ORIGINAL ARTICLE

Association Between Self-Efficacy and Psychological Distress with Readiness for Online Learning Among Nursing Students

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ABSTRACT

Introduction: During the Coronavirus Disease-2019 (COVID-19) pandemic, online learning has become an important strategy in the implementation of nursing education, in order to prevent the SARS-CoV-2 transmission in the education sector. This study aimed to assess: (i) the correlation between self-efficacy and psychological distress; (ii) the correlation between self-efficacy and online learning readiness; and (iii) the correlation between psychological distress and online learning readiness among nursing students in Indonesia. **Methods:** The cross-sectional study was conducted from October until December 2020, and involved 500 nursing students from 3 universities in Yogyakarta, Indonesia who were recruited using consecutive sampling methods. The instruments used in this study were: 1) the 10-item Kessler Psychological Distress Scale (K-10) to assess the psychological distress, 2) Online Learning Self-Efficacy Scale (OLSES) to assess online learning self-efficacy, and 3) Student Online Learning Readiness (SOLR) to assess online learning readiness. Spearman's rank test was used to analyze the correlation between online learning self-efficacy, psychological distress, and online learning readiness. **Results:** Most of the nursing students (70.6%) had psychological distress ranging from mild to severe distress. The self-efficacy had an inverse correlation with psychological distress (Rho=-0.488, p=0.001). Contrarily, self-efficacy was positively correlated with online learning readiness (Rho=0.708, P=0.001). Psychological distress was inversely correlated with online learning readiness (Rho=-0.423, p=0.001). **Conclusion:** Online learning self-efficacy and psychological distress are significantly correlated with online learning readiness. Strategies to increase self-efficacy and ameliorates psychological distress, such as appropriate online learning training, adequate technical assistance, and psychological support were required to improve students' online learning readiness.
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Keywords: Self-efficacy; Psychological Distress; Readiness; Online Learning; Nursing students

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INTRODUCTION

In early March of 2020, The World Health Organization (WHO) has declared SARS-CoV-2 (COVID-19) as a global pandemic (1) after spreading to more than 200 countries around the world (2). The COVID-19 pandemic causes unprecedented disruption on all aspects of human life, including in education sector. Due to unavailability of effective treatment and vaccines in the early stage of the COVID-19 pandemic, social distancing and lockdown were considered to be effective strategies to halt the SARS-CoV-2 transmission (3). Social distancing and lockdown policies have been employed in Indonesia, and included nation-wide school and university closures (4). The distance-learning or remote education has been implemented since March 24, 2020 in Indonesia and forced educational sectors, including nursing institutions, to shift into fully online learning. In this pandemic situation, the online learning or distance education is considered as the most important strategy for the implementation of nursing education. Online learning enables nurse educator and students to participate in the teaching and learning process from anywhere without time and space constraints, as well as preventing SARS-CoV-2 transmission in the education

sector.

Despite the advantages of online learning, its implementation still faces obstacles and challenges that may hinder the success of these programs. One of the major issues surrounding the successful implementation of online learning is student readiness (5). Students' readiness toward online learning is cited as a critical factor that is affecting their success within online learning environments (6). Readiness in online learning is an essential aspect that affects students' ability to engage easily and actively in the online learning process (5). A previous study demonstrated that students' online learning readiness was positively associated with their interactions in their learning environments (7). Another study has supported positive association between readiness toward online learning and academic performance in online learning during the COVID-19 pandemic (8). Students' readiness toward online learning combined with the availability of the adequate online learning facilities are essential for the successful outcome of any online learning program (9).

The COVID-19 pandemic has caused psychological distress in university students (10,11). The sudden switch to online learning during the current pandemic crisis has fundamentally changed the students' everyday lives, and could be severely affecting students' psychological well-being (12). For example, the lockdown policy caused the students to stay at their home for long periods of time. When combined with online learning, the students are prone to a series of emotional stress responses. Online learning is considered one of the most serious issues among students during the current pandemic (10). Several studies identified various barriers during online learning among medical students (13), dentistry students (4), and nursing students (14) during the COVID-19 pandemic especially in developing countries ranging from low skills and competence issues, high cost concerns, Internet and technological challenges, as well as motivation and social support issues. During distance learning, students are often unable to get adequate support from peers and teachers and are often not provided adequate assistance to solve the difficulties and technical troubles during the online learning process. In this confusing conundrum, they are left to solve these barriers and to motivate themselves (14). Recent study conducted in Indonesia found that 71.6% nursing students had psychological distress and identified that several online learning barriers such as cost, and internet barriers are acted as risk factors (12). Students' psychological well-being could affect students' academic performance both in traditional learning and online learning environment. A study by Kabir et al. found that online learning stress act as a predictor of online learning readiness among university students (15).

