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RESEARCH ARTICLE

Assessment of Final Year Nursing Students' Willingness and Readiness to Work With Patients With COVID-19 During the Pandemic: A Cross-Sectional Survey

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Introduction: During the COVID-19 pandemic, Indonesia faced shortages of medical supplies and healthcare workers. With a limited supply of healthcare workers, we examined the possibility of bringing final-year nursing students into COVID-19 patient care.

Methods: We conducted a cross-sectional survey among final-year nursing students to assess their willingness and readiness to work with patients with COVID-19 in Indonesia. We recruited 1,028 final-year nursing students in East Java, Indonesia, during October 7–20, 2021. Data were collected using an online questionnaire designed for this study using Google Forms. Response data were extracted from Google Forms to MS Excel 2016 for analysis. We performed univariate analysis for descriptive statistics, followed by multivariate analysis using binary logistic regression to analyze the effect of independent variables on study outcomes.

Results: The characteristics of the study participants showed that most respondents were female (97.1%) and of Javanese ethnicity (75.3%). More than 90% of participants reported no chronic diseases (96.2%) and were vaccinated (81.4%). Most participants were willing to work (84.3%) and ready to work (94.4%) with patients with COVID-19. Adjusted analysis showed that sex, type of institution, ethnicity, household condition, and history of chronic diseases were independent determinants of willingness to work with patients with COVID-19. Male and private university students were significantly more willing to work with patients with COVID-19.

Conclusions: Nursing students were willing to work with patients with COVID-19 during the pandemic; however, a longitudinal study is recommended for trend analysis.

INTRODUCTION

The coronavirus disease 2019 (COVID-19) pandemic has resulted in millions of cases and deaths worldwide.[1] It has created a significant public health problem and has threatened to overwhelm healthcare systems since severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) appeared in Wuhan, China, in December 2019.

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The WHO declared COVID-19 a global pandemic in March 2020.[2]

Indonesia officially reported its first case on March 2, 2020.[3] The government was unprepared and lacked the resources to deal with the emergence and rapid spread of COVID-19. Among Southeast Asian countries, Indonesia reported the highest incidence of COVID-19 infection. The number of cases in Indonesia reached 125,396 per week by July 1, 2021.[4] This situation compelled the Indonesian government to announce the implementation of emergency restrictions on public activities from July 3 to 20, 2021.[4] Despite these restrictions, the number of cases continued to increase. Factors contributing to the increasing number of cases may have been influenced by the emergence of new COVID-19 variants and the citizens traveling to their hometowns for Eid, a major Islamic holiday, and then returning to urban centers.[5] During the COVID-19 pandemic, Indonesia's healthcare system has tried to keep up with the infection surge.

Hospitals are a major source of COVID-19 infection transmission, and healthcare workers (HCWs) have become central to responding to the pandemic. HCWs are among the most vulnerable to infection and mental health impacts owing to their professional exposure.[6] Nurses have a much greater chance of infection than other healthcare professionals owing to the long periods of interaction with patients and inappropriately balanced nurse−patient ratios due to a shortage of nurses.[7]

The Indonesian health system continues to struggle owing to increasing COVID-19 cases. Shortages in medical supplies and HCWs have worsened the situation. Since the beginning of the pandemic, 545 physicians, 445 nurses, 223 midwives, 42 pharmacists, and 25 laboratory workers have died.[8] These conditions threaten the potential functional collapse of Indonesia's healthcare systems.

The COVID-19 crisis forced the Indonesian government to employ special materials and human resources to support the health service infrastructure. Indeed, the Ministry of Health issued Circular Number HK.02.01/MENKES/4394/2020 to allow hospitals to hire Indonesian healthcare students in the final year of their 5-year bachelor's degrees to reinforce staffing levels. In Indonesia, the legality of registration certificates (i.e., STR) for health workers in carrying out their duties at any hospital is an administrative requirement. However, since the COVID-19 pandemic, these provisions have been relaxed and even allowed health workers to practice without having an STR with the supervision of a licensed practitioner. Students who work with patients with COVID-19 will be supervised by professional HCWs while continuing their studies through an online platform. A similar strategy has been adopted in other countries, such as the United Kingdom,[9] with the same benefits as nursing care assistants. Similarly, Yonge et al.[10] explained that nursing students might serve as much-needed human resources in events such as pandemics.

