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RESEARCH ARTICLE

Mental Health Status and the Readiness of Nursing Students to Serve During the COVID-19 Pandemic

Naime Brajshori¹, Leonora Paice¹, Iliriana Alloqi Tahirbegolli¹, Antigona Dervishaj Ukehaxhaj^{2,3}, Blerta Kryeziu⁴, Derya Gogebakan Yildiz⁵, Flaka Hoti¹, Shkelzen Osmani⁶ and Bernard Tahirbegolli^{7,8,*}

¹Nursing Department, Heimerer College, Prishtina, Kosovo

²Nursing Department, "Fehmi Agani" University of Gjakova, Gjakova, Kosovo

³Department of Ecology, Institute of Public Health of Kosovo, Prishtina, Kosovo

⁴Nursing Department, Faculty of Medicine, "Hasan Prishtina" University of Prishtina, Prishtina, Kosovo

⁵Department of Educational Sciences, Faculty of Education, Manisa Celal Bayar University, Manisa, Turkey

⁶Suchtabteilung, Bezirkskrankenhaus Bayreuth, Bayreuth, Germany

⁷Department of Health Institutions and Services Management, Heimerer College, Prishtina, Kosovo

⁸National Sports Medicine Centre, Prishtina, Kosovo

Abstract:

Aims:

This study aims to assess the state of mental health of nursing students in Kosovo and their willingness to provide professional health services for individuals at risk during the COVID-19 pandemic.

Methods:

In this cross-sectional survey, undergraduate nursing students from three higher education institutions in Kosovo participate from May 25, 2020, to June 5, 2020. Data was collected through a structured, anonymous, self-directed questionnaire via the online platform-google forms. Questions about nursing knowledge, skills and competencies, and willingness to work, if necessary, in healthcare facilities in Kosovo before graduation during the COVID-19 pandemic, were organised according to the Likert scale.

Results:

Four hundred and seventy-two nursing students (82% female; and mean age 20.3±1.8 years) participated in the study. 18.2% of students required further evaluation for depression, 48.3% for anxiety, and 30.7% for stress. 77.8% of students agreed that they had acquired sufficient knowledge, 80.6% that they had sufficient skills, and 75.9% that they had sufficient competencies, during their studies, to work as nurses. Female students had higher stress (8.55±4.06) and anxiety scores (6.65±4.08) compared to their male counterparts (7.46±4.35; and 5.02±4.07; respectively) (p<0.05). There was no statistically significant difference among categories of stress, anxiety and depression, and nursing student's willingness to work or not during COVID-19 pandemic (p>0.05).

Conclusion:

Most nursing students in Kosovo appear ready and willing to join qualified nurses in healthcare institutions in delivering health services during the COVID-19 pandemic.

Highlights:

Most nursing students are willing to provide health services during the pandemic.

The female students had higher stress and anxiety scores than their counterparts.

This study discovered that students needed psychological support during the pandemic.

Serving during the pandemic will put into practice problem-solving skills.

Keywords: Nurse, Students, COVID-19, Practice, Pandemic, Anxiety.

Article History

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1. INTRODUCTION

The COVID-19 pandemic set a precedent in which numbers of healthcare staff were - as a direct result of staff infection with COVID-19 and the increased demand for care caused by the pandemic - insufficient to provide healthcare to patients [1].

This was also associated with a climate of anxiety, fuelled by uncertainty over new ways of living and working during lockdowns, existential anxiety at the increased risk of sudden death, and, for some, a dramatic reduction in financial security [2].

Nursing students, in particular, faced not only the sudden transition to online learning, in common with other higher education students but also the sudden withdrawal of opportunities to learn through clinical practice. This added to their anxieties about being able to finish their studies on time and begin to contribute fully to the care of patients [3].

Countries including the UK and Spain allowed nursing students to be deployed in the front line to augment depleted healthcare staffing [4]. This was not a completely innovative intervention, as it had already been seen elsewhere during previous outbreaks of SARS and MERS [5].

As the pandemic developed in Kosovo, health systems were confronted with unfamiliar situations and support was needed for institutions providing crisis management in the COVID-19 response. In addition to professional healthcare staff, Kosovo also called upon medical students, and specifically nursing students, to assist in the response [6 - 8].