Self-efficacy is a personal belief in one's capability

to execute behaviors necessary to produce specific performance attainments (16). Self-efficacy is cited as a factor that plays a critical role in academic performance success (17) and psychological well-being (18). Individuals with high self-efficacy have higher motivation and higher adaptive coping mechanisms (18). Self-efficacy also affects the stressor assessment and the method to deal with them, and thus it is crucial in stress management (19). Hence, high self-efficacy is important for university students to promote adaptive coping mechanisms and ameliorate stressors (20), which could be useful to maintain psychological well-being during the stressful education process. High self-efficacy could be a critical factor for students' success in the online learning environment. The previous study found a strong positive and significant association between online learning self-efficacy and readiness for online learning (14), suggesting that students with higher self-efficacy had a higher readiness level to engage in online learning. Individuals with high self-efficacy are hypothesized to expend more effort and persist longer in the face of difficulties than those who are unsure of their capabilities (16,21). The tendency for efficacious people to 'expend more effort and persist longer' is of particular importance because most personal success requires persistent effort (16).

Before the pandemic, fully online learning was not widely used for nursing education in Indonesia. The COVID-19 pandemic was the very first time for most of the nursing education institutions in Indonesia to implement fully online learning in their teaching and learning process. The sudden switch from traditional face-to-face learning to an online environment during the COVID-19 pandemic has raised the question regarding nursing students' self-efficacy and readiness in navigating the online courses effectively. The impact of the COVID-19 pandemic on psychological distress both in medical and nursing students has been well established. But to the best of our knowledge, there is limited literature regarding the level of online learning self-efficacy and readiness among nursing students during the COVID-19 pandemic. Moreover, as far as we know, there is limited research that explores the association between self-efficacy and psychological distress with online learning readiness. In order to address this gap in the literature, our present study aimed to: (i) assess the correlation between self-efficacy and psychological distress; (ii) assess the correlation between self-efficacy and online learning readiness; and (iii) assess the correlation between psychological distress and online learning readiness.

MATERIALS AND METHODS

Study Design
This observational study was conducted with a quantitative approach and cross-sectional design to assess the correlation between self-efficacy,

psychological distress, and online learning readiness among nursing students in Indonesia.

Study Setting and Period
We conducted this study in Universitas Respati Yogyakarta, Universitas Gadjah Mada, and Kepanjen School of Health Sciences, Indonesia. These universities provide undergraduate nursing education programs. Since March of 2020, these universities were basically shut down and had never implemented the fully online learning before the pandemic. In addition, these universities accommodated students from various provinces in Indonesia to study in nursing. Data collection was conducted from October until December 2020.

Sample
This research used Slovin's formula stated as $n=N/(1+N)$ to determine the minimum sample size required in which n = sample size, N = population size, and e = margin of error (21). Based on academic data in 2020, the total number of active undergraduate nursing students from those three universities was 1,086. In this study we used the margin of error of 5%. Thus, with N = 1,086, and e = 0.05, the minimum sample size required in this study was 292 students. A total of 500 nursing students participated in this study who were recruited using consecutive sampling strategy.

The inclusion criteria for this study were: active undergraduate nursing students, had academic level from 1st semester to 8th semester, had been participated in online learning for at least 1 month during the COVID-19 pandemic, had an active phone number and email address that can be contacted, and voluntarily willing to participate as research respondent. The students who could not be contacted (via WhatsApp call or email), did not fill out the informed consent form, or did not fill out the study questionnaire completely were excluded from the study.

The data regarding nursing students' identity, active status in the learning process, education level, student attendance in online learning, phone number, and email address were obtained from the academic section of each university. These data then were screened to determine the nursing students who meet the inclusion criteria. We contacted each of the nursing students who meet the inclusion criteria via WhatsApp call to explain the study information and ask about their willingness to participate in the study. The students who were available and voluntarily willing to be involved in the study could open a Google Forms link to get an information letter about the study, eligibility criteria, and provide informed consent as a prerequisite to proceed in participation.

