbox"/> Avoid crowded places and crowds		
<input type="checkbox"/> Cover your mouth and nose with your elbow before coughing or sneezing.		
<input type="checkbox"/> Sanitize purchased goods before storing or consuming.		
<input type="checkbox"/> Be careful when touching your eyes, nose and mouth before washing your hands.		
Section 3 - General knowledge about COVID-19	True	False
1). The first cases of COVID-19 were described in China at the end of 2019.		
2). It is believed that the causative agent of COVID-19, the virus called SARS-CoV-2, was initially transmitted to humans by a wild animal.		
3). SARS-CoV-2 was artificially created in the laboratory, and then spread to the environment and infected humans.		
4). Every continent in the world has reported cases of COVID-19.		
5). The clinical symptoms of COVID-19 are: fever, dry cough, respiratory discomfort, nausea, vomiting and diarrhea.		
6). Unlike the common cold, a stuffy nose, runny nose, and sneezing are less common in people with COVID-19.		
7). Not all people with COVID-2019 will develop severe cases.		
8). Only elderly people or people with chronic illnesses develop severe cases of the disease.		

9). Symptoms of COVID-19 can appear on the same day that the person becomes infected with the new coronavirus.		
Section 4 - Knowledge about the mode of transmission of COVID-19	True	False
1). The virus that causes COVID-19 can be transmitted through direct contact with infected people, contaminated surfaces, or inhalation of respiratory droplets from individuals with the disease.		
2). The virus that causes COVID-19 can remain suspended in the air for long periods of time and can spread.		
3). The new coronavirus is also eliminated through the feces of sick patients		
4). Today, wild animals are still primarily responsible for the transmission of COVID-19.		
5). People with COVID-19 can only infect others when a fever is present.		
6). Asymptomatic people cannot transmit the new coronavirus.		
7). A patient with COVID-19 sheds more virus when the symptoms of the disease disappear.		
8). Banknotes can transmit COVID-19.		
9). During the COVID-19 Pandemic it is not safe to receive orders from China.		
10). Cats and dogs do not become infected with the new coronavirus and do not transmit COVID-19, so it is not necessary to wash your hands before or after playing with them.		
Section 5 - Knowledge about ways to prevent and control COVID-19	True	False
1). Proper handwashing with soap and water is an efficient method to prevent COVID-19.		
2). One way to prevent COVID 19 is not to touch your eyes, mouth and nose without washing your hands.		
3). To avoid COVID-19, individuals should avoid going to crowded places.		
4). Correct use of masks can prevent infection with the new coronavirus.		
5). To protect yourself against COVID-19, you can use any type of material to make a homemade mask.		
6). Anyone who has contact with someone infected with the new coronavirus must be immediately isolated in a suitable place.		
7). Isolation and treatment of people infected with the new coronavirus are effective ways to reduce the transmission of the disease.		
8). Children and young adults do not need to take steps to prevent COVID-19.		
9). Hydroxychloroquine is effective for the treatment of COVID-19 and is widely recommended.		
10). Antiparasitics can combat the new coronavirus		
11). There is no vaccine against COVID-19.		
12). Washing your nose frequently with saline is an effective way to prevent COVID-19.		

13). When we drink alcoholic beverages or very hot drinks such as tea and coffee, we are preventing the new coronavirus from multiplying in our body, as heat and alcohol are efficient in destroying the virus.		
Section 6 - Expectations and positions related to COVID-19	Yes	No
1). Do you believe that COVID-19 in the world will be successfully controlled?		
2). Do you believe that Brazil will be able to control COVID-19?		
3). Do you believe that a vaccine against COVID-19 will emerge in 2020?		
4). Do you believe in the importance of social isolation for controlling COVID-19?		
5). Do you believe in the effectiveness of hydroxychloroquine in combating COVID-19?		
6). Have you taken or are using any medication or alternative therapies (teas, specific foods such as garlic, among others) as a way to prevent COVID-19?		
7). Have you been feeling sadness, anger, fear and discouragement these past few months?		
8). During the pandemic are you feeling unmotivated to study?		
9). Do you believe that life will return to normal after the pandemic?		