



Original research article

# The COVID-19 pandemic from the viewpoint of nursing students

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## Abstract

**Aim:** To assess nursing students' experiences during the COVID-19 pandemic and their perspectives on state-mandated work.

**Methods:** Cross-sectional study, original online survey. Statistical analysis was performed at the significance level of 0.05 (Pearson chi-square test, Kruskal-Wallis test, test of ordinal independence, and Spearman correlation).

**Results:** 390 nursing students participated in the survey. Students from the Secondary School of Nursing worked under supervision more often than students from Colleges and University ( $p = 0.000$ ). Declared emotional stability and subjective feelings of resilience to stress increased with the increasing age of respondents ( $p = 0.000$ ). The frequency of negative emotion declaration differed between genders. The frequency of the stated negative emotions, "fear" ( $p = 0.049$ ), "concern for one's health" ( $p = 0.010$ ), and "tiredness and exhaustion" ( $p = 0.004$ ), was more often declared by women.

**Conclusion:** Respondents declared that the state-mandated work obligation had a significant impact on their studies. Despite the results, students reported that they are satisfied with the work and would like to continue in the future (61.28%). The greatest benefit for nursing students was acquiring new knowledge and practical skills in patient care (80.51%). Students declared that it was beneficial to enhance their critical thinking skills (88.72%), gain independence in making clinical decisions (87.18%), and experience in performing professional activities (81.20%).

**Keywords:** Clinical practice; COVID-19 pandemic; State-mandated work; Students

## Introduction

In 2020 and 2021, the COVID-19 pandemic significantly affected educational opportunities in the Czech Republic, and considerably impacted access to healthcare facilities. Dealing with the COVID-19 pandemic necessitated effective measures and the unification of healthcare practices at the international level. A government decision was issued at the national level to introduce state-mandated work for medical students in the Czech Republic (Act No 222/1999 Coll.; Act No 240/2000 Coll.; Government of the Czech Republic, 2010; National Institute of Health, 2021). The state-mandated work was applied to third and fourth-year students from Secondary Schools of Nursing, students of Colleges of Nursing, students preparing for non-medical healthcare professions at universities, fourth and fifth-year students from general medicine, and fifth-year students from the field of dentistry (Government of the Czech Republic, 2021). The repeated order of state-mandated work was intended to help the regions deal with the pandemic crisis declared by each hospital. The crisis was mainly caused by patients requiring intensive care admission due to a serious condition, while at the same time, the healthcare providers

also had to maintain basic medical and non-medical care for the rest of the patients (Government of the Czech Republic, 2021). Non-medical students also worked as volunteers during the pandemic period. The volunteers involved worked shifts in health care facilities, social services, collection sites, call centers, and later in vaccination centers. In most cases, they worked without study concessions and often without financial remuneration. On the global level, the increase in the numbers of COVID-19 patients has led to the involvement of students in medical and non-medical fields (as part of coping strategies) by allowing (and subsequently mandating) them to assist in inpatient health care facilities (standard departments, specialised COVID-19 departments, Intensive Care Units or Anaesthesia-Care Units) (Alwidyan et al., 2022; Awada et al., 2021). The economic impact of the pandemic, the social distance affecting health care delivery and the potential threat to education with an overall impact on health have also been identified abroad (Kaul et al., 2021).

## Aim

The study aimed to assess nursing students' experiences (practical/general nurses) during the COVID-19 pandemic and their perceptions of state-mandated work during the second

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and third waves of the COVID-19 pandemic in the Czech Republic.

## Materials and methods

### Design

Cross-sectional study using a non-standardised questionnaire consisting of 24 items divided into two parts (i) to ascertain demographic data (items 1–4) and (ii) to examine the issue of state-mandated work and its impact on respondents' lives during the COVID-19 pandemic (items 5–24). The first part of the questionnaire focuses on demographic data such as age, gender, region of employment, and type of school/college attended. The second part of the questionnaire aimed to uncover details about the performance of state-mandated work (workplace, position, working hours, impact on studies, experiences, or difficulties of interventions). The questions also focused on the nurses' opinions about performing state-mandated work, and emotional experiences during the working hours.