During the COVID-19 pandemic, HCWs have experienced high levels of stress and an increased likelihood of psychological morbidities.[11] Nursing schools or similar programs must cover the development of specific skills such as resilience to prepare students to deal with crises, which can have a positive impact on learning how to handle infectious disease outbreaks.[12,13] Studies on volunteering to work during the COVID-19 pandemic have been conducted worldwide. A cross-sectional study of knowledge, confidence, and willingness regarding COVID-19 among Spanish healthcare students revealed that their knowledge of community prevention measures was adequate; their willingness and moral responsibility were also high. However, they had little confidence in treating COVID-19 cases.[14]

A similar study of final-year nursing students demonstrated that they lack confidence and feel unprepared in responding to a crisis.[15] Another study in Indonesia among undergraduate medical students indicated that many are willing to volunteer; however, fear of their personal health, limited availability of medical services, and fear of harming patients are the primary factors preventing them from volunteering.[16]

During unprecedented events such as pandemics, HCWs deal with mass casualties, distress, limited medical supplies, and the need for assistance.[17] Likewise, Indonesia has no experience with severe pandemics in the past. Little is known about final-year nursing students' willingness and readiness to practice during the COVID-19 pandemic in Indonesia. This study follows a circular issued by the Indonesian government and efforts to address the shortage of healthcare providers amid the surge of COVID-19 infections. Investigating these aspects is remarkably important to assess students' preparedness to deal with the pandemic, explore their views on public health policy measures taken in Indonesia during the pandemic, and provide data for developing nursing curricula to train for future public health emergencies. Therefore, this study examined final-year nursing students' willingness and readiness to work with patients with COVID-19 in East Java, Indonesia.

METHODS

Study Participants

A cross-sectional survey was conducted among undergraduate nursing students from October 7 to 20, 2021.

The study assessed nursing students' willingness and readiness to work with patients with COVID-19 during the final year of the program and their perspectives on the effectiveness of the first public health measure in Indonesia, Circular Number HK.02.01/MENKES/4394/2020, issued to reinforce staffing levels.

The study population included final-year undergraduate nursing students from East Java, Indonesia. Obtaining the exact number of final-year nursing students across East Java is challenging. Our best estimate was 2,027 nursing students. We calculated the estimated final-year nursing students on the basis of the number of academic nursing institutes in East Java and the average number of students enrolled per institute. We calculated the minimum required sample size using the Raosoft sample calculator[18] with a 5% margin of error and a 90% CI, resulting in a minimum sample size of 239 respondents.

Research assistants (RAs) designed Google Forms and disseminated online questionnaires to nursing students through research collaborators from each nursing school. We used emails and WhatsApp numbers to disseminate survey questionnaires to students. All data were collected using an online self-reporting questionnaire. The self-report questionnaire was delivered through students' e-mail and WhatsApp. The online questionnaire consisted of 29 items, devised using Google Forms. Independent variables in this study included sex, age, type of institution, ethnicity, marital status, household composition or structure, family income, history of chronic diseases, and COVID-19 vaccination status. The primary study outcome was the willingness and readiness of final-year nursing students to work with patients with COVID-19. The secondary outcome was the students' opinions about Indonesia's first public health policy measures regarding the COVID-19 pandemic.

