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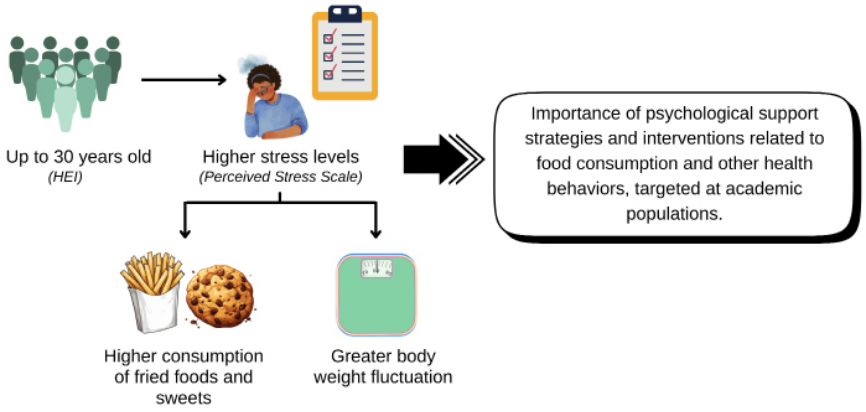
# Stress levels, eating habits, and body weight of adults in Higher Education Institutions

**Gabriela Baptista**[1] **Joana Pereira de Carvalho-Ferreira**[1] **Daniela de Assumpção**[2] **Marina Padovan**[1] **Alice Helena de Souza Paulino**[1] **Caroline Dário Capitani**[1]

[1]Laboratório Multidisciplinar em Alimentos e Saúde, Faculdade de Ciências Aplicadas, Universidade Estadual de Campinas – LabMAS/UNICAMP. Campinas/SP, Brasil.
[2]Programa de Pós-Graduação em Gerontologia, Faculdade de Ciências Médicas, Universidade Estadual de Campinas – UNICAMP. Campinas/SP, Brasil.
E-mail: alicehsp@unicamp.br

**Graphical Abstract**




**Highlights**

- *More than one-third of students and education professionals exhibited high stress levels;*
- *Higher stress levels were associated with increased consumption of foods with poor nutritional quality;*
- *Adults with high stress levels presented greater fluctuations in body weight.*

**Abstract**

To analyze the prevalence of perceived stress during the period of social isolation imposed by the Covid-19 pandemic, according to sociodemographic characteristics, food consumption, and other health-related behaviors, among adult workers and students from Higher Education Institutions in the state of São Paulo, Brazil. This is a cross-sectional study conducted in 2020 with 524 individuals. Participants completed an online questionnaire on perceived stress (Perceived Stress Scale), in addition to reporting the weekly frequency of consumption of healthy and unhealthy foods. Adjusted prevalence ratios (PR) and corresponding 95% confidence intervals were estimated using Poisson regression. The highest level of perceived stress reached 31.1% of the sample and was even higher among individuals with lower household income (≤ 3 minimum wages, PR=2.14; 95% CI: 1.22–3.73), those who consumed fried foods (PR=1.80; 95% CI: 1.15–2.82), those who consumed sweets ≥ 2 days per week (PR=1.69; 95% CI: 1.11–2.56), those who reported increased alcohol consumption (PR=1.76; 95% CI: 1.15–2.68), and those who reported body weight reduction (PR=2.62; 95% CI: 1.25–5.51) during the Covid-19 pandemic. The findings of this study show that more than one-third of students and education professionals exhibited high levels of stress, along with greater consumption of foods with low nutritional quality, increased alcohol use, and weight loss during Covid-19-related isolation.

**Keywords:** Ultra-processed Foods. Social Isolation. Anxiety. Body Weight Changes.

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## INTRODUCTION

In 2020, public health measures were implemented that affected the daily lives of populations worldwide[1,2]. Social isolation negatively impacted daily activities, compromising social, economic, and psychological aspects, and leading to changes in diet and physical activity[3], which contributed to weight gain in part of the population[4].

A narrative review by Hossain and colleagues analyzed the epidemiology of mental health problems during 2020 and suggested that this period could result in depression, anxiety, stress, irrational anger, impulsivity, sleep disorders, and emotional disturbances[5]. Furthermore, a systematic review with meta-analysis including 14 studies indicated that approximately one in four adults exhibited significant stress due to changes resulting from imposed public health measures[6].