### Setting and sample

To obtain the research data, different types of students were approached: students from Secondary Schools of Nursing studying practical nursing (4th year), students of Colleges of Nursing – diploma degree, whose graduates are diploma specialists in nursing (2nd and 3rd year), and universities in general nursing – bachelor's degree (2nd and 3rd year). Respondents were only included in the study if they fulfilled the inclusion criteria: (i) a 4th-year student of a Secondary School of Nursing, or of Colleges of Nursing or University in the mentioned fields and years, (ii) a student actively performing state-mandated work during the COVID-19 pandemic.

### Data collection

Four South Moravian Region educational institutions (1 × Secondary School of Nursing, 2 × Colleges of Nursing, and 1 × University) agreed to participate in the study and the collection of data from the targeted population. After approval by the management of the individual cooperating schools ( $n = 4$ ), the questionnaire was electronically distributed (in bulk) through contact persons to the respondents of a given educational institution. The questionnaire could have been further distributed using the snowballing method. The study involved students who studied in the South Moravian Region, but also those permanently living in other regions of the country. The pilot study was conducted with 27 respondents in the 4th year of Secondary School of Nursing. Respondents from the pilot study were not subsequently included in the final survey. Data were collected during the second and third waves of the COVID-19 pandemic in the Czech Republic (from March to April, 2021).

### Data analysis

Data analysis was performed using Microsoft Office 2016 and IBM SPSS Statistics. Pearson chi-square test, Kruskal–Wallis test, Student's  $t$ -distribution, ordinal independence test, and Spearman correlation ( $p < 0.05$ ) were used for statistical data processing.

### Ethics

Approval was obtained from the participating educational institutions to conduct the research project. Participation in the study was voluntary. The respondents were informed about

the nature of the research study, its purpose, and the anonymous treatment of the results. The respondents had to give consent to participate by submitting the questionnaire form. The anonymised data was stored on a secure external drive by the authors of the study.

## Results

### Analysed sample

A total of 390 respondents participated in the survey, 348 (80.23%) women and 42 (10.77%) men. Most respondents were from a Secondary School of Nursing 175 (45%), studying at the College of Nursing – a diploma degree was declared by 97 (25%) students, and University – bachelor's degree was declared by 118 (30%) respondents. The average age of the respondents was 19.88 years (min. 17, max. 26 years). Most respondents were in the age category of 21 years ( $n = 104$ , 26.67%). The majority of students performed state-mandated work in the South Moravian Region (70.51%), the Olomouc Region (7.95%), and the Zlín Region (7.18%).

During the second and third waves of the COVID-19 pandemic, 95 (24.36%) respondents concurrently volunteered alongside their state-mandated work, and 171 (44.85%) respondents continued to volunteer after their state-mandated work. The respondents worked in different types of departments, see Table 1 and Table 2.

**Table 1. Type of department to perform state-mandated work based on COVID-19 positivity of hospitalized patients**

Department and patient COVID-19 positivity	Absolute frequency ( $n$ )	Relative frequency (%)
COVID-19 positive patients	150	38.46
COVID-19 negative patients	64	16.41
COVID-19 positive and negative patients	176	45.13
<b>Total</b>	<b>390</b>	<b>100</b>

**Table 2. Type of department where the student's state-mandated work was performed**

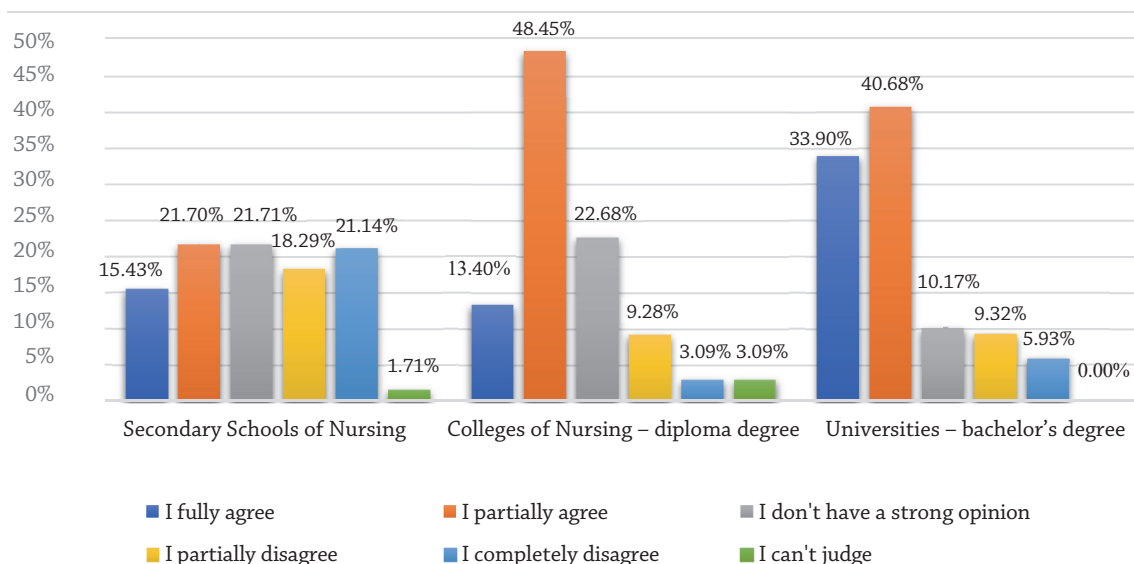
Department/Unit	Absolute frequency ( $n$ )	Relative frequency (%)
Standard department	185	47.44
Department of Anesthesiology and Resuscitation	29	7.44
Intensive Care Unit	68	17.44
Combination of multiple departments/units	103	26.41
<b>Total</b>	<b>390</b>	<b>100</b>

