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Impact of COVID-19 on the family, social, and academic dynamics of nursing students in Portugal

Impacto da COVID-19 nas dinâmicas sociofamiliares e académicas dos estudantes de enfermagem em Portugal

Impacto de la COVID-19 en las dinámicas sociofamiliares y académicas de los estudiantes de enfermería en Portugal

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Abstract

Background: Due to the COVID-19 pandemic, education institutions were closed, and students were confined to their homes.

Objectives: To identify the social, family, academic, and behavioral changes related to the COVID-19 pandemic in nursing students; to characterize their perceptions of health, information, and compliance with the measures.

Methodology: Quantitative descriptive-correlational study with 425 nursing students. The COVID-19 International Student Well-Being Study (C19 ISWS) was used. All ethical requirements were met.

Results: With the suspension of presential classes, students returned to their family homes, reduced their contacts with friends, and gave priority to online forms of communication. They experienced stress due to the changes in the teaching methods and about the possibility of not successfully completing the academic year. Students reported an increase in online materials but did report an increase in academic workload. They reported fewer financial resources and considered that the information from the Directorate-General of Health was clear and provided in due time. They also reported having complied with the measures. Students significantly decreased their consumption of tobacco, alcohol, and others.

Conclusion: The COVID-19 pandemic has changed the nursing students' lives, due to their return to their family homes, the concerns about their academic success, the distancing from social activities, with strict compliance with the recommended sanitary measures.

Keywords: pandemic; covid-19; nursing students; confinement; social isolation; higher education

Resumo

Enquadramento: Devido à pandemia COVID-19 encerraram-se estabelecimentos de ensino e confinaram-se os estudantes.

Objetivos: Conhecer as mudanças sociofamiliares, académicas e comportamentais dos estudantes de enfermagem, provocadas pela pandemia COVID-19; caracterizar percepções de saúde, informação e adesão às medidas veiculadas.

Metodologia: Estudo quantitativo descritivo-correlacional com 425 estudantes de enfermagem. Utilizou-se o COVID-19 International Student Well-Being Study (C19 ISWS). Cumpriram-se pressupostos éticos.

Resultados: Suspensas aulas presenciais, os estudantes regressaram ao domicílio familiar, reduziram contactos com amigos e privilegiaram comunicações *online*. Manifestaram *stress* face às mudanças no ensino e à possibilidade de não concluírem o ano letivo. Reportaram aumento de materiais *online*, mas não identificaram acréscimo de trabalho académico. Referiram menos recursos financeiros. Consideraram informações da Direção-Geral da Saúde atempadas e compreensíveis e aderiram fortemente às medidas implementadas. Os consumidores, diminuíram significativamente consumos de tabaco, álcool e outros.

Conclusão: A pandemia COVID-19 trouxe alterações à vida dos estudantes de enfermagem, marcadas por retorno à casa da família, preocupações com sucesso escolar e afastamento das sociabilidades académicas, aderindo massivamente às medidas sanitárias recomendadas.

Palavras-chave: pandemia; covid-19; estudantes de enfermagem; confinamento; isolamento social; ensino superior

Resumen

Marco contextual: Debido a la pandemia de COVID-19, se cerraron los establecimientos educativos y se confinó a los estudiantes.

Objetivos: Conocer los cambios sociofamiliares, académicos y de comportamiento de los estudiantes de enfermería causados por la pandemia de COVID-19; caracterizar las percepciones de la salud, la información y el cumplimiento de las medidas comunicadas.

Metodología: Estudio cuantitativo descriptivo-correlacional con 425 estudiantes de enfermería. Se utilizó el COVID-19 International Student Well-Being Study (C19 ISWS). Se cumplieron los supuestos éticos.

Resultados: Con la suspensión de las clases presenciales, los estudiantes volvieron al domicilio familiar, redujeron el contacto con sus amigos y dieron prioridad a la comunicación en línea. Manifestaron estrés ante los cambios en la enseñanza y la posibilidad de no completar el año académico. Informaron de un aumento de los materiales en línea, pero no identificaron ningún aumento en el trabajo académico. Indicaron que disponían de menos recursos financieros. Consideraron que la información de la Dirección General de Salud era adecuada y comprensible, y se comprometieron firmemente con las medidas aplicadas. Los consumidores disminuyeron significativamente el consumo de tabaco, alcohol y otros productos.