Measures

The initial questionnaire was drafted in English and translated into Bahasa Indonesia. The questionnaire was developed through a literature search[14–16,19] of published articles in the English language, the contents of which were modified to fit the Indonesian context. We used a professional translator with a Master of Teaching English as a Second Language to verify whether the 2 languages had equal weights and meanings. Before being sent to respondents, the questionnaire was reviewed through consultation with independent public health experts to ascertain the appropriateness and sufficiency of its content. Subsequently, the questionnaire was pilot tested on participants with similar characteristics to assess both validity and reliability for item comprehension. Internal reliability was tested using Cronbach's alpha, which yielded coefficients of 0.868 and 0.681 for willingness and readiness, respectively, indicating high internal reliability. The questionnaire consisted of the following 3 sections:

- Social-demographic variables;
- Willingness and readiness to work with patients with COVID-19; and
- Views on the public health policy introduced in Indonesia during the COVID-19 pandemic.

The study collected sociodemographic characteristics, including age, sex, type of institution, ethnicity, marital status, household composition or structure, and family income. SES was determined per family income level as follows: incomes of less than IDR 1,500,000 are classified as low; incomes of IDR 1,500,000−2,500,000 are considered lower middle; incomes of IDR 2,500,000−3,500,000 are upper middle; and incomes more than IDR 3,500,000 are classified as high income.[16,20]

The second part focused on participants' willingness to work and treat patients with COVID-19, and the questions were structured on a 4-point Likert scale (1=totally disagree, 4=totally agree). The survey questions were adapted from previous studies on motivation and volunteering to treat COVID-19 cases.[14,19] The maximum score for each respondent was 28 (4 × 7), whereas the minimum score was 7 (1 × 7), where higher scores were denoted as very likely or likely willing to work with patients with COVID-19.

To assess the participants' readiness to work with patients with COVID-19, 11 questions were included. Readiness was determined on the basis of the knowledge, confidence, and attitude of nursing students based on a previous study.[14,19] Readiness was scored on a 4-point Likert scale (1=totally disagree; 4=totally agree), with the maximum score for each respondent being 44 (4 × 11), whereas the minimum score was 11 (1 × 11). Respondents with high scores were considered ready or very ready to work with patients with COVID-19.

The final section explored the students' perspectives on the public health policy regarding reinforcing staffing levels during the COVID-19 pandemic; these were collected through yes or no qualitative responses.

Statistical Analysis

After receiving the completed questionnaires, the principal investigator (PI) and RAs double checked them for their completeness and duplicate survey questionnaires

by matching emails and WhatsApp numbers. All questionnaires were collected and saved in 1 storage unit with a unique identification before data analysis. All data collection procedures followed the standard protocol. The RAs extracted survey data from Google Forms to MS Excel 2016, and an RA ensured the completeness of the data along with participant eligibility criteria. For any missing or incomplete data, an RA contacted the study participant using their e-mail or WhatsApp to collect the missing or incomplete data. This step minimized missing data. Confidentiality and data integrity were ensured; data were saved on a password-protected computer with the PI's office. For accuracy of the data, an RA and PI checked separately the completed survey questionnaire. Each completed survey was assigned a unique identification in the Excel file to create a clean file for analysis. Subsequently, the cleaned data set was analyzed using SPSS (version 24.0; SPSS Inc, Chicago, IL). Categorical and dichotomous data were presented as frequencies and proportions. An analysis of willingness and readiness was performed by dichotomizing the scores using cut off points. The lowest score for the willingness variable was 7, and the highest was 28. The sum of scores ≥50% (≥17.5 points) indicates the likelihood of willingness. The lowest score of the readiness variable was 11, and the highest was 44, and the sum of scores ≥50% (≥27.5 points) was denoted as very ready (well prepared).

Univariate statistics were performed using frequency distribution or descriptive statistics. We employed the chi-square correlation with crosstabs to examine the association of independent variables with willingness and readiness to work with patients with COVID-19. In addition, we conducted a multivariate analysis using binary logistic regression to analyze the effect of independent variables on variable outcomes. The significance level was set at $p<0.05$. Subsequently, the last section on student nurses' views on the public health policy is presented using frequency distribution, including reasons.