Respondents were most frequently assigned to orderly positions ( $n = 176$ ; 45.13%) and nurse practitioners ( $n = 173$ ; 44.36%). As part of their job duties, during the pandemic they reported working an average of 163.64 hours as part of their job duties and 67.9 hours as part of their volunteer activities. Selected variables (gender, age, region of care, type of workplace, job position, and type of school attended) were statistically tested in more detail. A selection of these will be presented below. Opinions on regulating state-mandated work for medical students did not differ much in the study population.

Most of the respondents were inclined towards a positive attitude, which was shared by 85 (48.57%) students of Secondary School of Nursing, 57 (58.76%) students of Colleges of Nursing – diploma degree, and 82 (69.49%) students of University – bachelor's degree.

Respondents' perceptions of the impact of state-mandated work on their studies varied according to the type of school attended. According to their statements, the situation most affected the studies of students of Colleges of Nursing. A total

of 88 (74.58%) University students and 60 students (61.85%) of Colleges of Nursing indicated the option of fully agreeing and partially agreeing with the school's increased demands on students during a pandemic (see Chart 1). Students of the Secondary School of Nursing reported a significant impact of state-mandated work on their studies (37.14%) ( $n = 65$ ). Students of the University more frequently declared increased demands from the school in performing work obligations ( $p = 0.000$ ).



Note: Percentage is calculated from the number of respondents in each category separately: universities ( $n = 118$ ; 100%); colleges ( $n = 97$ ; 100%), secondary schools ( $n = 175$ ; 100%)

**Chart 1.** Agreement with the school's increased demands on students during a pandemic

Half of the respondents considered the death of a patient ( $n = 198$ ; 50.77%) to be the most challenging situation in providing direct care, followed by administrative tasks ( $n = 63$ ; 16.15%), and the organisation of work in patient care ( $n = 37$ ; 9.49%). From the respondents' point of view, the difficulty rating of a given nursing intervention varied according to age (see Table 3). It was found that the higher age categories (21 years and above) considered the above interventions less challenging than the lower age category (18–20 years).

It was also ascertained whether the students were working under the supervision of a competent person (mentor) while performing their work duties. The majority of students reported

ed working under supervision (Secondary School of Nursing:  $n = 152$ ; 38.9%; University:  $n = 108$ ; 27.69%; College of Nursing:  $n = 91$ ; 23.33%). Students at the Secondary School of Nursing reported performing activities under supervision more often than students at the College of Nursing and University.

Respondents were also asked about the occurrence of professional or unprofessional behavior in the provision of nursing care by healthcare professionals. Students overwhelmingly reported that they had always ( $n = 151$ ; 38.72%) or mostly ( $n = 200$ ; 51.28%) witnessed professional behavior by healthcare workers in the performance of their state-mandated work.