Conclusión: La pandemia de COVID-19 trajo consigo cambios en la vida de los estudiantes de enfermería, marcados por el regreso a la vivienda familiar, la preocupación por el éxito académico y el distanciamiento de la sociabilidad académica, cumpliendo así ampliamente con las medidas sanitarias recomendadas.

Palabras clave: pandemia; covid-19; estudiantes de enfermería; confinamiento; aislamiento social; educación superior



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Introduction

The COVID-19 pandemic has severely restricted the daily lives of the populations. To prevent the spread and transmission of the virus, and following the recommendation of health authorities, governments implemented measures that changed family routines, work, and social interactions. The changes were sudden and unexpected, considering the short amount of time that elapsed since December 2019, when the new virus was discovered in the Chinese city of Wuhan. On 11 March 2020, the World Health Organization (WHO) announced the novel coronavirus as a pandemic (WHO, 2020a) and implemented the 2019 Novel Coronavirus Strategic Preparedness and Response Plan. This Plan emphasized the importance of international collaboration to fight the outbreak by interrupting human-to-human transmission of the virus and effectively caring for those affected (WHO, 2020b). The first cases of COVID-19 in Portugal were confirmed on 26 February 2020, by the Directorate-General of Health (DGS, 2020). On 12 March 2020, the Portuguese government decided to close all public and private education institutions. Nevertheless, two weeks earlier, on their rector's initiative, some universities in Portugal had already canceled presential classes and sent their students home. On 18 March 2020, the President of the Portuguese Republic declared the state of emergency, following a strategy to prevent the virus from spreading through a lockdown of the general population and social distancing, bringing about even more restrictions (Decreto no 20-A/2020 de 17 de abril). The state of emergency was renewed until 2 May 2020.

Previous studies carried out in Hong Kong during the 2003 Severe Acute Respiratory Syndrome (SARS) epidemic showed that higher education students were among the most psychologically affected (Wong, Gao, & Tam, 2007), for which reason it is relevant to study the impact of the pandemic crisis on these students, particularly nursing students, due to their direct contact with clinical settings within the practical component of their programs.

This study aims to identify the changes caused by the pandemic crisis in the social, family, and academic dynamics of nursing students; analyze the changes brought by the COVID-19 outbreak in students' behaviors; and characterize their perceptions of the uncertainty associated with their health, the information provided by health officials, and the compliance with sanitary measures.

Background

Quarantine is associated with negative effects on the well-being and mental health of the populations (Brooks et al., 2020). For the present generation, the lockdown was an unprecedented experience that forced them to develop adaptive strategies and find a new personal and social balance. However, given previous situations, several international studies assessed the impact of the pandemic and the lockdown (or quarantine measures) on the lifestyles and mental health of the general population,

revealing that, although they affect all segments of the population, their consequences are experienced differently in the various social groups (Wong et al., 2007).

Higher education students have been particularly affected during pandemics, either in previous epidemic outbreaks, such as the Middle East Respiratory Syndrome (MERS) and SARS (Gu et al., 2015; Huremović, 2019; Wong et al., 2007), or in the COVID-19 pandemic, with increased risk for mental illness and lifestyle changes (Kaparounaki et al., 2020; Wang et al., 2020; Zhang & Ma, 2020). Amid this uncertainty, with in-person classes suspended and higher education institutions implementing measures gradually, the pandemic forced the personal and family contexts to adapt to a new reality.

In Portugal, the studies available on the impact of COVID-19 on higher education students are still scarce and partial. Portuguese nursing students, in particular, may be facing increased challenges due to the suspension of clinical rotations, which mandatorily represent 50% of their syllabus. The Observatory for Education, Policies, Training, and Science (Benavente, Peixoto, & Gomes, 2020) analyzed the impact of COVID-19 on the Portuguese education system in a subsample composed of higher education students and concluded that the majority of students (59.4%), when considering financial, learning and relational issues reported that online learning had put them in an unfavorable situation when compared to in-person learning. For these students, the level of participation in classes decreased significantly, as well as their interest in them. Students reported that online learning required too much work, and only a few students were not concerned about their final assessment. In this study, 40% of students reported having higher levels of anxiety due to the lockdown/isolation.