While still undergraduates, nursing students found themselves being asked to help respond to a global challenge of unprecedented proportions. Participation in this crisis response is likely to bring feelings of insecurity and anxiety while coping with a new reality [8].

As Kosovo is a relatively new country, we were interested to assess whether and to what extent nursing students in Kosovo showed a ready willingness to be deployed during the pandemic, providing professional healthcare services for individuals at risk of infection with COVID-19. This study also aims to examine the ways their mental health was affected by the challenges associated with the pandemic.

2. MATERIALS AND METHODS

In this cross-sectional survey, bachelor-level undergraduate nursing students from three institutions (Heimerer College, "Hasan Prishtina" the University of Prishtina and "Fehmi Agani" the University of Gjakova) in Kosovo participate from May 25, 2020, to June 5, 2020. The study protocol was approved by the Institutional Review Board of Heimerer College (Prot. No: 143-20). The procedures of this study complied fully with the provisions of the Helsinki Declaration on research on human participants. Data was collected through a structured, anonymous, self-directed questionnaire, including

socio-demographic characteristics and the Depression, Anxiety and Stress Scale (DASS-21) questionnaire via the online platform [9]. The internal consistency coefficients of the Albanian version of DASS-21 were found to be 0.85 for depression, 0.81 for anxiety and 0.80 for stress subscales in the research done by Basha & Kaya [10]. Questions about nursing knowledge, skills and competencies, and willingness to work, if necessary, in healthcare facilities in Kosovo before graduation during the COVID-19 pandemic were organised according to the Likert scale, (1-5): Strongly disagree (1), disagree (2), neither agree nor disagree (3), agree (4), and strongly agree (5).

All participants provided informed consent electronically before enrolment. Participation in the study was on a voluntary basis. In Kosovo, there were 4055 nursing students in total. A sample size calculation based on an error margin of 5%, a 95% confidence level, and a response distribution of 50% were performed for this study at the sample size calculator website: <http://www.raosoft.com/samplesize.html>, and the result was 351. Inclusion criteria include male and female students and first- through third-year nursing students at one of the three institutions chosen for the study. Potential participants were excluded from participating because of the following factors: graduation from the nursing program, work as a nurse, enrollment in other medical sciences study programs, and enrollment at another university, not giving consent to participate, and not completing the questionnaire to the end.

The Statistical Package for the Social Sciences software (SPSS version 21.0) was used for data analysis [11]. Frequencies (n) and percentages (%) were used to summarise categorical variables, and continuous variables are summarised with mean±standard deviation (SD). The chi-square (χ^2) test and contingency tables were used to compare the frequency of categorical variables. The variables about nursing students' willingness to work, if necessary, in healthcare facilities in Kosovo before graduation during the COVID-19 pandemic, as well as anxiety, stress and depression, were considered as dependent variables in the multiple linear logistic regression analyses conducted. For all statistical tests, a p-value of <0.05 was considered statistically significant.

3. RESULTS

Four hundred and seventy-two bachelor-level nursing students, with a mean age of 20.3±1.8 years, 82% (n=387) female and 18% (n=85) male, participated in the study. Third-year students made up 37.5% of students participating in the study (n=177), and the majority of students (53.0%) were living in an urban setting (Table 1). As indicated in Table 2, 39.6% of students said they would not be prepared to work 12 or 24 hours shifts in healthcare institutions during the COVID-19 pandemic. As shown in Table 2, 77.8% of students felt that they had acquired sufficient knowledge, 80.6% that they had acquired sufficient skills, and 75.9% that they had acquired sufficient competencies, during their studies to work as nurses. There was no statistically significant difference in the distribution of students' responses about their willingness to work in healthcare institutions during the COVID-19 pandemic according to their year of study (Table 3) (p>0.05).

* Address correspondence to this author at the Department of Health Institutions and Services Management, Heimerer College, Prishtina, Kosovo; E-mail: btahirbegolli@gmail.com

Table 1. Sociodemographic characteristics of study group.