**Table 3. Rating (assessment) of the difficulty of the nursing intervention in relation to the age of the respondent**

Variables under consideration	Number of respondents	Spearman rank correlation	Student's <i>t</i> -distribution	<i>p</i> -value (significance level)
Age × nursing intervention	390	-0.106306	-2.10591	<b>0.035854</b>
Age × professional procedures (blood collections, wound dressings, etc.)	390	-0.183022	-3.66705	<b>0.000280</b>
Age × patient death/ care of the dead body	390	-0.278647	-5.71506	<b>0.000000</b>
Age × communication with the patient/family	390	-0.023268	-0.45846	0.646881
Age × work organisation	390	0.267282	5.46362	<b>0.000000</b>
Age × administrative performance	390	0.194178	3.89907	<b>0.000114</b>
Age × COVID-19 related professional performance	390	-0.333947	-6.97862	<b>0.000000</b>
Age × communication in contact tracing	390	0.347249	7.29389	<b>0.000000</b>

Students perceived the performance of state-mandated work as an opportunity to strengthen their knowledge and skills. The most frequently mentioned advantage was gaining “new knowledge in patient care” ( $n = 323$ ; 82.82%) and “new practical skills” ( $n = 314$ ; 80.51%). The declaration that students “like their job very much and want to do it in the future” was reported by 239 (61.28%) respondents. “Strengthening of critical thinking skills” was reported by 346 (88.72%) respondents, “independence in decision making” was reported by 340 (87.18%), and “more independence in performing professional activities” was reported by 318 (81.20%) respondents.

Another part of the study focused on the emotions students experienced during their state-mandated work. Respondents were asked about their experience of positive emotions. The most frequently reported emotions were “empathy” ( $n = 357$ ; 91.54%), “contentment” ( $n = 323$ ; 82.82%), and “feeling needed” ( $n = 274$ ; 70.26%). For negative emotions, it was “tiredness and exhaustion” ( $n = 116$ ; 29.75%), “nervousness” ( $n = 78$ ; 20%), and “regret” ( $n = 118$ ; 30.26%). More detailed testing of the association between age and the experience of each emotion revealed that increased emotional stability and resilience to stress were related to the increasing age of respondents ( $p = 0.000$ ). On the other hand, the difference in the frequency of negative emotions was found to be related to gender; women and men were found to differ in experiencing “fear” ( $p = 0.049$ ), “concern for one’s health” ( $p = 0.010$ ), and “tiredness and exhaustion” ( $p = 0.004$ ). The frequency of these negative emotions was more frequently observed in the female population.

## Discussion

The results of the survey highlighted the importance of perception the subjective perspective of the respondents who were on duty at the time of the COVID-19 pandemic. Based on the results, it can be concluded that students ( $n = 362$ ; 93%) were willing to help overburdened healthcare providers. We have to consider that students were not sufficiently prepared for the unusual situation that the COVID-19 pandemic brought. Most knowledge about the COVID-19 disease is highly variable and constantly evolving. For greater clarity and interpretation of the findings, the discussion section will be divided into areas of importance from the perspective of the study authors.

### Age and gender

In terms of demographic factors, the only difference in the respondents’ views on the performance of state-mandated work was related to age. Older respondents (Ø 20.1 years) were likelier to report a positive view of the requirement to perform state-mandated work. There was no evidence of different opinions between genders about the performance of state-mandated work; this may also be due to the unequal gender representation in the nursing profession ( $n = 42$  males;  $n = 348$  females). Although the representation of men (10.77%) in the nursing profession is slowly increasing, the difference between genders remains high and the male population is low. According to the Czech Statistical Office’s (2022) latest available data from 2021, there were a total of 90,318 (98%) women and only 2,100 (2%) men among the population of general nurses.

The average age and percentage of women and men in the present population corresponds with a study conducted on 197 undergraduate nursing students in California, which involved 83% women and 16% men with an average age of 22.7 years (Wittenberg et al., 2021).

### Perceptions of the impact of work responsibilities on studies

The medical students had to cope not only with a high workload but also with fulfilling their study requirements. During the COVID-19 pandemic, teaching did not take place face-to-face in schools but moved to an online environment. Respondents from different types of schools differed in their attitudes toward the impact of workload on their studies. Most students interviewed ( $n = 287$ ; 73.59%) felt that their school accepted the state-mandated work and reduced their study demands. The lowest acceptance of the state-mandated work by the school was reported by College of Nursing students ( $n = 68$ ; 70.10%). In a similar study conducted in Southeast and East Asia from January 2021 to August 2021, nursing students ( $n = 1897$ ) reported higher levels of stress as a result of disruption to their normal learning routines, as they were also working in various clinical settings at the same time as their studies. Students reported facing the risk of infection as front-line workers (Shorey et al., 2022). However, the participants were mostly satisfied with their new learning modalities, although most felt their education was compromised (Shorey et al., 2022). In the case of the switch to e-learning, other studies showed a lack of user skills and training (Eltaybani et al., 2021; Kaul et al., 2021). Some countries have also issued recommendations stating that students should not take on volunteer positions if it would have a major impact on their studies and the ability to prepare for future qualifications (Yu et al., 2020). In the Czech Republic, such restrictions were not officially declared, but professional training was also preferred and emphasised.