In a study conducted in the United Kingdom with students aged 13 to 25 years, the authors found that 83% of the students reported that the pandemic had a negative impact on their mental health due to the closure of schools and universities, loss of academic routines, isolation, and restriction of social connections (YoungMinds, 2020). In China, 24.9% of higher education students experienced severe anxiety associated with the COVID-19 outbreak (Cao et al. 2020). A study conducted in India found that 76.44% of secondary and higher education students were having severe anxiety and 23.66% of students were having moderate as a result of education, online classes, and the duration of online classes, although anxiety was not associated with the types of online or in-person classes (Dangi & George, 2020). For Chinese students, living in urban areas, living with parents, and family income stability were protective factors against the anxiety experienced during the COVID-19 outbreak. However, having a relative or acquaintance infected with SARS-CoV-2 was an independent risk factor for high anxiety levels (Cao et al., 2020). Other COVID-19-related stressors, such as economic effects, effects on daily life, as well as delays in academic activities, and lack of social support were associated with severe anxiety symptoms (Cao et al., 2020). In India, a small part of the surveyed students (4%), did not accept the classes provided online. Of those who had online

classes, 22.4% of them reported studying 1 to 2 hours a day, and 26% of them reported that they needed extra internet data. Regarding COVID-19, 40% of students reported that they thought about coronavirus during their study time, and 61.2% said that they respected the lockdown and knew how to prevent the disease (Dangi & George, 2020).

These studies reinforce the need to further explore the changes brought about by the COVID-19 pandemic to the lives of higher education students, particularly nursing students.

Research question

How did the COVID-19 pandemic affect the academic dynamics, the daily lives, and the behaviors of nursing students?

Methodology

This is a quantitative descriptive-correlational study. It is part of the COVID-19 International Student Well-Being Study (C19 ISWS). C19 ISWS is the result of a study design, study protocol, and questionnaire developed by a team of the University of Antwerp, Belgium (Sarah Van de Velde, Veerle Buffel, and Edwin Wouters; University of Antwerp, Centre for Population, Family and Health, 2020).

The sample consisted of 425 nursing students from a Portuguese school: 88% ($n = 374$) of them were females and 12% ($n = 51$) were males. Their mean age was 21.37 years ($SD = 4.25$; Min. = 18 years; Max. = 46 years). In this sample, 96.7% ($n = 411$) were enrolled in an undergraduate degree, of whom 31.4% were enrolled for the first time in higher education and 68.6% had been enrolled more than once, and 3.3% ($n = 14$) were enrolled in master/post-graduate degrees. When students filled out the questionnaire, only one student was infected with SARS-CoV-2, with laboratory confirmation. However, 24.9% ($n = 106$) of them knew someone from their personal network who got infected, of whom 59.4% ($n = 63$) had mild symptoms, 22.6% ($n = 24$) had severe symptoms but were not hospitalized, and 8.5% ($n = 19$) had severe symptoms and were hospitalized but not in intensive care. Severe symptoms with hospitalization in intensive care occurred in 4.7% of the cases, and 4.7% died.

This study used the International COVID-19 Student Well-Being Questionnaire, which was translated into Portuguese by Xavier and Hilário (2020). It consists of groups of questions with different topics. The following topics were selected for analysis: sociodemographic information, social and family dynamics, academic dynamics, and perceived risk of infection.

With regard to the procedures, in Portugal, as in the other partner countries, the survey was translated and culturally adapted, and a pre-test was performed. The questionnaire, together with a request for its completion, was sent by e-mail in the form of a Google Doc link. All

ethical requirements were met. The study was approved for Portugal by the Ethics Committee of the Institute of Social Sciences of the University of Lisbon (Opinion no. 2020/10). To complete the questionnaire, participants had first to sign an informed consent form. Data were collected between April 27 and May 18, 2020, using the Qualtrics platform.