-	n(%)
Age (years) mean±SD	20.3±1.8
Gender	-
Male	85(18.0)
Female	387(82.0)
Institution	-
Heimerer College	194(41.1)
University of Prishtina	117(24.8)
University of Gjakova	161(34.1)
Year of study	-
1 st	162(34.3)
2 nd	133(28.2)
3 rd	177(37.5)
Living setting	-
Urban	250(53.0)
Rural	222(47.0)
Chronic Condition	-
Yes	21(4.4)
No	451(95.6)

Table 2. Students' feelings about their nursing knowledge, skills and competences, and willingness to work before graduation, during the COVID-19 pandemic.

-	Strongly Disagree n(%)	Disagree n(%)	Neither Agree Nor Disagree n(%)	Agree n(%)	Strongly Agree n(%)
Would answer positively a call to work in healthcare institutions	3(0.6)	10(2.1)	41(8.7)	179(37.9)	239(50.6)
Would work only in units without Covid-19 infected patients	65(13.8)	140(29.7)	89(18.9)	111(23.5)	67(14.2)
Would work anywhere in healthcare institutions	4(0.8)	16(3.4)	75(15.9)	173(36.7)	204(43.2)
Would be prepared to work in institutions with 12 or 24 hr shifts	65(13.8)	122(25.8)	108(22.9)	118(25.0)	59(12.5)
Consider they had gained sufficient knowledge to work as a nurse	11(2.3)	24(5.1)	70(14.8)	235(49.8)	132(28.0)
Consider they have sufficient skills to work as a nurse	10(2.1)	20(4.2)	62(13.1)	224(47.5)	156(33.1)
Consider they've gained sufficient competences to work as a nurse	4(0.8)	33(7.0)	77(16.3)	224(47.5)	134(28.4)

Table 3. Students' willingness to work in healthcare institutions during Covid-19 pandemic.

Year of Study	Disagree n(%)	Agree n(%)	Neither Agree Nor Disagree n(%)	p
1 st	6 (1.3)	139 (29.4)	17 (3.6)	0.422
2 nd	4 (0.8)	116 (24.6)	13 (2.8)	
3 rd	3 (0.6)	163 (34.5)	11 (2.3)	

As shown in Table 4, 18.2% of students required further evaluation for depression, 48.3% for anxiety and 30.7% for

stress. As shown in Table 5, female students had higher stress and anxiety scores compared to their male counterparts ($p<0.05$).

Table 4. Mental health according to DASS-21 categories

-	Depressive Symptoms n(%)	Anxiety Symptoms n(%)	Stress Symptoms n(%)
Normal	386 (81.8)	244 (51.7)	327 (69.3)

(Table 4) contd.....

-	Depressive Symptoms n(%)	Anxiety Symptoms n(%)	Stress Symptoms n(%)
Mild	48 (10.2)	119 (25.2)	139 (29.4)
Moderate	37 (7.8)	95 (20.1)	6 (1.3)
Severe	1 (0.2)	14 (3.0)	0 (0)
Extremely severe	0 (0)	0 (0)	0 (0)

Table 5. Mental health status of nursing students by gender

-	Gender	Mean±SD	-
Stress	F	8.55±4.06	t=2.22, p=0.036
	M	7.46±4.35	
Anxiety	F	6.65±4.08	t=3.33, 0.001
	M	5.02±4.07	
Depression	F	5.45±4.37	t=0.57, p=0.571
	M	5.15±4.78	

Analysed with ANOVA, there was no statistically significant difference in stress ($F=0.99$, $p=0.373$), anxiety ($F=0.45$, $p=0.633$), and depression scores ($F=1.79$, $p=0.168$) according to the year of study of nursing students. Analysed according to a chi-square test, there was no significant statistical difference in nursing students' willingness, or lack of willingness, to work during the Covid-19 pandemic between those with different stress, anxiety or depressive symptoms score categories ($p>0.05$).