### Assessing the complexity of nursing interventions

The results of the translated study have confirmed that nursing interventions conducted by the students themselves were considered more challenging by the respondents from the Secondary School of Nursing in all the areas studied. Students considered communication with patients and their families to be the least challenging. Conversely, all students considered the following interventions to be very challenging, and all of them were shown to be more frequently reported by Secondary School of Nursing students than Colleges of Nursing or University students: Performing basic nursing care ( $p = 0.035$ ), performing professional nursing interventions ( $p = 0.000$ ), confronting the death of a patient and caring for the dead body ( $p = 0.000$ ), collaborating with professional caregivers in healthcare facilities ( $p = 0.000$ ), organising their work in caring for patients ( $p = 0.000$ ), performing administrative tasks ( $p = 0.000$ ), performing professional duties related to COVID-19 ( $p = 0.000$ ). Students working in call centers also reported the difficulty of communicating with patients while tracing contacts ( $p = 0.000$ ). Despite the experiences mentioned above, most students (93.07%) reported that they believed they had been reliable members of the nursing team and had developed nursing-specific skills.

This appreciation of the experience, skills, and confidence gained in clinical practice during the COVID-19 pandemic has also been shown in a Spanish study ( $n = 10$ ). The authors also reported the dominance of fear and uncertainty among students; especially at the beginning of the pandemic when they did not know what to expect, how the team would function, and what rules to follow (Casafont et al., 2021).

### Students’ experience of emotions during the pandemic

Study participants reported experiencing ambivalent emotions in the course of their job duties. They felt useful and



proud to be able to help during a global crisis. The most common positive emotions reported by respondents were *empathy* ( $n = 357$ ; 91.54%), *satisfaction* with performing their job duty ( $n = 323$ ; 82.82%), and *helpfulness* ( $n = 274$ ; 70.26%). For all reported positive emotions, differences were found by age of respondents. Increased emotional stability and resilience to stress were identified in older respondents ( $p = 0.000$ ). In a similar study ( $n = 368$ ), respondents were involved. In a similar study, various ambivalent feelings were also demonstrated in students, with students being negatively affected by anxiety and stress when performing nursing care on critically ill patients, and managing mechanical pulmonary ventilation (Hernández-Martínez et al., 2021). Even a study conducted on a larger number of respondents ( $n = 2292$ ) is consistent with our results, confirming that, due to their older age and maturity, older students may be able to manage the situation more effectively (Shorey et al., 2021).

Despite the threats posed by COVID-19, all respondents were willing to take up the challenge. They had to very quickly learn to work with healthcare providers to minimise the overload on the healthcare system. The students had never encountered a situation like the COVID-19 pandemic before. They reported experiencing negative emotions such as *regret* ( $n = 118$ ; 30.26%), *fatigue and exhaustion* ( $n = 116$ ; 29.75%), *nervousness* ( $n = 78$ ; 20.00%), and *fear* ( $n = 68$ ; 17.44%). According to the respondents' statements, the frequency of negative emotions differed according to gender for experiencing fear ( $p = 0.049$ ), worrying about one's health ( $p = 0.010$ ), and also declaring tiredness and exhaustion ( $p = 0.004$ ). The frequency of the mentioned negative emotions was more frequently observed in women. Another study focusing on the feelings of frontline general nurses during the COVID-19 pandemic in the Czech Republic, identified predominantly negative emotions such as exhaustion, fatigue, work overload, numbness to the situation, sadness, homesickness, helplessness, anger, and resentment (Shivairová et al., 2023).