Statistical analysis was performed using IBM SPSS Statistics software, version 24. Absolute and percentage frequencies and summary statistics (mean, median, standard deviation, and interquartile range) were calculated. The following hypothesis tests were applied: McNemar's test, Student's t -test for paired samples, and Wilcoxon signed-rank test. The correlations were analyzed using gamma (G) and Somers' D measures. Three effect-size measures were used: Cohen's g (McNemar), d (student's t), and r (Wilcoxon signed-rank). For the interpretation of the results, the following cutoff points were used: for g , the effect size is considered small if $g = 0.5$, medium if $g = 0.15$, and large if $g \geq 0.25$; for d , the effect size is small if ($0.20 \leq d < 0.50$), medium if ($0.50 \leq d < 0.80$); and large if ($d \geq 0.80$); and for r , the effect size is small if ($0.10 < r < 0.30$), medium if ($0.30 < r < 0.80$) and large if ($r > 0.50$).

Results

The results will be presented following the order of the variables/domains mentioned in the study objectives.

Change in social and family dynamics

The first major change resulting from COVID-19 was the almost massive return of students to their families. As illustrated in Table 1, at the time of questionnaire completion and compared with previous values, even though 28.9% of the participants already lived with their parents, this percentage increased to 88.2% after implementation of the confinement measures. This increase has statistical significance ($\chi^2 = 238.640$; $p = 0.000$; $g = 0.48$), with a large effect size.

When comparing the means of the number of people with whom the participants lived before and after the implementation of the measures, there was a decrease from 2.92 to 2.74 people. This difference is statistically significant, with a very small effect size ($t = 2.259$; $p = 0.024$; $d = 0.13$), as seen in Table 2.

The number of (offline and/or online) contacts among their family members with whom the participants could discuss personal/intimate matters during the lockdown, increased for 35.3% of the participants, remained the same for 29.2% of the participants and decreased for 35.5% of the participants. The contacts with friends to discuss personal/intimate partners increased for 15.8% of the participants, remained the same for 20.2% of participants, and decreased for 64% of the participants. The mean of the perception of financial resources to cover monthly costs before the COVID-19 outbreak and during the lockdown, on a Likert-type scale from 1 (*strongly disagree*) to 5 (*strongly agree*), as shown in Table 2, decreased from 4.30 to 3.88. This difference is statis-

tically significant ($t = 10.906$; $p = 0.000$; $d = 0.52$) with a large effect size.

Social and health behaviors

The questions about the frequency of behaviors associated with the consumption of tobacco, alcohol, and other substances, as well as physical activity, were rated on a Likert-type scale (from 1- *never or almost never* to 5- *daily/almost daily*). Regarding the frequency of smoking (cigarettes, cigarillos, electronic cigarettes), the Wilcoxon signed-rank test was applied, removing 80.7% ($n = 343$) of the participants from the analysis as they answered *never or almost never*, thus corresponding to non-smokers. Therefore, the analysis was conducted with 82 students. As shown in Table 1, the median consumption was 4 points before the outbreak, that is, *more than once a week*, dropping to 1 point (*never or almost never*) during the last week, with statistically significant differences ($z = -6.114$; $p = 0.000$; $r = 0.68$). The effect size r applied to the z-statistic revealed a significant change. The comparison of the mean number of smoked cigarettes (only 66 indicated the number of cigarettes) reveals a median decrease from 4 to 0 cigarettes, a statistically significant difference ($z = -5.173$; $p = 0.000$; $r = 0.64$) with a large r .

The same procedure was applied to alcohol consumption, first considering the frequency of consumption (number of drinks per week) and then the mean consumption. When comparing the frequency of consumption, 186 students (43.8%) who did not drink alcohol (zero drinks) were excluded from the study. The comparative analysis of the median values, which were calculated using the Wilcoxon signed-rank test, showed statistically significant differences ($z = -11.214$; $p = 0.000$; $r = 0.72$) and a large effect size. The initial median value before the outbreak was 4/week, decreasing to 0/week. Regarding the frequency of

consumption of six or more drinks on a single occasion, 46.8% ($n = 199$) of participants reported they had never or almost never done so. The Wilcoxon signed-rank test was then applied to the remaining sample ($n = 226$), before the outbreak and in the last week.