Stress levels and emotional factors may be associated with the consumption of nutritionally unbalanced foods. In this context, the scenario of social isolation may be related to a greater search for foods considered as "comfort foods" (those with compositional characteristics capable of promoting emotional well-being, albeit momentarily), such as ultra-processed foods[7]. These are characterized by high content of fats, sodium, food additives, and sugars, and lower amounts of protein, dietary fiber, and micronutrients[8]. Changes in eating patterns, therefore, are due not only to limited access to foods during the isolation period but also to the psychological consequences of a confinement condition, such as stress, fear, and concerns[9].

The immediate impact of confinement can be observed through variations in diet quality and population stress levels[7,10]. Beyond stress levels, other factors directly related to emotional vulnerability may be affected when one or more individuals are deprived of social interaction[10]. Thus, it is important to evaluate which potential associations may be related to stress levels under such environmental conditions. Therefore, the hypothesis of this study is that individuals with high stress levels during the Covid-19 pandemic are more likely to adopt behavioral risk factors, such as unhealthy eating. In this regard, the aim of the present study was to analyze the prevalence of perceived stress during the first year of social isolation imposed by the Covid-19 pandemic, according to sociodemographic characteristics, food consumption, and other health-related behaviors in adult students and/or workers from Higher Education Institutions (HEIs) in the state of São Paulo, Brazil.

## METHODS

### Study Design and Population

This was a cross-sectional study conducted with students and/or workers from Higher Education Institutions (HEIs) in the state of São Paulo, between September and December 2020. The sample was selected by convenience, through recruitment in four HEIs, via invitations disseminated on social media (Facebook, WhatsApp, and Instagram) and by e-mail. Data were collected using a pre-coded questionnaire, developed on the Google Forms platform, based on questions retrieved or adapted from previously validated health surveys, such as ConVid[11], Pesquisa de Comportamentos, and the Health and Food Consumption Survey of Campinas, SP[12]. The questionnaire was self-administered by the participants using a computer or mobile phone with internet access. Prior to its application, the instrument was pilot tested. The study was conducted after approval by the Research Ethics Committee of the University of Campinas (UNICAMP) (#4.213.274). Participants answered the questionnaire after providing informed consent (Informed Consent Form – ICF).

### Variables

Perceived stress was the dependent variable of the study and was assessed using the Perceived Stress Scale questionnaire, translated and validated for university students[13]. This instrument consists of 14 items addressing the perception of stressful experiences (reflecting negative feelings and the ability to cope with stress) during the past month. Responses followed a five-point Likert-type scale, with the categories: never, almost never, sometimes, fairly often, and very often[13]. The total score ranged from 0 to 40 points, with higher scores in-


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dicating greater stress levels. The overall score was categorized into distribution tertiles: 0–14 (tertile 1), 15–21 (tertile 2), and 22–40 points (tertile 3). Individuals in the upper tertile (≥ 22 points) were classified as having a high level of stress. The upper tertile (≥ 22 points) was used to analyze possible associations of higher perceived stress levels during the pandemic with the following independent variables:

a) Sociodemographic: sex (male and female), age group (≤ 30, 31–40, 41–50, 51–59, and ≥ 60 years), education (high school completed/undergraduate incomplete; and undergraduate completed), and household income (≤ 3, > 3 to ≤ 5, and > 5 minimum wages).

b) Eating habits: the question "Usually, during the pandemic, on how many days of the week do you usually eat these foods?" was used to assess frequency of consumption of healthy foods (rice, beans, eggs, beef, chicken and fish, vegetables, fruits, fruit juice, whole foods, and whole grains) and unhealthy foods (ready-made dishes, instant noodles, pizza and snacks, packaged savory snacks, sweets, candies, soft drinks, processed meats, and fried foods). Responses were grouped according to regular consumption of healthy foods (≥ 5 days/week) and unhealthy foods (≥ 2 days/week).

c) Health-related behaviors, body weight change, and eating practices: hours of sleep (< 8 and ≥ 8 hours/day), physical activity (does not practice, 1–2 times/week, and ≥ 3 times/week), alcohol consumption (no change, increased, decreased), smoking (yes and no), changes in body weight (no, yes, weight gain, weight loss), food preparation at home (yes and no), ordering food via delivery apps (yes and no), and number of daily meals (1–3 and ≥ 4).