Data Collection
In this study, we used an online questionnaire to collect the data due to the large-scale social restriction policy employed by Indonesian government to prevent SARS-CoV-2 transmissions at the time of the data collection. We created the online questionnaire using Google Forms. The questionnaire was then distributed to the participants via WhatsApp. Before the study, all the participants were phoned to explain the study information and to ask their willingness to participate. Afterward, they completed an informed consent statement from a Google Forms link as a prerequisite for further participation and they were instructed to fill out the form completely.

Ethical Considerations
Ethical clearance with number KE/FK/1067/EC/2020 was obtained from the Medical and Health Research Ethics Committee of the Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada, Yogyakarta, Indonesia. We obtained the informed consent from each participant before the data collection process and confidentiality of their data was ensured.

Instrument
The questionnaire was divided into 5 sections: (1) sociodemographic characteristics, (2) Online learning information, (3) psychological distress, (4) students' self-efficacy, and (5) students' readiness in online learning. The questionnaire to assess sociodemographic characteristics and online learning was adapted from previous research (14,22,23).

Then, in the following section the Indonesian version of the 10-item Kessler Psychological Distress Scale (K10) was used to assess the psychological distress (24). The K10 has Cronbach's α = 0.89, indicating high-internal reliability (24). It consists of 10 item questions and each item is measured on a 5-point Likert scale (10,25) as follows: None of the time (1 point), A little of the time (2 points), Some of the time (3 points), Most of the time (4 points), and All of the time (5 points). Thus, the minimum and maximum score were 10 and 50, respectively (10). The K10 total score was then categorized into four groups of psychological distress severity: 10–19 = no psychological distress, 20–24 = mild psychological distress, 25–29 = moderate psychological distress, and 30–50 = severe psychological distress (10,25).

Afterward, the Indonesian version of the Online Learning Self-Efficacy Scale (OLSES) instrument was used to measure students' self-efficacy in online learning (26). It was developed by Zimmerman and Kulikowich and consists of 22 items (27). It is comprised of three subscales: self-efficacy for learning online (items 4, 6, 10, 11, 12, 15, 17, 18, 21, and 22), self-efficacy for time management (items 8, 9, 16, 19, and 20), and self-efficacy for using technology (items 1, 2, 3, 5, 7, 13, and 14) (28). Each item was rated on a scale of 1 to 6 in which the score 1 signified low self-efficacy and the score 6 signified high self-efficacy (27,28). For each item, scores 1 and 2 are considered as having poor self-efficacy, scores 3 and 4 are considered as having insufficient self-

efficacy, and scores 5 and 6 are considered as having good self-efficacy (29). This instrument has high internal reliability as shown by Cronbach's α of 0.890, 0.855, and 0.843 for learning, time, and technology subscales, respectively (27).

The last section measured readiness for online learning that was assessed using the Indonesian version of Student Online Learning Readiness (SOLR) (30). This instrument was developed by Yu and Richardson (31) and is comprised of 20 self-reported items intended to assess 4 dimensions, as follows: social competencies with the instructor (5 items), social competencies with classmates (5 items), communication competencies, and (4 items), and technical competencies (6 items) (32). Each item was measured on a 5-point Likert scale as follows: 1=disagree, 2=tend to disagree, 3=neutral, 4=tend to agree, and 5=agree (30). The SOLR instrument has high internal reliability (Cronbach's α=0.895) (30).

Statistical Analysis

Statistical analyses were performed using the SPSS v.23 (IBM Corp., Armonk, NY). Descriptive analysis used in this study was mean and standard deviation (SD) for numerical variables, while frequency and percentage were used for categorical variables. Spearman's rank test was used to analyze the correlation between self-efficacy and psychological distress, self-efficacy and readiness to online learning, and psychological distress and readiness. All variables have abnormally distributed data indicated by Kolmogorov-Smirnov test p<0.05. The confidence level was set at 95% and a p-value less than 0.05 was considered statistically significant.

RESULTS

Participants' Characteristics

A total of 500 undergraduate nursing students voluntarily participated in this study and completed the study questionnaire. The average age of participants was 19.9 years (SD=1.38). Most of the participants were female (n=396; 79.2%), first year students (n=214; 42.8%), residing at their own home during the implementation of lockdown policy (n=443; 88.6%), and resided in rural areas (n=271; 54.2%). Most of respondents had a monthly family income between IDR 1-2 million (n=159; 31.8%). The detailed information about the sociodemographic characteristics of the study participants is provided in Table I.