RESULTS

Description of Study Population

A total of 1,028 participants were included in this analysis, with a response rate of 50.7%. Most of the respondents were female (97.1%) and of Javanese ethnicity (75.3%). The number of study participants from public and private universities was almost equal. Most respondents (60.1%) lived with their families and were unmarried (87%) at the time of the survey. Nearly two thirds of participants considered themselves middle- or high-income families (71.9%). Participants were generally in good health, with no history of chronic diseases (96.2%). Most of the participants reported that they received 2 or 3 shots of COVID-19 vaccination (81.4%). Further details of the characteristics of the study participants are presented in Table 1.

Our study indicated that most participants were willing or very willing to work with patients with COVID-19 during the pandemic (84.3%), and most respondents (94.4%) were ready or very ready to work with patients with COVID-19. The willingness of students to work with patients with COVID-19 varied across sex, age, type of institution, household condition, and history of chronic diseases, whereas the readiness of students to work with patients with COVID-19 was largely determined by the type of institution and household conditions (Table 1).

Factors Associated With the Willingness and Readiness to Work With Patients With COVID-19 During the Pandemic

After adjusting for confounding factors, we determined that sex, type of institution, ethnicity, household condition, and history of chronic diseases were independent determinants of willingness to work with patients with COVID-19 (Table 2). Male students were 3.3 times more willing than females to work with patients with COVID-19 (95% CI=1.844, 6.005; p=0.000), whereas students from private universities revealed that they were more willing than their public counterparts (OR=2.43; 95% CI=1.631, 3.626; p=0.000). Nursing students from Madura Island (Madurese) were less likely to be willing to work with patients with COVID-19 than students from Java Island (OR=0.5; 95% CI=0.270, 0.967; p=0.039). In addition, participants living with their parents reported that they were 1.6 times more willing to work with patients with COVID-19 than those living independently (OR=1.63; 95% CI=1.094, 2.434; p=0.016). Finally, nursing students with a history of chronic diseases were less likely to be willing to work with patients with COVID-19 than those with no history (OR=0.42; 95% CI=0.197, 0.933; p=0.033). We found that nursing students who lived with their parents were better prepared (more ready) to work with patients with COVID-19 during the pandemic (OR=2.72; 95% CI=1.453, 5.120; p=0.002) than those who lived alone.

To further elaborate on our findings, we also explored nursing students' perspectives regarding the first public health policy established by the Indonesian government to strengthen staffing levels to address the pandemic. The results showed that approximately 850 nursing students (82.7%) agreed with Circular Number HK.02.01/MENKES/4394/2020, issued by the government. We found that obligation as a student nurse (70.4%) and shortage of HCWs (58.6%) were the main reasons that

Table 1. Characteristics of Participants Classified by the Indicator of Willingness and Readiness to Work With Patients With COVID-19