Regarding the use of cannabis before the outbreak and in the last week, the participants who reported that they had never or almost never used it were removed from the study, which corresponded to 92.9% of the sample ($n = 395$). The test was applied to the remaining 30 students, revealing a statistically significant decrease with a large effect size ($z = -4.183$; $p = 0.000$; $r = 0.76$), and the median decreased from 2 (*less than once a week*) to 1 (*never or almost never*) in the last week.

When asked about the frequency of vigorous physical activity, such as lifting heavy things, running, aerobics, or fast cycling for at least 30 minutes, 44.9% ($n = 191$) of participants answered *never or almost never*, thus being excluded from the statistical analysis. The test revealed statistically significant differences ($z = 3.214$; $p = 0.000$; $r = 0.21$), but the effect size was small.

In the same analysis regarding the comparison between both moments in terms of moderate physical activity (e.g., cycling), the test applied to 289 students (those who reported *never or almost never* were excluded) did not indicate any statistically significant differences ($z = -0.704$; $p = 0.482$; $r = 0.21$).

In the questions regarding the activities carried out in the last week, Table 1 shows that the majority of participants talks to friends or family via video call (87.3%), over the phone (85.4%), and online (excluding the previous ones; 61.2%). Other activities were also mentioned such as going for a walk with another person (53.7%), talking to friends on the street (48%), attending online recreational activities (39,1%), and playing online trivia with friends (28.9%). The remaining activities scored below 10%.

Table 1
 Percentage distributions and summary statistics of the questions regarding the social, family, and academic life

| Variables | Before the outbreak (%) | Last week (%) | χ^2 ^(a) | <i>p</i> | <i>g</i> ^(b) |
|---|-----------------------------------|-----------------------------------|-------------------------|----------|-------------------------|
| Living with father/mother (parents) | 28.9 | 88.2 | 238.640 | 0.000 | 0.48 ^a |
| Other (student home/rented accommodation alone or with others) | 71.1 | 11.8 | | | |
| | Mean (<i>SD</i> ^(c)) | Mean (<i>SD</i> ^(c)) | <i>t</i> ^(d) | <i>p</i> | <i>d</i> ^(e) |
| Number of people you live with | 2.92 (1.39) | 2.74 (1.21) | 2.259 | 0.024 | 0.13 |
| Perceived availability of financial resources for monthly costs | 4.30 (0.79) | 3.88 (0.99) | 10.906 | 0.000 | 0.52 |
| | Median (IQR ^(f)) | Median (IQR ^(f)) | <i>z</i> ^(g) | | <i>r</i> ^(h) |
| Frequency of tobacco consumption (cigarettes, cigarillos, electronic cigarettes) (<i>n</i> = 66) | 4.00 (2.00) | 1.00(4.00) | -6.114 | 0.000 | 0.68 |
| Mean number of cigarettes smoked per day (<i>n</i> = 66) | 4.00 (6.00) | 0.00(3.00) | -5.173 | 0.000 | 0.64 |
| Mean alcohol consumption/week (<i>n</i> = 239) | 3.00 (3.00) | 0.00 (1.00) | -11.214 | 0.000 | 0.72 |
| Consumption of six or more drinks in one sitting (<i>n</i> = 226) | 2.00 (1.00) | 1.00 (0.00) | -12.892 | 0.000 | 0.86 |
| Frequency of cannabis use (marijuana, weed, hashish) (<i>n</i> = 30) | 2.00 (3.00) | 1.00 (0.00) | -4.183 | 0.000 | 0.76 |
| Frequency of vigorous physical activity (e.g., running) (<i>n</i> = 234) | 3.00 (2.00) | 4.00 (2.00) | 3.214 | 0.000 | 0.21 |
| Frequency of moderate physical activity (e.g., cycling) (<i>n</i> = 289) | 3.00 (2.00) | 4.00 (3.00) | -0.704 | 0.482 | 0.02 |
| Activities performed in the last week | | | | | |
| Going for a walk with another person, respecting the measures... | --- | 53.65 | --- | --- | --- |
| Bike riding with another person, respecting the measures... | --- | 9.18 | --- | --- | --- |
| Having a drink or a picnic with friends or family, respecting the measures... | --- | 6.12 | --- | --- | --- |
| Talking to friends or family on the street, respecting the measures | --- | 48.00 | --- | --- | --- |
| Attending an online recreational activity (e.g., yoga class) | --- | 39.06 | --- | --- | --- |
| Playing online trivia with friends or family | --- | 28.94 | --- | --- | --- |
| Talking to friends or family via video call | --- | 87.29 | --- | --- | --- |
| Talking to friends or family over the phone | --- | 85.41 | --- | --- | --- |
| Talking to friends or family online (excluding ...phone calls) | --- | 61.18 | --- | --- | --- |
| None of the above | --- | 0.24 | --- | --- | --- |