Online Learning Implementation

Most of the participants engaged in online learning more than 3 days per weeks (n=424; 84.8%), utilized Smartphone/Android mobile phone for attending online classes (n=442; 88.4%), and utilized the mobile hotspot to obtain their Internet connection (n=321; 64.2%). Most of the students perceived that they have moderate Internet connection quality during online learning (n=384; 76.8%). Before the pandemic, most of the

Table I: Sociodemographic characteristics of the study participants and information about online learning (n=500)

Characteristics	Frequency (n)	Percentage (%)
Age (years) - Mean (SD)	19.9 (1.38)	
Sex		
Female	396	79.2
Male	104	20.8
Residential during pandemic		
At own home	443	88.6
Other places (i.e. relative house, dormitory, rented house, etc.)	57	11.4
Residential area		
Rural	271	54.2
Urban	229	45.8
Monthly income of the family (IDR)		
Under 1 million	77	15.4
1 million–2 million	159	31.8
2 million–3 million	77	15.4
3 million–4 million	81	16.2
4 million–5 million	52	10.4
Above 5 million	54	10.8
Academic level		
First year	214	42.8
Second year	83	16.6
Third year	152	30.4
Fourth year	51	10.2
Number of online classes per week		
Above 3 days per week	424	84.8
3 days per week or less	76	15.2
Gadgets used for online classes		
Smartphone/android mobile	442	88.4
Laptop/personal computer	58	11.6
Primary internet connection source		
Local Area Network (LAN)	2	0.4
Mobile hotspot	321	64.2
Wifi	177	35.4
Perception about Internet connection quality		
Poor	101	20.2
Moderate	384	76.8
Good	15	3.0
History of online learning before the COVID-19 pandemic		
Yes	72	14.4
No	428	85.6

students had never attended online learning (n=428; 85.6%). The detailed information about online learning is provided in Table I.

Psychological Distress Among Nursing Students

Using the K-10 instrument, nursing students were asked to rate their psychological distress level. Our result showed that 70.6% of nursing students had psychological distress with the majority of the respondents having mild psychological distress (n=133; 26.6%). Table II shows the detailed information about psychological distress severity among nursing students.

Self-efficacy in Online Learning Among Nursing Students

Using the OLSES instrument, nursing students were

Table II: Psychological distress among nursing students (n=500)

Psychological Distress	Total K-10 Score Range	Frequency (n)	Percentage (%)
No Psychological Distress	10-19	147	29.4
Mild Psychological Distress	20-24	133	26.6
Moderate Psychological Distress	25-29	104	20.8
Severe Psychological Distress	30-50	116	23.2

asked to rate their online learning self-efficacy and the results are shown in Table III. Our study identified that most of the students reported good self-efficacy to complete assignment on time (n=435; 87%). Our study also identified that majority of nursing students had insufficient self-efficacy in several online learning activity. Most of the students reported insufficient self-efficacy to solve the difficulties and connection troubles during online learning by themselves (n=290; 58.0%); to find the answer to a course-related question in the Internet (n=259; 51.8%), to learn online without directly meeting with their instructors in the same room (n=241; 48.2%); to stay focused on the online class when facing daily distractions (n=233; 46.6%); to communicate effectively with their instructors via email (n=219; 43.8%), to learn online without directly meeting with friends in the same room (n=219; 43.8%), and to use the library's online resources efficiently (n=219, 43.8%).

Correlation Between Online Learning Self-Efficacy and Psychological Distress

The correlation between online learning self-efficacy and psychological distress was analyzed using Spearman's rank test and is shown in Table IV. Spearman's rank test demonstrated that there was a significant inverse correlation between the total OLSES score and the total K-10 distress score (p = 0.001; Rho = -0.488). This result indicates that the students with higher self-efficacy levels were more likely to have lower psychological distress severity.

We also examined whether a statistically significant correlation existed between each of the three self-efficacy subscales (learning subscale, time management subscale, and technology subscale) and psychological distress. Spearman's rank test showed that there was a significant inverse correlation between the learning subscale, time management subscale, and technology subscale with psychological distress (p<0.01). The detailed information about this result is provided in Table IV.