**Data Analysis on Stress**

Descriptive analyses (absolute and relative frequencies) were used to characterize the study participants. Subsequently, the prevalences of high perceived stress were estimated, and associations with independent variables were verified using Pearson's Chi-square test with a significance level of 5% ($p < 0.05$). Adjusted prevalence ratios (PR) by sex and age and their corresponding 95% confidence intervals (95% CI) were then estimated. A multiple Poisson regression model was developed to identify variables independently associated with high stress levels and selected variables. All variables with $p < 0.20$ in the bivariate analysis were included in the model, and only those with significance < 5% remained. Data analyses were performed using Stata software, version 15.1[14].

## RESULTS

A total of 524 adults from Higher Education Institutions in the state of São Paulo completed the questionnaire. The characteristics of the sample are presented in Table 1. The majority of participants were female (59.3%), aged 51–59 years (24.43%); some were currently enrolled in higher education (20.8%), while most had already completed their degree (79.2%).

For the entire study population, the prevalence of high perceived stress reached 31.3% (95% CI: 27.5–35.4) and was lower among individuals over 40 years of age compared to younger adults (up to 30 years). Regarding eating habits, higher prevalences of stress were observed among those who regularly consumed fried foods, sweets, and soft drinks (Table 1).

**Table 1 -** Prevalence and prevalence ratios of perceived stress according to sociodemographic and dietary intake variables among students and workers from Higher Education Institutions, São Paulo, Brazil, 2020 (n = 524).

| Variables and categories | n (%) | Prevalence (%) | p-value[a] | Adjusted PR[b] by sex and age (95% CI[c]) |
|---|---|---|---|---|
| **Sex** | | | **0.005** | |
| Male | 213 (40.6) | 24.4 | | 1 |
| Female | 311 (59.4) | 36.0 | | 1.34 (0.96–1.87) |
| Total | 524 | 31.3 | | |
| **Age group (years)** | | | **<0.001** | |
| ≤ 30 | 104 (19.8) | 51.9 | | 1 |
| 31–40 | 96 (18.3) | 42.7 | | 0.87 (0.57–1.30) |
| 41–50 | 124 (23.7) | 27.4 | | 0.54 (0.35–0.84) |
| 51–59 | 128 (24.4) | 18.7 | | 0.38 (0.23–0.61) |
| ≥ 60 | 72 (13.7) | 15.3 | | 0.32 (0.16–0.61) |
| **Education** | | | **<0.001** | |
| Undergraduate completed | 415 (79.2) | 26.5 | | 0.91 (0.45–1.82) |
| High school completed/undergraduate incomplete | 109 (20.8) | 49.5 | | 1 |
| **Household income (minimum wages)** | | | **0.001** | |
| ≤ 3 | 31 (7.6) | 54.8 | | 1.58 (0.88–2.84) |
| > 3 to ≤ 5 | 99 (24.4) | 30.3 | | 1.11 (0.71–1.74) |
| > 5 | 276 (68.0) | 22.8 | | 1 |
| **Dietary intake** | | | | |
| Rice (≥ 5 days/week) | 203 (38.7) | 36.4 | **0.043** | 1.20 (0.88–1.64) |
| Beans (≥ 5 days/week) | 116 (22.1) | 40.5 | **0.015** | 1.22 (0.86–1.72) |
| Eggs (≥ 5 days/week) | 58 (11.1) | 44.8 | **0.018** | 1.40 (0.92–2.13) |
| Vegetables (≥ 5 days/week) | 257 (49.0) | 30.7 | 0.787 | 1.00 (0.73–1.37) |
| Fruits (≥ 5 days/week) | 260 (49.6) | 29.2 | 0.311 | 0.97 (0.71–1.33) |
| Fruit juice (≥ 5 days/week) | 91 (17.4) | 38.5 | 0.098 | 1.38 (0.94–2.00) |
| Whole foods (≥ 5 days/week) | 106 (20.2) | 33.0 | 0.669 | 1.05 (0.72–1.53) |
| Red meat (≥ 5 days/week) | 37 (7.1) | 48.6 | **0.018** | 1.42 (0.86–2.33) |
| Chicken (≥ 5 days/week) | 24 (4.6) | 62.5 | **0.001** | 1.64 (0.95–2.81) |
| Fish (≥ 5 days/week) | 159 (30.3) | 28.9 | 0.441 | 1.00 (0.71–1.41) |
| Processed meats (≥ 2 days/week) | 247 (47.1) | 35.6 | **0.044** | 1.21 (0.89–1.65) |
| Ready-to-eat meals (≥ 2 days/week) | 94 (17.9) | 44.7 | **0.002** | 1.41 (0.99–2.00) |
| Fried foods (≥ 2 days/week) | 124 (23.7) | 50.0 | **<0.001** | 1.71 (1.22–2.38) |
| Pizza (≥ 2 days/week) | 210 (40.1) | 40.0 | **<0.001** | 1.27 (0.92–1.75) |
| Instant noodles (≥ 2 days/week) | 39 (7.4) | 43.6 | 0.085 | 1.23 (0.74–2.03) |
| Desserts (≥ 2 days/week) | 218 (41.6) | 39.4 | **0.001** | 1.34 (0.98–1.83) |
| Sweets/candies (≥ 2 days/week) | 267 (50.9) | 40.4 | **<0.001** | 1.58 (1.14–2.20) |
| Soft drinks (≥ 2 days/week) | 152 (29.0) | 44.1 | **<0.001** | 1.54 (1.12–2.10) |
| Packaged savory snacks (≥ 2 days/week) | 54 (10.3) | 44.4 | **0.028** | 1.33 (0.86–2.05) |