Note. ^(a) McNemar's test; ^(b) Cohen's *g* effect size; ^(c) *SD* = standard deviation; ^(d) *t*-test for paired samples; ^(e) Cohen's *d* effect size; ^(f) interquartile range; ^(g) *z*-statistic of the Wilcoxon signed-rank test;

^(h) *r* effect size for the Wilcoxon signed-rank test.

Academic dynamics

The analysis of the variables relating to the time spent and possible changes, particularly regarding: a) teaching materials available offline (e.g., in-person classes, seminars, laboratories, tests, etc.); b) teaching materials available online (e.g., classes, seminars, laboratories, online tests, etc.); c) time for personal study (e.g., study planning, reading, writing, doing homework, etc.); and d) paid work (not including temporary jobs during the holidays) was carried out by first recoding the scores in groups/intervals (Table 2) and, later, applying the Wilcoxon signed-rank test and calculating the effect size.

Table 2 includes the test and the percentage distributions for each question, including the differences applying the signed test to verify whether there is an increase, decrease,

or no change in the time spent.

Considering the teaching materials available offline (e.g., in-person classes), a statistically significant decrease was found in the number of hours spent ($z = -13.292$; $p < 0.001$; $r = 0.65$), with a large effect size. This decrease is reported by 65.4% of the sample, while 24% of participants reported that it remained unchanged.

About the teaching materials available online (e.g., classes, seminars), a statistically significant increase ($z = 9.127$; $p < 0.001$; $r = 0.44$) was found, with a medium effect size, in 48% of participants, 36.7% of them reported that it remained unchanged, and only 15.3% of them reported a decrease. No statistically significant differences were found in the time for personal study ($z = 1.816$; $p > 0.05$) and paid work ($z = 0.583$; $p > 0.05$).

Table 2

Percentage distributions regarding the time spent in offline, online courses, study, and paid work, before the outbreak and during the last week ($n = 425$)

| Variables | Before the outbreak (%) | Last week (%) | $z^{(a)}$ | Differences (a-d) | no. (%) |
|--|-------------------------|---------------|-----------------------|---------------------|------------|
| Teaching materials available offline (e.g., in-person classes, etc...) | | | | | |
| 0h - 4h | 26.8 | 79.0 | | | |
| 5h - 9h | 12 | 4.3 | | Negative (increase) | |
| 10h - 14h | 3.1 | 5.4 | | | 45 (10.6) |
| 15h - 19h | 2.6 | 2.1 | | Positive (decrease) | 278 (65.4) |
| 20h - 24h | 7.3 | 2.6 | -13.292*** | | 102 (24) |
| 25h - 29h | 4 | 0.9 | (0.65) ^(b) | Ties (no changes) | |
| 30h - 3 h | 15.5 | 2.1 | | | |
| > 34 h | 28.7 | 3.5 | | | |
| Teaching materials available online (e.g., seminars, etc...) | | | | | |
| 0h - 4h | 72.6 | 45.7 | | | |
| 5h - 9h | 12.3 | 13.8 | | Negative (increase) | |
| 10h - 14h | 6.8 | 6.4 | | | 204 (48) |
| 15h - 19h | 1.4 | 6.1 | | Positive (decrease) | 65 (15.3) |
| 20h - 24h | 2.4 | 9.2 | -9.127*** | | 156 (36.7) |
| 25h - 29h | 0.7 | 1.7 | (0.44) ^(b) | Ties (no changes) | |
| 30h - 34 h | 1.2 | 4.9 | | | |
| > 34 h | 2.6 | 12.2 | | | |
| Time for personal study (e.g., doing assignments...) | | | | | |
| 0h - 4h | 25.4 | 41.2 | | | |
| 5h - 9h | 19.8 | 14.2 | | Negative (increase) | |
| 10h - 14h | 18.4 | 14.7 | | | 125 (29.4) |
| 15h - 19h | 11.1 | 4.3 | | Positive (decrease) | 153 (36) |
| 20h - 24h | 11.1 | 7.6 | -1.816 ^{ns} | | 144 (33.9) |
| 25h - 29h | 3.3 | 1.9 | | Ties (no changes) | |
| 30h - 3 h | 5.7 | 6.6 | | | |
| > 34 h | 5.4 | 9.5 | | | |
| Time spent on paid work | | | | | |
| 0h - 4h | 86.6 | 89.6 | | Negative (increase) | 21 (4.9) |
| 5h - 9h | 8.9 | 4.7 | | Positive (decrease) | 33 (7.8) |
| 10h - 14h | 4.5 | 5.7 | -0.583 ^{ns} | Ties (no changes) | 371 (87.3) |