Variable	*n* (%)	Willingness, *n* (%)			Readiness, *n* (%)		
		Unwillingness, 161 (15.7)	Willingness, 867 (84.3)	*p*-value	Unprepared, 58 (5.6)	Prepared, 867 (94.4)	*p*-value
Sex							
Male	215 (20.9%)	14 (6.5%)	201 (93.5%)	**0.000**	9 (4.2%)	206 (95.8%)	0.298
Female	813 (97.1%)	147 (18.1%)	666 (81.9%)		49 (6.0%)	764 (94.0%)	
Age, years							
22	279 (27.1%)	54 (19.4%)	225 (80.6%)	0.053	21 (7.5%)	258 (25.1%)	0.179
23	365 (35.5%)	59 (16.2%)	306 (83.8%)		21 (5.8%)	344 (94.2%)	
24	384 (37.4%)	48 (12.5%)	336 (87.5%)		16 (4.2%)	368 (95.8%)	
Type of institution							
Public	505 (49.1%)	109 (21.6%)	396 (78.4%)	**0.000**	36 (7.1%)	469 (92.9%)	**0.042**
Private	523 (50.9%)	52 (9.9%)	471 (90.1%)		22 (4.2%)	501 (95.8%)	
Ethnicity							
Javanese	774 (75.3%)	118 (15.2%)	656 (84.8%)	0.134	39 (5.0%)	735 (95.0%)	0.151
Madurese	66 (6.4%)	16 (24.2%)	50 (75.8%)		7 (10.6%)	59 (89.4%)	
Others	188 (18.3%)	27 (14.4%)	161 (85.6%)		12 (6.4%)	176 (93.6%)	
Marital Status							
Not married	894 (87.0%)	143 (16.0%)	751 (84.0%)	0.447	55 (6.2%)	839 (93.8%)	0.067
Married and/or divorced	134 (13.0%)	18 (13.4%)	116 (86.6%)		3 (2.2%)	131 (97.8%)	
Household condition							
Alone	410 (39.9%)	80 (19.5%)	330 (80.5%)	**0.032**	38 (9.3%)	372 (90.7%)	**0.001**
Living with parents	480 (46.7%)	59 (12.3%)	421 (87.7%)		17 (3.5%)	463 (96.5%)	
Living with husband/wife/kids	104 (10.1%)	16 (15.4%)	88 (84.6%)		2 (1.9%)	102 (98.1%)	
Living with extended family	34 (3.3%)	6 (17.6%)	28 (82.4%)		1 (2.9%)	33 (97.1%)	
Family income							
<IDR 1,500,000	289 (28.1%)	44 (15.2%)	245 (84.8%)	0.382	14 (4.8%)	275 (95.2%)	0.869
IDR 1,500,000–IDR 2,500,000	260 (25.3%)	33 (12.7%)	227 (87.3%)		16 (6.2%)	244 (93.8%)	
IDR 2,500,000–IDR 3,500,000	220 (21.4%)	39 (17.7%)	181 (82.3%)		14 (6.4%)	206 (93.6%)	
>IDR 3,500,000	259 (25.2%)	45 (17.4%)	214 (82.6%)		14 (5.4%)	245 (94.6%)	
History of chronic diseases							
Yes	39 (3.8%)	11 (28.2%)	28 (71.8%)	**0.028**	2 (5.1%)	37 (94.9%)	0.887
No	989 (96.2%)	150 (15.2%)	839 (84.8%)		56 (5.7%)	933 (94.3%)	
Vaccination status							
None	12 (1.2%)	0 (0.0%)	12 (100.0%)	0.283	0 (0.0%)	12 (100.0%)	0.519
1 shot	179 (17.4%)	24 (13.4%)	155 (86.6%)		9 (5.0%)	170 (95.0%)	
2 shots	703 (68.4%)	118 (16.8%)	585 (83.2%)		44 (6.3%)	659 (93.7%)	
3 shots	134 (13.0%)	19 (14.2%)	115 (85.8%)		5 (3.7%)	129 (96.3%)	

Note: Boldface indicates statistical significance ($p<0.05$).

determined both willingness and readiness to work with patients with COVID-19. In contrast, 178 students (17.3%) were reluctant to adopt government policies. The most prominent reasons among those who disagreed were fear of family health (60.1%) and not receiving permission from parents (52.8%). Other reasons for their reluctance to work with patients with COVID-19 during the pandemic included fear of personal health (51.1%), fear of harming patients, scarcity of personal protective equipment, and absence of a cure (Figure 1).