### **Attitude toward continuing in the profession**

Students saw the experience of performing state-mandated work as an opportunity to improve their skills in clinical practice ( $n = 363$ ; 93.07%), as well as to gain independence in providing professional patient care ( $n = 318$ ; 81.53%) without having full responsibility for the patients. The respondents valued the opportunities to learn to cope with adversity and grow professionally. Most of the students ( $n = 369$ ; 94.61%) gained new knowledge and the opportunity to learn something about teamwork. For the first time, students felt that they belonged to a team as colleagues and not students – as also evidenced in the Barisone et al. (2022) study. A positive finding from the study was that more than four-fifths ( $n = 349$ ) of the students liked the job and would like to do it in the future. This finding is consistent with a study conducted in five different regions of the USA, where 65.1% of nursing students reported that the COVID-19 pandemic had reinforced their desire to become general nurses (Michel et al., 2021). A Belgian study also demonstrated high levels of study engagement and overall low levels of willingness to quit. A total of 1,079 students

reported feeling competent, connected to a team, and able to be themselves when providing care to the patients. However, they also agreed that they were exposed to an overload of work and study (Duprez et al., 2021). In our cohort, a higher study load was reported by university students.

### **Strengths and limitations of the study**

The main strength of the study is its cross-sectional design. As far as the authors are aware, it is the only study of this scope conducted on persons in professional training for the nursing profession (practical, general). A limitation of the study is the questionnaire format, which required the voluntary participation of respondents. The study involved mostly motivated respondents, making it impossible to discover the opinions in the unmotivated section of the population.

## **Conclusion**

The state-mandated work provided students a unique opportunity to get closer to the future professional reality and to integrate the acquired theoretical knowledge with practical skills. Professional identity is directly related to students' persistence in nursing.

The study results confirmed that the impact of work responsibilities on the respondents' studies was significant. However, students still reported that they liked their jobs and would like to continue in this profession in the future. The greatest benefits for the students were gaining new knowledge and practical skills in patient care, strengthening their critical thinking skills, independence in clinical decision-making, and autonomy in performing professional activities.

The results of the study could provide useful guidance in the preparation of nursing students. The results could also identify areas where further research is needed to improve the ability to respond to public health emergencies. Appropriate preparation of students to deal with emergencies could help to eliminate nursing students dropping out due to fears and feelings of failure in relation to their future profession.

The study could be a starting point for further follow-up studies in the area of analysis of students' experiences in providing health care to patients in exceptional situations (e.g. pandemics, natural disasters). In future follow-up studies, we recommend including a question about students' previous education in order to identify previous competencies achieved.

### **Ethical aspects and conflict of interest**

The authors are unaware of any potential conflict of interest. The data were collected anonymously, and the data set is available upon request from the corresponding author.

### **Author contributions**

Conception and design (VŽ, DD), data collection (VŽ, DD), data analysis and interpretation (VŽ, DD), manuscript draft (VŽ), critical revision of the manuscript (DD, PB, AP), final approval of the manuscript (DD, AP).

## Pandemie COVID-19 očima studentů oboru praktická a všeobecná sestra

### Souhrn

**Cíl:** Zhodnotit zkušenosti studentů oboru praktická a všeobecná sestra v době pandemie COVID-19 a jejich pohled na pracovní povinnost.

**Metody:** Průřezová studie s využitím originálního online dotazníku. Statistická analýza (Pearsonův chí-kvadrát test, Kruskal-Wallisův test, test pořadové nezávislosti a Spearmanova korelace) byla provedena na hladině významnosti 0,05.

**Výsledky:** Průzkumu se zúčastnilo 390 studentů oboru praktická a všeobecná sestra. Studenti ze střední zdravotnické školy pracovali pod dohledem častěji než studenti z vyšších odborných škol a univerzity ( $p = 0,000$ ). Deklarovaná emoční stabilita a subjektivní pocit odolnosti vůči stresu se zvyšovaly s rostoucím věkem respondentů ( $p = 0,000$ ). Frekvence negativních emocí se lišila mezi pohlavími. Četnost deklarovaných negativních emocí „strach“ ( $p = 0,049$ ), „obavy o své zdraví“ ( $p = 0,010$ ) a „únava a vyčerpání“ ( $p = 0,004$ ) častěji deklarovaly ženy.

**Závěr:** Respondenti deklarovali významný dopad státem nařízené pracovní povinnosti na studium. Navzdory výsledkům studenti uváděli, že jsou se svou prací spokojeni a rádi by v ní pokračovali i v budoucnu (61,28 %). Největším přínosem pro studenty ošetřovatelsví bylo získání nových znalostí a praktických dovedností v péči o pacienty (80,51 %). Studenti deklarovali, že přínosem bylo posílení dovedností v jejich kritickém myšlení (88,72 %), získání samostatnosti při klinickém rozhodování (87,18 %) a také výkon odborných činností (81,20 %).

**Klíčová slova:** klinická praxe; pandemie COVID-19; pracovní povinnost; studenti

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