Correlation Between Online Learning Self-Efficacy and Readiness to Online Learning

The correlation between online learning self-efficacy

Table III: Online learning self-efficacy among nursing students (n=500)

OLSES Item	Poor Self-Efficacy	Insufficient Self-Efficacy	Good Self-Efficacy
Navigate online course materials efficiently	17 (3.4%)	146 (29.2%)	337 (67.4%)
Find the course syllabus online	9 (1.8%)	103 (20.6%)	388 (77.6%)
Communicate effectively with my instructor via e-mail	83 (16.6%)	219 (43.8%)	198 (39.6%)
Communicate effectively with technical support via e-mail, telephone, or live online chat	68 (13.6%)	151 (30.2%)	281 (56.2%)
Submit assignments to an online drop box	12 (2.4%)	159 (31.8%)	329 (65.8%)
Overcome technical difficulties on my own	15 (3.0%)	290 (58.0%)	195 (39.0%)
Navigate the online grade book	24 (4.8%)	136 (27.2%)	340 (68.0%)
Manage time effectively	28 (5.6%)	151 (30.2%)	321 (64.2%)
Complete all assignments on time	1 (0.6%)	62 (12.4%)	435 (87.0%)
Learn to use a new type of technology efficiently	9 (1.8%)	145 (29.0%)	346 (69.2%)
Learn without being in the same room as the instructor	51 (10.2%)	241 (48.2%)	208 (41.6%)
Learn without being in the same room as other students	33 (6.6%)	219 (43.8%)	248 (49.6%)
Search the Internet to find the answer to a course-related question	29 (5.8%)	259 (51.8%)	212 (42.4%)
Search the online course materials	24 (4.8%)	132 (26.4%)	344 (68.8%)
Communicate using asynchronous technologies (discussion boards, e-mail, etc.)	6 (1.2%)	107 (21.4%)	387 (77.4%)
Meet deadlines with very few reminders	9 (1.8%)	103 (20.6%)	388 (77.6%)
Complete a group project entirely online	9 (1.8%)	101 (20.2%)	390 (78.0%)
Use synchronous technology to communicate with others (such as Zoom)	3 (0.6%)	109 (21.8%)	388 (77.6%)
Focus on schoolwork when faced with distractions	44 (8.8%)	233 (46.6%)	223 (44.6%)
Develop and follow a plan for completing all required work on time	12 (2.4%)	127 (25.4%)	361 (72.2%)
Use the library's online resources efficiently	72 (14.4%)	219 (43.8%)	209 (41.8%)
When a problem arises, promptly ask questions in the appropriate forum (e-mail, discussion board, etc.)	6 (1.2%)	160 (32.0%)	334 (66.8%)

Table IV: Spearman's rank test result between online learning self-efficacy and psychological distress (n=500)

Tested-variables	p	r	Alpha level	Decision
Online learning self-efficacy and psychological distress	0.001	-0.488	0.05	Sig
Self-efficacy for learning online subscale and psychological distress	0.001	-0.483	0.05	Sig
Self-efficacy for time management subscale and psychological distress	0.001	-0.452	0.05	Sig
Self-efficacy for using technology subscale and psychological distress	0.001	-0.408	0.05	Sig

and readiness to online learning was analyzed using Spearman's rank test and is shown in Table V. Spearman's rank test revealed that there is a significant positive correlation between the total OLSES score and the total SOLR score (p = 0.001; Rho = 0.708). This result indicates that the students with higher self-efficacy levels were more likely to have higher readiness to online learning.

We also examined whether a statistically significant correlation existed between each of the three self-efficacy subscales (learning subscale, time management subscale, and technology subscale) and readiness to online learning. Spearman's rank test revealed that there is a significant positive correlation between learning subscale, time management subscale, and technology subscale with online learning readiness (p<0.01). The detailed information about this result is provided in Table V.

Correlation Between Psychological Distress and Readiness to Online Learning

The correlation between psychological distress and readiness to online learning was analyzed using Spearman's rank test and is shown in Table V. Spearman's rank test revealed that there is a significant inverse correlation between the total K-10 distress score and the total SOLR score (p = 0.001; Rho = -0.423). This result indicates that the students with higher psychological distress severity were more likely to have lower readiness to online learning.