DISCUSSION

As part of the future healthcare workforce, nursing students have played a significant role during the COVID-19 pandemic. Our results were generally consistent with those of published studies in which participants were able and prepared to work if required,[10,21,22] whose findings indicated that nursing students have better preparedness (84.3%) and a strong willingness (94.4%) to work with patients with COVID-19 because most of the students had received vaccinations (2 and 3 doses)

Table 2. Multivariate Analysis of Factors Associated With Willingness and Readiness to Work With Patients With COVID-19

	Willingness			Readiness		
Variable	**OR**	**95% CI**	***p*-value**	**OR**	**95% CI**	***p*-value**
Sex						
Male	3.328	(1.844, 6.005)	**0.000**	1.410	(0.665, 2.990)	0.370
Female	ref			ref		
Age, years						
22	ref			ref		
23	1.063	(0.695, 1.627)	0.778	1.242	(0.655, 2.357)	0.507
24	1.324	(0.814, 2.153)	0.258	1.428	(0.690, 2.956)	0.337
Type of institution						
Public	ref			ref		
Private	2.432	(1.631, 3.626)	**0.000**	1.493	(0.810, 2.755)	0.199
Ethnicity						
Javanese	ref			ref		
Madurese	0.511	(0.270, 0.967)	**0.039**	0.539	(0.222, 1.311)	0.173
Others	1.058	(0.635, 1.762)	0.830	0.907	(0.430, 1.914)	0.798
Marital status						
Not married	ref			ref		
Married and/or divorced	3.211	(0.695, 14.847)	0.135	1.976	(0.243, 16.081)	0.524
Household condition						
Alone	ref			ref		
Living with parents	1.632	(1.094, 2.434)	**0.016**	2.728	(1.453, 5.120)	**0.002**
Living with husband/wife/kids	0.312	(0.060, 1.606)	0.163	2.105	(0.168, 26.393)	0.564
Living with extended family	0.784	(0.296, 2.080)	0.626	3.025	(0.392, 23.345)	0.288
Family income						
<IDR 1,500,000	ref			ref		
IDR 1,500,000–IDR 2,500,000	1.306	(0.782, 2.182)	0.307	0.727	(0.337, 1.569)	0.417
IDR 2,500,000–IDR 3,500,000	0.880	(0.532, 1.456)	0.619	0.659	(0.298, 1.457)	0.302
>IDR 3,500,000	1.065	(0.650, 1.747)	0.801	0.868	(0.390, 1.933)	0.730
History of chronic diseases						
Yes	0.429	(0.197, 0.933)	**0.033**	1.131	(0.255, 5.011)	0.871
No	ref			ref		
Vaccination status						
None	ref			ref		
1 shot	0.000	(0.000)	0.999	0.000	(0.000)	0.999
2 shots	0.000	(0.000)	0.999	0.000	(0.000)	0.999
3 shots	0.000	(0.000)	0.999	0.000	(0.000)	0.999

Note: Boldface indicates statistical significance ($p<0.05$).

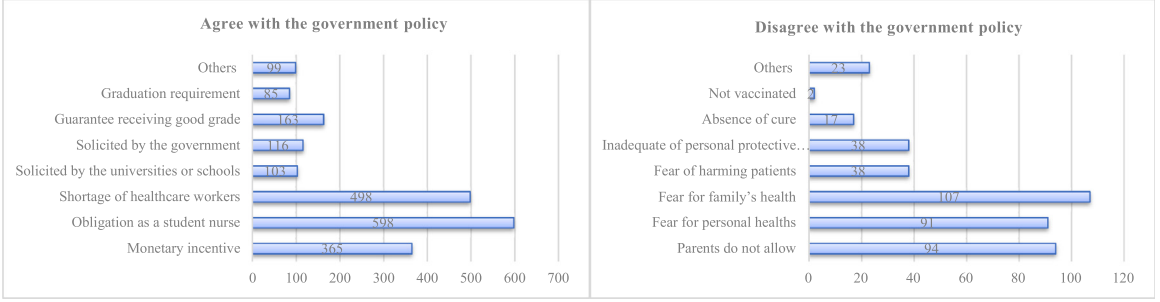

Figure 1. Students' views on public health policy measure taken in Indonesia during the COVID-19 pandemic.