Only the age ($\beta:0.090$, 95%CI: -0.070-0.000), gender ($\beta:0.093$, 95%CI: 0.05-0.330), self-consideration about having acquired sufficient skills ($\beta: 0.142$, 95%CI: 0.043-0.188), and anxiety ($\beta:-0.100$, 95%CI: -0.032 - -0.002) variables were found to be significant predictors in the multiple linear regression analysis for the dependent variable, the nursing students' willingness to work during COVID-19 pandemic, if necessary ($p<0.05$). Age ($\beta: 0.065$, 95%CI: -0.254-0.003), depression ($\beta: 0.453$, 95%CI: 0.352-0.489), and anxiety ($\beta: 0.412$, 95%CI: 0.339-0.488) were discovered to be significant predictors when stress was the dependent variable in the regression analysis ($p<0.05$).

The multiple linear regression model identified the following variables as significant predictors of depression: gender ($\beta: 0.079$, 95%CI: 0.234-1.596), students self-consideration having acquired sufficient knowledge ($\beta: 0.081$, 95%CI: 0.070-0.737), and competences ($\beta: -0.102$, 95%CI: -0.882 - -0.185), stress ($\beta: 0.511$, 95%CI: 0.490-640), and anxiety ($\beta: 0.312$, 95%CI: 0.246-0.427) ($p<0.05$). However, no other statistically significant predicting individual factors that did control the variables were identified ($p>0.05$).

4. DISCUSSION

The main findings of our study showed that 88.5% of nursing students would be prepared to work as nurses in healthcare institutions during the COVID-19 pandemic in Kosovo. But only 37.5% would be willing to work in 12 or 24 hours shifts. Most of the students agreed that they had acquired sufficient knowledge (77.8%), had sufficient skills (80.6%), and had sufficient competencies (75.9%) to work as nurses.

Gouda *et al.*, showed in their study that 69% of students were willing to volunteer in the event of a natural disaster and about 59% during an infectious epidemic, but only 23.7% thought that their actual skill level would be useful in an emergency situation [12]. In the study by Yonge *et al.*, 70.7% of nursing students believed that they had a professional obligation to volunteer during a pandemic, and about 68% were likely to volunteer in the event of a pandemic if they could do so. This proportion increases (77.4%) if they are provided with personal protective equipment [13]. In their study of Belgian medical students, Mortelmans *et al.*, found that 82% would care for pandemic patients if needed, and half of them (41%) would do so if these patients were children, but only about 19% thought they were sufficiently educated about H5N1 [14].

Another study in Denmark by Astorp *et al.*, produced similar results, with 80% of medical students willing to join the healthcare workforce during a pandemic emergency [15]. Similar results were shown in the study by Elsheikh *et al.* in Sudan, a developing country, where about 81% of students were willing to participate in COVID-19 response efforts, and the main reason stated for refusal was to avoid becoming infected [16].

Similarly, a systematic review by Martin *et al.*, showed that health students "were capable and willing to be involved in health emergencies" [17].

The mental health of nursing students, how this might be negatively affected by their potential involvement in pandemic response, and the longer-term consequences should be taken into consideration in considering their potential deployment in healthcare institutions.

In our study, we found that about a fifth of students needed further assessment for depression, nearly half of them for anxiety and one third for stress. In terms of gender differences, female students had higher stress and anxiety scores compared to male students.

Gallopeni *et al.* (2020), showed in their study that 45% of healthcare professionals in Kosovo had symptoms of anxiety and 39% had symptoms of depression during the COVID-19 pandemic. Female health professionals had a higher proportion

of symptoms of anxiety and depression compared to their male counterparts [18]. Symptoms of depression, anxiety, insomnia, and distress were also higher in females than in males in research conducted by Lai *et al.*, where female healthcare care workers reported a prevalence of 14% for depression, 25% for anxiety, and 32% for distress [19]. Similarly, Birimoğlu Okuyan, Karasu and Polat (2020) showed in their study that nursing students had high levels of health anxiety during the pandemic, felt overwhelmed, nervous, and feared virus contamination and death [20]. In addition, this research showed that nursing students needed psychological support during the pandemic. The findings showed no significant difference between years of study, in terms of students' willingness to work in healthcare institutions during the Covid-19 pandemic. Similarly, there were no significant differences in mental health status of nursing students by year of study. The other findings of our study showed that female students had higher stress and anxiety scores compared to their male counterparts. These results were similar to those of Hammond *et al.*, (2020) and Savitsky *et al.*, (2020) [21, 22]. In their study, Hammond *et al.* consider that these results may be related to the prevalence of psychological symptoms in the general population, or that women are more likely to have self-reported mental health problems than men [21].