DISCUSSION

Challenges to well-being and mental health status are commonly faced by the general population and students during the COVID-19 pandemic. However, there are few studies concerning the impact of this pandemic on psychological distress among undergraduate nursing students. We elucidated that the pandemic situation has caused psychological distress among Indonesian's nursing students as indicated by 69.6% students who reported psychological distress, and most of them (24.4%) had mild psychological distress (Table 3).

Previous study found that psychological distress was being observed during the COVID-19 pandemic among university students (10,33,34). Another study revealed that COVID-19 pandemic has caused anxiety and depression among medical students (35). The SARS-CoV-2 and its associated disease, COVID-19 have caused considerable anxiety and fear around the world, particularly due to the uncertainty surrounding the nature of SARS-CoV-2, route of transmissions, treatments, prognosis and fatality rate (36,37). Additionally, business, and educational sectors are also impacted by social distancing and lockdown policies implemented to control the SARS-CoV-2 transmission. Young student's social brains make them to have stronger desires for social interaction and makes them more sensitive to social isolation when lockdown policy where implemented (8). These disruptions continue to have serious psychological impacts and cause mental health problems, particularly among university students (38). Psychological distress is an emotional state that occurs when a person has experienced stressors that result in harm either temporary or permanent (39). Highly competitive training, high academic pressure, financial difficulties, and poor quality of sleep were observed in nursing students even before pandemic. When combined with direct contact with patients during the clerkship period in the pandemic situation, it makes them become psychologically vulnerable. They face the same problems as other young non-medical students. Moreover, as a healthcare students, they also have to cope with the high academic burden (40). Previous research conducted in normal situations and not in the pandemic condition found that nursing students had higher levels of mental health problems compared to non-medical students and to the general population (40).

Our study identified that nursing students in Indonesia had low self-efficacy in performing several aspects of online learning activities ranging from solving the technical troublesome during online learning, distance communication with the lecturer, learning and staying focused in an online environment, and searching online literature. A previous study in India demonstrated that

Table V: Spearman's rank test result between online learning self-efficacy and psychological distress with readiness to online learning (n=500)

Tested-variables	p	r	Alpha level	Decision
Self-efficacy and readiness to online learning	0.001	0.708	0.05	Sig
Self-efficacy for learning online subscale and readiness to online learning	0.001	0.692	0.05	Sig
Self-efficacy for time management subscale and readiness to online learning	0.001	0.608	0.05	Sig
Self-efficacy for using technology subscale and readiness to online learning	0.001	0.620	0.05	Sig
Psychological distress and readiness to online learning	0.001	-0.423	0.05	Sig

most of the students had a low self-efficacy in learning, time management, and technical aspect of online learning (41). In another study, Yu and Richardson (2015) reported that social, communication and technical competencies are all highly associated with academic learning outcomes and learner satisfaction in online learning (31). Early evidence demonstrated that there are four sources of self-efficacy: mastery experiences, vicarious experiences, verbal persuasion, and physiological and affective states. Mastery experiences are defined as one's perception of previous successes in performing a specific task or attaining specific goals and are cited as the strongest factor that influences self-efficacy development, because it's the most authentic evidence of one's capabilities to succeed (42,43). In our study, most of the nursing students had never attended online learning before the COVID-19 pandemic, suggesting that they don't have mastery experience in online learning which could contribute to low self-efficacy.

Our study demonstrated that online learning self-efficacy was inversely correlated with psychological distress. This finding suggests that students with lower levels of online learning self-efficacy were likely to have higher psychological distress severity. Previous study reported that there is a significant positive association between academic self-efficacy and psychological well-being (44). Another study found significant inverse association between total self-efficacy and academic self-efficacy with depression and anxiety among high school students (45). In adolescent sample, Nunes and Faro identified self-efficacy as negative predictor of depression (46). Self-efficacy affects psychological well-being because it has a critical role in stress management such as affecting how the person assesses the stressor, and the methods to deal with them. Self-efficacy regulates and individual's cognition, emotions, and decisions which are associated with psychological well-being (19,47). Individuals with high self-efficacy have higher motivation and higher adaptive coping mechanisms when facing problems (18,48). As a result, they consider challenging situations and difficulties as an opportunity rather than an insurmountable risk (49). Therefore, self-efficacy plays a critical role in preventing stressors and promoting adaptive adjustment (20). Nursing students in developing countries are experiencing numerous difficulties during the abrupt implementation of online learning in this pandemic crisis such as poor Internet connection to access online learning, low online learning motivation, lack of training and skills in using online learning platforms, in addition to the lack of assistance to help solve these challenging troubles during online learning, and the extra financial burden for the Internet access (14). These barriers could severely affect students' psychological well-being. High self-efficacy is of particular importance during online learning implementation, because with this boost in students' self-confidence, they can expend more effort and persist longer when facing barriers during online learning. Hence, they will maintain better psychological well-being.