**Notes:** [a]p-value from Pearson's Chi-square test (**p < 0.05**). [b]PR: Prevalence Ratio. [c]CI: 95% Confidence Interval.

Data showed that the prevalence of stress was lower among individuals who practiced physical exercise three or more times per week (PR = 0.68; 95% CI: 0.47–0.97). On the other hand, the prevalence of stress was twice as high among those who reported body weight changes during the period of social isolation: PR = 2.06 (95% CI: 1.16–3.63) for those who reported weight gain and PR = 2.20 (95% CI: 1.21–4.00) for those who reported weight loss.

**Table 2 -** Prevalence and prevalence ratios of perceived stress according to lifestyle variables, body weight change, and eating practices among students and workers from Higher Education Institutions, São Paulo, Brazil, 2020 (n = 524).

| Variables and categories | n (%) | Prevalence (%) | P-value[a] | Adjusted PR[b] by sex and age (95% CI[c]) |
|---|---|---|---|---|
| **Hours of sleep/day** | | | **0.009** | |
| < 8 | 292 (55.9) | 26.7 | | 1 |
| ≥ 8 | 230 (44.1) | 37.4 | | 1.20 (0.87–1.65) |
| **Physical activity practice** | | | **0.038** | |
| None | 173 (33.0) | 37.0 | | 1 |
| 1–2 times/week | 144 (27.5) | 33.3 | | 0.92 (0.63–1.34) |
| ≥ 3 times/week | 207 (39.5) | 25.1 | | 0.68 (0.47–0.97) |
| **No change** | | | **<0.001** | |
| Increased | 294 (56.1) | 22.4 | | 1 |
| Decreased | 163 (31.1) | 42.3 | | 1.38 (0.94–2.03) |
| Decreased | 67 (12.8) | 43.3 | | 1.37 (0.83–2.26) |
| **Smoking** | | | 0.831 | |
| Non-smoker | 487 (92.9) | 31.4 | | 1 |
| Smoker | 37 (7.1) | 29.7 | | 0.87 (0.47–1.61) |
| **Body weight change** | | | **<0.001** | |
| No change | 97 (20.2) | 14.4 | | 1 |
| Weight gain | 246 (51.4) | 33.3 | | 2.05 (1.16–3.63) |
| Weight loss | 136 (28.4) | 37.5 | | 2.20 (1.21–4.00) |
| **Home food preparation** | | | | |
| Yes | 210 (40.1) | 38.6 | 0.004 | 1.04 (0.71–1.52) |
| No | 313 (59.8) | 26.5 | | 1 |
| **Food delivery (≥ 1 day/week)** | | | **<0.001** | |
| Yes | 260 (52.2) | 39.2 | | 1.41 (0.98–2.03) |
| No | 238 (47.8) | 21.0 | | 1 |
| **Number of meals/day** | | | **0.025** | |
| 1–3 | 464 (88.7) | 29.7 | | 1 |
| ≥ 4 | 59 (11.3) | 44.1 | | 1.37 (0.90–2.10) |