Note. ^{a)} Wilcoxon signed-rank test; *** $p < 0.001$; ^(b) (r) effect size; ns – not significant.

Regarding the perceived increase in academic workload (Table 3), students had a mean score of 2.82 points, being close to the *neutral* score, that is, they perceived the changes as not implying an increase in the workload. Regarding the concerns about their studies, resulting from the sum of the items applied in the question, the mean score was 3.77 points, which is close to the level of agreement (Table 3). The separate analysis showed that the highest scores were in the item “I am concerned that I will not be able to successfully complete the academic

year due to the COVID-19 outbreak”, with a mean of 4.02 points. The item “The change in teaching methods resulting from the COVID-19 outbreak has caused me significant stress” had a mean score of 3.84 points. Considering the perception of institutional support, the mean score of the items was 3.20 points.

With regard to the quality of the information provided by the DGS and its timely disclosure, the mean score was 3.43 points. Regarding the level of understanding of this information, students found it clear (3.72 points).

Table 3

Summary statistics of the academic questions, perception of institutional support, perception of government information, and degree of compliance with the measures ($n = 425$)

| Items/factors | Mean | SD |
|--|------|------|
| My academic workload has significantly increased during the COVID-19 outbreak ^(a) | 2.82 | 1.48 |
| Factor 1: study-related concerns ^(a) | 3.77 | 0.79 |
| Factor 2: perception of institutional support ^(a) | 3.20 | 0.89 |
| The government provided timely information about the COVID-19 outbreak ^(a) | 3.43 | 1.10 |
| The government provided clear information about the COVID-19 outbreak ^(a) | 3.72 | 0.90 |
| I complied with the COVID-19 measures implemented by the government ^(b) | 8.91 | 1.17 |
| What is the probability of getting infected with COVID-19 ^(c) | 4.22 | 2.27 |
| What is your level of concern about getting infected with COVID-19 ^(d) | 6.63 | 2.44 |
| What is your level of concern about getting severely ill from COVID-19 ^(d) | 6.95 | 3.05 |

Note. SD = standard deviation. ^(a) 1 (strongly disagree) to 5 (strongly agree); ^(b) 0 (I did not comply at all) to 10 (I strictly comply); ^(c) 0 (highly unlikely) to 10 (highly likely); ^(d) 0 (not at all concerned) to 10 (very concerned).

Compliance with measures and health concerns in a time of uncertainty

In terms of the compliance with the COVID-19 measures implemented by the government, on a scale from 0 (*I did not comply at all*) to 10 (*I strictly comply*), the mean score was 8.91, which indicates almost total compliance with the measures implemented by the portuguese government. With regard to the nursing students' perceived risk of infection, using the same response format, the mean score was 4.22. When converted to a percentage, it represented a 40% perception of the risk of infection. In terms of the concerns about getting infected and getting severely ill, the scores were 6.63 and 6.95.

The *gamma* (asymmetric) measures of association were calculated by analyzing the association between the degree of concern about getting infected and the concern about getting severely ill. The final score ($G = 0.57$; $p < 0.001$) indicated a strong inter-variable association.