Our study demonstrated that online learning self-efficacy was positively correlated with online learning readiness. This finding suggests that students with higher levels of online learning self-efficacy were likely to have a higher level of readiness toward online learning. This outcome is consistent with previous study by Kenny et.al which was found that self-efficacy is associated with e-learning among nursing educators and nursing students (50). Another study demonstrated that online learning self-efficacy are associated with online learning readiness among university students (5). Recent study found that academic self-efficacy are significant predictor of online learning readiness and academic performance during COVID-19 pandemic (51). Self-efficacy is defined as an individual's belief in his or her capacity to organize and execute courses of action necessary to achieve the designated types of skills, performances, and to reach specific goals (16,21). Online learning self-efficacy is defined as an individual's belief in his or her capabilities to achieve success in online learning, as well as an individual's belief in his or her capabilities to successfully execute and complete specific tasks and successfully learn the materials related to online learning (27). Individuals with high self-efficacy have higher commitment, expend more effort and persist longer when facing difficulties than those who have low self-efficacy, thus they can have excellent performance (16,17,21). People who have low self-efficacy may avoid a specific task, while those who have high self-efficacy are eager to participate. The previous study demonstrated that students with low self-efficacy are afraid of their tasks, and tend to avoid, to postpone, and also to give up without completion (17,21). Recent study found that nursing students with higher self-efficacy had a higher problem-solving ability, so they can solve complex problems (52). Students' self-efficacy is one of the critical factors that affect their success in online learning. The capacity of students with high self-efficacy to "expend more effort and persist longer' is an essential aspect for online learning success, because most personal success requires persistent effort.

Our study found that psychological distress was inversely correlated with online learning readiness. This finding suggests that students with higher levels of psychological distress severity were likely to have a lower level of readiness toward online learning. Similarly, recent study found that psychological distress had inverse relationship with student's online learning readiness among nursing students (53) and among non-health sciences university students (54,55,14). Tubaishat et al reported that the low level of online learning readiness, such as poor computer or technological skills, could contribute to high level of stress among the nursing students (56). In their study, Mirzaei-Alavijeh et al reported that low mental health

status had a negative effect on student's self-efficacy (57), which could contribute to lower learning readiness and lower academic performance (57). In addition, another study found that psychological distress had a negative effect on student's online academic performance during the COVID-19 (54,8) via the partial mediating effect of online learning readiness (54).

Our study highlighted that nursing educator should assess the students' psychological well-being and their self-efficacy level when conducting online learning. Our study also highlighted the need for a strategy to ameliorate psychological distress and increase self-efficacy in order to improve nursing students' readiness in an online learning environment. The low self-efficacy among nursing students indicates the need for training regarding the pedagogical and technological competencies in online learning for students before exposing them to online learning. This will enable the students to achieve mastery of the tasks associated with online learning. Developing academic services that provided adequate technical assistance for students when they face difficulties during the online learning process will aid them in gaining self-efficacy. These findings also indicate that mental health care services should be strengthened at the university level. Intervention programs to support and promote student psychological well-being were needed to ameliorate psychological distress among nursing students.

CONCLUSION

Increased psychological distress is being observed among nursing students in Indonesia during the COVID-19 pandemic. Most of the nursing students are regarded as having mild psychological distress. Online learning self-efficacy was inversely correlated with psychological distress but was positively correlated with online learning readiness. Psychological distress was inversely correlated with online learning readiness.

Our study indicated that strategy to improve self-efficacy and ameliorate psychological distress are required to improved students' readiness in online learning. Appropriate skill-based training should be designed and provided to the students before exposing them to the online learning. Adequate technical assistance should be provided to help the students to cope with online learning difficulties. These finding also highlight the need of strengthening the mental health care services at university level and the need of an intervention program to ameliorate psychological distress among the undergraduate nursing students.

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