**Notes**: [a]p-value from Pearson's Chi-square test (**p < 0.05**). [b]PR: Prevalence Ratio. [c]CI: 95% Confidence Interval.

The results of the multiple Poisson regression model are presented in Table 3. Higher prevalences of stress were observed among individuals with lower household income (≤ 3 vs. > 5 minimum wages), those who consumed fried foods and sweets/candies at least twice per week, those who reported increased alcohol consumption, and those who reported body weight reduction. The variable sex was retained in the model for adjustment, considering the differences in stress prevalence between men and women in the bivariate analysis.

**Table 3 -** Multiple Poisson regression model and variables associated with perceived stress among students and workers from Higher Education Institutions, São Paulo, Brazil (n = 524).

| Variables and categories | Adjusted PR[a] | P-value[b] | 95% CI[c] |
|---|---|---|---|
| **Sex** | | | |
| Male | 1 | | |
| Female | 1.36 | 0.154 | 0.89–2.08 |
| **Household income (minimum wages)** | | | |
| < 3 | 2.14 | 0.008 | 1.22–3.73 |
| > 3 to ≤ 5 | 1.39 | 0.154 | 0.88–2.20 |
| > 5 | 1 | | |
| **Dietary intake** | | | |
| Fried foods (≥ 2 days/week) | 1.80 | 0.010 | 1.15–2.82 |
| Sweets/candies (≥ 2 days/week) | 1.69 | 0.014 | 1.11–2.56 |
| **Alcohol consumption** | | | |
| No change | 1 | | |
| Increased | 1.76 | 0.009 | 1.15–2.68 |
| Decreased | 1.25 | 0.550 | 0.60–2.63 |
| **Body weight change** | | | |
| No change | 1 | | |
| Weight gain | 1.75 | 0.133 | 0.84–3.61 |
| Weight loss | 2.62 | 0.011 | 1.25–5.51 |

Notes: [a]Adjusted PR: prevalence ratio adjusted for all variables in the table. [b]p-value from Wald test. [c]CI: 95% Confidence Interval.

## DISCUSSION

The present study investigated the prevalence of perceived stress among students and workers from Higher Education Institutions in the state of São Paulo, according to sociodemographic characteristics, food consumption, and other health-related behaviors. A high prevalence of elevated stress levels was found among students and workers from these HEIs in 2020, especially among women. High stress levels were significantly greater among individuals with lower household income, those who regularly consumed fried foods and sweets, those who reported increased alcohol intake, and those who reported body weight loss during the period of social isolation.

The HEIs assessed in this study were state institutions that maintained remote activities on an emergency basis, without a planning or adaptation period. Therefore, it is worth noting that the women evaluated were required to continue their professional and academic activities remotely during social isolation and possibly accumulated household tasks, as previously described in the literature. Although no significant association was observed between stress and sleep duration in this study, the epidemiological scenario of the Covid-19 pandemic implied an overloaded routine and excessive responsibilities for women, which, in turn, may have led to changes in sleep patterns, contributing to higher stress levels[15]. This finding is consistent with a study that identified a positive association between high prevalence of poor sleep quality and stress[16]. Data from a web-based cross-sectional study with Brazilian adults and older adults showed that, during the pandemic, 49.8% of women reported the onset of sleep problems and 53.7% reported worsening of preexisting sleep problems, prevalences that were 35% and 41% higher, respectively, than those observed among men[17].