Finding roles best suited to students' experience, and compliant with the regulations and protocols in place, should be a priority. This will enable the necessary legal procedures regarding nursing licensing to be put in place to facilitate the effective deployment of nursing students, to avoid possible burn-out and/or legal repercussions related to their work in the pandemic response.

Undergraduate medical students have a track record of providing valuable services during previous outbreaks of infectious diseases, and in the current COVID-19 pandemic. Nevertheless, experience has shown that they need to be trained in advance and must be aware of their specific roles to avoid putting them in situations of dilemma or anxiety [23].

Nursing is a key profession in the provision of care for COVID-19 patients and places its practitioners in risky work settings. For this reason, it is recommended that students are empowered to adapt health literacy to the work situations in which they find themselves during the pandemic and are provided with updated information and guidance. In addition, organising ongoing professional and scientific training (seminars, workshops, *etc.*) throughout such deployments, as well as during nursing education itself, will help ensure adequate health literacy suitable for the situations in which nursing students find themselves [24].

This study had a number of limitations. The first, data collection period did not capture all pandemic waves or changes in the number of new COVID-19 infections. Second, students of other medical sciences were not recruited; only nursing students were. Thirdly, subjectivity risk exists because data collection was done online due to the increased risk of infection.

CONCLUSION

In conclusion, a majority of nursing students in Kosovo

appear to be ready and willing to join qualified nurses in healthcare institutions in delivering health services during the COVID-19 pandemic. The involvement of nursing students in managing the pandemic is likely to be necessary to help alleviate the workload of healthcare workers. In addition, it will provide rich opportunities, unavailable elsewhere, for students to learn and put into practice critical thinking and problem-solving skills, and practice specific critically important nursing roles as part of the pandemic response. This will supplement the training already provided by their undergraduate curricula.

AUTHORS' CONTRIBUTIONS

Paice MD and Tahirbegolli MD., PhD. had full access to all of the data in the study and took responsibility for the integrity of the data and the accuracy of the data analysis.

Concept and Design: Paice, Brajshori, Alloqi Tahirbegolli, Dervishaj Ukehaxhaj, Kryeziu, Hoti, and Tahirbegolli

Acquisition, Analysis, or Interpretation of Data: Paice, Brajshori, Alloqi Tahirbegolli, Dervishaj Ukehaxhaj, Kryeziu, Gogebakan Yildiz, Hoti, Osmani, and Tahirbegolli

Drafting of the Manuscript: Paice, Brajshori, Alloqi Tahirbegolli, Dervishaj Ukehaxhaj, Kryeziu, Gogebakan Yildiz, and Hoti.

Critical Revision of the Manuscript for Important Intellectual Content: Paice, Brajshori, Alloqi Tahirbegolli, Dervishaj Ukehaxhaj, Kryeziu, Gogebakan Yildiz, and Tahirbegolli.

Statistical Analysis: Paice, Hoti, and Tahirbegolli

Administrative, Technical, or Material Support: Paice, Alloqi Tahirbegolli, Dervishaj Ukehaxhaj, Kryeziu, and Hoti.

Supervision: Brajshori, Osmani, and Tahirbegolli.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

The study protocol was approved by the Institutional Review Board of Heimerer College (Prot. No: 143-20).

HUMAN AND ANIMAL RIGHTS

No animals were used for studies that are the basis of this research. All the humans were used in accordance with the ethical standards of the committee responsible for human experimentation (institutional and national), and with the Helsinki Declaration of 1975, as revised in 2013 (<http://ethics.iit.edu/ecodes/node/3931>).

CONSENT FOR PUBLICATION

Informed consent was obtained from all participants of this study.

STANDARDS OF REPORTING

STROBE guidelines were followed.

AVAILABILITY OF DATA AND MATERIALS

The data that support the findings of this study are

available from the corresponding author [B.T] upon reasonable request.

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None.

CONFLICT OF INTEREST

The authors declare no conflicts of interest, financial or otherwise.

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Declared none.

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