To study the association between the compliance with the measures and the perceived risk of infection, the Somers' *d* (symmetric) measure was applied, obtaining a score of $d = 0.008$ ($p = 0.870$), which indicates the lack of association between the variables.

Discussion

The strategies adopted by the governments to control the pandemic had direct effects on higher education institutions and students. This study analyzed the impact of the pandemic crisis on social, family, and academic dynamics, as well as on nursing students' behaviors and health.

For students who were away from their family home during the school term, the first impact was returning to their parents' home. Such a change may have had several consequences for these young adults, such as losing some autonomy and independence in social behaviors. As Fuchs (2020) points out, the convergence of social spaces with the home, caused by confinement, is accompanied by the convergence of time periods dedicated to specific activities carried out in everyday life in which individuals perform different roles and tasks. This situation can result in an

overburdening of the individual as the management of all these roles is now restricted to his/her home. Nursing students showed a significant decrease in the consumption of alcohol, tobacco, and other substances, which are behaviors that are usually associated with academic socialization.

Nevertheless, as found in other studies, living with the parents can have a protective effect against the anxiety caused by the outbreak (Cao et al., 2020). The distance from the usual contact with colleagues and friends was very significant, and there was a decrease in the number of contacts, including online contacts. In their everyday life, most students preferred talking with friends or family via video call and/or over the phone, or through other types of online communication.

The normality of academic life and youth academic socialization was abruptly interrupted by the SARS-CoV-2 pandemic, as mentioned by the report of the Observatory for Education, Policies, Training, and Science (Benavente et al., 2020). The institutional context of nursing education changed, causing concern and stress in the students regarding their present and future situation. Their major concern is the possibility of not completing their academic year due to the pandemic. Students also reported that the change in teaching methods was a significant source of stress.

The changes introduced in online teaching, the suspension of clinical rotations, new assessment criteria, among others, forced the sampled students to incorporate these changes into their work time, devoting more time to online activities. Nevertheless, and contrary to that reported by other higher education students in Portugal (Benavente et al., 2020), nursing students did not report a significant increase in academic workload, with a high number of students (65%) reporting a significant decrease in the number of hours spent in academic activities, despite the significant increase in the study material available online. Considering this data, it is possible to admit the hypothesis that there was a moratorium period, granted by the educational institution, until a new academic rhythm take place and students could return to their clinical teaching, unexpectedly interrupted and without viable

alternatives in a near future.

It was probably the situation of change and uncertainty caused by the institutional measures implemented in the teaching methods and in the program, as well as the lack of certainty regarding the future caused by the pandemic itself that prompted a higher degree of concern with the possibility of not being able to successfully complete the academic year.

The institutional framework for situations of crisis is important for managing crises and related-stress situations (Pearlin, 1989). Information measures and institutional guidelines are usually well-received, as they provide a sense of security and confidence.

In terms of health, although all individuals are affected by the uncertainty regarding the evolution of the pandemic outbreak, the way they experience stress is influenced by contextual factors and their social position (Pearlin, 1989). The students were very concerned about the possibility of getting infected with the virus and getting severely ill, which is a concern that increased when referring to their family. The nursing students understood and complied with the measures adopted by the educational institution and the portuguese government, which is in line with the general opinion of other higher education students in Portugal that those responsible for portuguese education institutions responded positively to the situation created by the pandemic (Benavente et al., 2020). A limitation of this study might be that it used a cross-sectional design.

Conclusion

The COVID-19 pandemic disrupted the social and personal life of nursing students. Although young adults were not the most affected group in terms of severity of illness, the lockdown and its consequences on social life and the life of education institutions had important effects on these students' well-being. There was a strong convergence of the spaces of everyday life, namely the workplaces, schools, and the home. Social distancing changed interactions and communication practices, moving from in-person situations and direct communication to mediated relationships and remote communication, with a large increase in online contacts. Pandemic-related health issues caused great concern, leading to strict compliance with the established sanitary measures. For nursing students, as for all other students, COVID-19 changed significantly the access to classes and the contact with teachers and colleagues. It is an experience characterized by fear, loss of freedom, distance from others and everyday life routines, and anguish about the future.

Author contributions

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