Higher level of perceived stress among women—identified in the bivariate analysis of the present study—was also reported by other authors[18,19]. These findings may be related to the possibility that women have a higher propensity to perceive stress, which may also be reflected in dietary intake[3]. During social isolation, perceived stress among mothers was related to loss of working hours, job loss, and decreased ability to pay bills and obtain childcare support[3]. It has also been shown that women were at greater risk of developing mental health problems during the pandemic, as most remained responsible for the majority of domestic

tasks, including caring for children and older adults[20]. Indeed, the literature highlights sex differences, indicating that women appear to face a higher lifetime risk of developing affective disorders, with stress being an important environmental factor associated with this risk[19]. Explanatory hypotheses include a potentially greater reactivity of the hypothalamic-pituitary-adrenal axis, known as the stress axis, in women, as well as greater exposure to negative social support[21].

Regarding the higher prevalence of perceived stress among participants with lower household income, it is important to note that economic hardship and pressures resulting from this condition may lead to greater psychological strain, increased risk of anxiety and depression, and overall impairment of socioemotional development[22]. During social isolation, individuals with lower family income were likely those at greater risk of deprivation of basic resources, leading to situations of insecurity, such as food insecurity, which is associated with mental health risks, including depression and high levels of stress[23].

The results of the present study indicated a higher prevalence of perceived stress among participants who regularly consumed fried foods and sweets (two or more times per week), as well as those who reported changes in body weight (weight loss). These findings are consistent with similar studies conducted in other countries[3,24,25], highlighting a possible association between poorer psychological well-being and the consumption of less nutritious foods, along with variations in body weight, among students and workers from HEIs.

The relationship between perceived stress and food consumption has gained attention, as stress has been identified as a relevant factor associated with worsening quality of life and health. Among university students and staff in Chile, an increase in the consumption of comfort foods was observed due to increased emotional distress during social isolation[18]. Similarly, in France, 50.3% of participants in one study reported a negative change in perceived diet quality, which they attributed mainly to dietary choices that favored comfort food consumption[25]. An online cross-sectional study conducted with 197 mothers of children aged 5 to 11 years showed that most participants resorted to comfort foods as a strategy to cope with perceived stress related to the Covid-19 pandemic[3].

A statistical association was also observed between stress and increased alcohol consumption, which was 76% higher among individuals with elevated stress levels. Increased alcohol consumption during social restrictions was reported by 17.6% of the Brazilian adult population (aged 18 years or older), according to data from the virtual health survey 'ConVid, *Pesquisa de Comportamentos*'[26]. Data from two online surveys conducted between march and april 2020 with adults living in the United States using social media, showed that the adjusted odds ratios for reporting increased alcohol intake were 1.41 among respondents with anxiety symptoms and 1.64 among those with depressive symptoms, compared to those without such symptoms[27]. Alcohol is recognized as a central nervous system depressant, and its use is associated with more than 230 diseases and health conditions, including mental disorders, which were likely exacerbated by alcohol consumption during the period of social isolation, triggering or worsening depressive and anxiety episodes[28].

The results of this study showed that body weight loss was 2.6 times more frequent among individuals who reported high levels of stress. It is relevant to highlight that, in situations of weight loss, stress may be a determining factor for some people, leading to reduced nutrient and caloric intake or the skipping of meals, as possible adaptive responses to stress[29,30]. The attempt to minimize emotional discomfort through eating during social isolation may result in maladaptive eating behaviors, leading to weight fluctuations[31,32]. Thus, stress may be considered a relevant factor for the increased susceptibility to body weight variations among students and workers from HEIs in Brazil, particularly in the state of São Paulo.

Although no direct association was observed in the present study, it can be speculated that greater consumption of energy-dense foods at the expense of fresh foods may be one of the contributing factors to body weight change in individuals with high levels of perceived stress, especially if the individual does not engage in or has low frequency of physical activity[33]. This hypothesis should be further explored in future studies. Physical activity is not only important as a preventive behavior against obesity[34], but it is also associated with better psychological outcomes and healthier eating behaviors[35].

Supporting the role of physical exercise as a protective factor for health[36], a lower prevalence of perceived stress was observed among participants who practiced physical activity three or more times per week. Although this result was not independently associated with stress in the multiple regression model, it can be mentioned that, in general, higher perceived stress may contribute to reduced physical activity or increased sedentary behavior[37]. Therefore, as reported in different studies[2,7,37,38], it is important to understand the nature of the associations between perceived stress during the period of social isolation in the pandemic and health-related behaviors. This is due to the need to prevent the long-term impacts of the pandemic on individual health, as well as the impact of other environmental situations that are potential sources of stress.