during data collection. In addition to having better knowledge and a more positive attitude toward COVID-19, nursing students' vaccination status was correlated with nurses' confidence in working with patients with COVID-19.[23,24]

Furthermore, we found that male students had a higher willingness to work with patients with COVID-19 than female students (93.5%), which is consistent with previous studies.[16,25] The uncertainties of the pandemic, where HCWs are dealing with distress, limited medical supplies, and the need for assistance[17] may also lead to female students' fear of working with patients with COVID-19. Our findings differed from those of a study in China, where female nursing students were more likely to volunteer during emergencies than their male counterparts.[26]

In addition, students aged >24 years were more willing to work with patients with COVID-19. A likely reason for this finding could be that senior students take their nursing program while in service, which means they have greater knowledge and experience in clinical settings and may have greater confidence, particularly in dealing with emergencies. This is in line with the findings of a previous study on university nursing students' willingness to volunteer during the COVID-19 pandemic in Brunei Darussalam.[27] However, our findings differed from those of another study that reported that age was not significantly associated with students' willingness to serve as a volunteer during the COVID-19 pandemic.[28] Interestingly, an individual's history of chronic diseases affects their willingness; those who have no history of chronic diseases are more likely to work and practice with patients with COVID-19. Presumably, nursing students have demonstrated a better understanding of COVID-19 guidelines and protocols owing to massive publicly available information about the current pandemic. Nursing students' positive attitudes and willingness to promote their services during the pandemic are in line with findings from the study by Prisca et al.[28]

Moreover, ethnicity was a factor for nursing students during the pandemic. Our findings showed that nursing students from ethnic Madura were less likely to work with patients with COVID-19 than their Javanese counterparts. However, the association between these variables is based on findings from a cross-sectional survey, and future investigations should aim to elaborate on the possible reasons underlying these trends.

Further multivariate analysis highlighted that institution type and household condition contributed significantly to the assessment of student nurses' willingness. Our study is consistent with a previous study conducted in Indonesia regarding medical students' willingness to volunteer and readiness to practice.[16] The findings suggest that volunteering should be fostered to improve valuable knowledge and experiences for students' future careers. Our findings indicate that students from private universities had a strong willingness to work and practice with patients with COVID-19. This may be because the majority of private universities in our study are affiliated with religious organizations. Religious values were more likely to be associated with a strong motivational drive among nursing students to serve and volunteer. Similarly, during the pandemic, religious values contributed significantly to providing services in the name of humanity.[29]

Household conditions influenced nursing students' willingness to work with patients. Our findings differed from those of previous studies, in which living alone contributed significantly to an increase in willingness and readiness for nursing students to actively participate during health crises. One reason for this is that the health risks in a pandemic are limited in effect to the nursing students themselves. Because they are medically trained, they have a more accurate understanding of the risks and may feel more control over their own health outcomes if exposed to the virus. Therefore, participants in those studies reported fewer barriers to decisions about working with patients with COVID-19 when living by themselves than those living with family. Because COVID-19 is highly contagious, respondents identified fear of harming their family members or loved ones as the most prominent reason for reluctance to volunteer but also noted that by becoming sick themselves, they would be unable to help family members with medical needs.[14,30] In our study, however, we found that nursing students living with their parents or families reported a higher willingness to volunteer during the pandemic. Data from the open-ended question indicated that nursing students living with their parents felt a strong motivation to volunteer out of a sense of duty and moral obligation. Within the Indonesian family culture, moral obligation and duty are most strongly associated with parental respect and family expectations.