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It is important to emphasize that the data from the present study may serve as a starting point for reflection and for strengthening institutional policies aimed at caring for the academic community. Collectively, the findings help to understand the impact of stress on students and staff at HEIs in the state of São Paulo, fostering discussion on efficient psychological support systems and structured support mechanisms for students, faculty, and staff. This is particularly relevant given the profound transformation in work modalities after the coronavirus pandemic, with a significant and seemingly lasting increase in partially remote work formats. In this sense, the perception of support from supervisors and colleagues appears to be a fundamental factor not only for increased technical security but also for the overall well-being and satisfaction of workers[39]. It is also worth noting that, in more extreme situations of social isolation, and considering the expansion of hybrid forms of remote work (combining remote and in-person work), encouraging physical activity among members of the academic community appears to be a fundamental protective measure for psychological well-being.

This study has limitations that should be considered. The cross-sectional design does not allow establishing causality in the associations observed, such as the relationship between stress and increased alcohol consumption. Therefore, it is difficult to make inferences about possible changes in perceived stress levels over time. The decision to categorize perceived stress into distribution tertiles was adopted due to the absence of validated cut-off points for the population studied. However, this strategy has limitations, as cut-off points are derived from the sample itself, which compromises the generalizability of the results. In addition, the sample was recruited by convenience and concentrated in four HEIs in the state of São Paulo, which limits the external comparability of the findings. Nevertheless, data reported in the scientific literature indicate an increase in stress levels in the population, with a higher prevalence of psychological disorders resulting from social isolation[40]. Thus, it can be suggested that there was an increase in perceived stress during this period in the analyzed population. Furthermore, all data were collected through a self-administered online questionnaire, which may entail certain limitations, such as lack of accuracy regarding body weight data. Pre-pandemic data were collected retrospectively, meaning that eating habits and physical activity levels referring to the period prior to social isolation may have been influenced by recall bias. Finally, it is not possible to rule out the occurrence of non-response bias, considering that individuals in more adverse situations may have been less likely to participate in the study. However, the absence of data on non-respondents, if present, does not allow evaluation of the direction and magnitude of this bias. Such an effect could have led to an underestimation of the effects found in this study.

## CONCLUSION

The results of this study reveal that the prevalence of perceived stress among students and workers from Higher Education Institutions in the state of São Paulo was significantly high during the period of social isolation imposed by the Covid-19 pandemic, especially among individuals who reported lower household income, frequent consumption of fried foods and sweets during the week, increased alcohol intake, and body weight loss. Overall, the findings emphasize the importance of psychological support strategies and targeted interventions, particularly for academic and professional populations that faced, and continue to face, drastic changes in their routines and work environments. It is suggested that future efforts to promote mental well-being should include measures to encourage regular physical activity, healthy eating and and provide adequate emotional support. Despite its limitations, the data reflect a trend consistent with the literature on the impact of stress during social isolation and indicate areas for future research and intervention.

**CRediT author statement:**

Conceptualization: Carvalho-Ferreira, J.P.; Capitani, C. D. Methodology: Baptista, G.; Carvalho-Ferreira, J.P.; Assumpção, D.; Capitani, C. D. Validation: Baptista, G.; Carvalho-Ferreira, J.P.; Capitani, C. D. Statistical analysis: Assumpção, D. Formal analysis: Assumpção, D. Investigation: Baptista, G. Resources: Capitani, C. D.; Assumpção, D. Writing-original draft preparation: Baptista, G. Writing-review and editing: Carvalho-Ferreira, J.P.; Assumpção, D.; Padovan, M.; Paulino, A. H. S.; Capitani, C. D. Visualization: Carvalho-Ferreira, J.P.; Assumpção, D.; Padovan, M.; Paulino, A. H. S.; Capitani, C. D. Supervision: Capitani, C. D. Project administration: Capitani, C. D.

All authors have read and agreed to the published version of the manuscript.

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### Ethical statement

This study was fully approved by the Ethics Committee of the University of Campinas (UNICAMP) (#4.213.274) on August 21, 2020.

### Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the workreported in this paper.

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