Moral obligation was also cited as a motivational drive among nursing students, who mostly strongly agreed with the government's policy of using nursing students to strengthen healthcare during the shortage of HCWs. Moral obligation was one of the most significant factors for students joining the nursing workforce, beyond the need for workers, owing to shortages and monetary incentives. These traits of moral obligation were also found in a study of Indonesian medical students who expressed a strong willingness to volunteer if medical staff shortages occurred.[16]

The situation in Indonesia also aligns with studies conducted in China,[26] Peru,[31] and Spain.[15] Yu found that 348 of 552 Chinese medical students agreed that

volunteering and joining the healthcare workforce during a pandemic should be based on professional obligations. In Peru, approximately 77% of participants expressed moral obligation as the most prevalent reason for volunteering during the influenza pandemic.[31] Similarly, a study of final-year Spanish nursing students indicated that professional obligation and moral commitment create a strong desire to volunteer or seek employment contracts, despite anxieties about health risks and readiness.[15] On the basis of these results, moral obligation is a fundamental value among healthcare professionals and nursing students worldwide, motivating them to report on duty or volunteer during pandemics.

Among the strong opponents of the government policy, the strongest resistance came from those with concerns about family or personal health risks and a lack of parental consent. Withholding of parental permission likely occurred because of the emphasis of Indonesian culture on interdependence. Living with parents while in college is acceptable and common. Consequently, individuals are more likely to obey what their parents say and are less likely to make their own decisions, including personal intentions to volunteer during the COVID-19 pandemic. These 3 top concerns of family health safety, parental permission, and personal health safety may also very likely reflect similar fears of immediate health risks. Nursing students may express caution out of fear for themselves or immediate family members. Likewise, parents may be reluctant to give permission out of concern that the nursing student is still a young professional and may not yet be ready to take on the greatest risks of their profession, especially prior to being fully credentialed. Our findings on the reasons for not volunteering were consistent with those of previous studies, where they found that students were less likely to volunteer owing to the deadly nature of the pandemic,[26] fear of harming their own family members,[21,32] and fear of being infected with the virus.[21]

The Indonesian health system continues to struggle as COVID-19 cases increase and shortages in medical supplies and HCWs have worsened the situation. Our study indicates a relatively positive attitude of students toward government efforts to handle the COVID-19 pandemic. These findings can be utilized for policy implementation to address COVID-19 and future pandemics.

The strength of our study lies in the large sample size. This allowed us to explore the factors that contribute to nursing students' willingness and readiness to work with patients with COVID-19. To the best of our knowledge, this is the first study assessing nursing students' willingness and readiness to work with patients with COVID-19 during their final year of study, when they are already practicing in a clinical setting. In addition, this is the first study in Indonesia involving nursing students' perspectives on the Indonesian government's health policy since the regulations were issued. However, the cross-sectional design limits the ability of this study to identify causation between variables, and the geographic focus of participants from nursing institutions in East Java limits the ability to generalize these findings. Future studies should explore the willingness and confidence of final-year nursing students to volunteer for general nursing activities compared with their willingness to volunteer for pandemic-specific activities. This could further our understanding of the extent to which nursing students can help support different types of HCW shortages.

CONCLUSIONS

Most study respondents, the final-year nursing students, are willing and ready to work with patients with COVID-19 during the pandemic. Factors such as sex, type of institution, ethnicity, household condition, and history of chronic diseases of the study participants are independent determinants of the willingness and readiness of the final-year nursing students to work with patients with COVID-19. Participants supported government policies and the health system in significant ways. Because our findings are based on a cross-sectional survey, we recommend further studies on trend analysis of students' willingness and preparedness to work during future pandemics.

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CREDIT AUTHOR STATEMENT

Dewi Kartikawati Ningsih: conceptualization, methodology, modifying and designing questionnaire, formal data analysis, writing original draft preparation, and writing-reviewing-editing. Ikhda Ulya: project administration including coordinator to

gather information from public and private university collaborators and administrator including correspondence of official letters, designing of Google Forms surveys, data curation. Annisa Wuri Kartika: petition for approval from the ethics committee, data collection and validation. K.M. Monirul Islam: methodology, modifying, and designing questionnaires, data analysis, supervision, and writing-reviewing-editing.

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