

ORIGINAL RESEARCH

Association Between Sources of Social Support and Depression Among Nursing Students During the COVID-19 Pandemic



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Abstract

Background: Nursing students have a higher risk of depression due to their high academic burden, social isolation, pandemic loneliness, abrupt online learning, and financial difficulties during the COVID-19 pandemic lockdown. Although the disruption of social network patterns during the pandemic has been observed in previous studies, it is still not fully understood which source of social support is associated with depression among nursing students.

Purpose: This study aimed to assess the correlations between sources of social support and depression among nursing students during the COVID-19 pandemic.

Methods: An online cross-sectional study was conducted between May and September 2021. Nursing students (n=734) from seven universities across four provinces in Indonesia were recruited as participants using convenience sampling methods. Data were obtained through online questionnaires consisting of the Multidimensional Scale of Perceived Social Support (MSPSS) to assess social support and the Patient Health Questionnaire-9 (PHQ-9) to assess depression. Spearman-Rank correlation tests were used to examine the correlations between sources of social support and depression.

Results: Most of the nursing students (85.1%) were female, with a mean age of 19.94 years (SD=1.42). Many nursing students (n=313; 42.6%) experienced depression. Most of the students (n=465; 63.4%) perceived high family support, moderate friends (n=415; 56.5%) and significant others' support (n=437; 59.5%). Of the three sources of social support (family, friends, and significant others), only family support had a significant inverse correlation with depression (Rho=-0.492, p<0.001).

Conclusion: Family support had a significant inverse and moderate correlation with depression among nursing students during the COVID-19 pandemic. Our findings provided information to nursing educators to incorporate a strategy to maintain robust family support and regular depression assessments as part of the online learning curriculum. Therefore, it can be used to ameliorate depression among nursing students.

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1. Introduction

Depression, a mood disorder characterized by either persistent sadness or loss of interest in daily activities, or both (Ng et al., 2016), is the most prevalent mental health condition that often remains undiagnosed and untreated. Depression is regarded as a major mental health problem worldwide and among the world's leading causes of disability (Njim et al., 2020; Tung et al., 2018). Globally, it is estimated that depression affects 350 million people every year (Njim et al., 2020; Tung et al., 2018). Depression was among the top global disease burdens in 2020 (Lim et al., 2018) and is predicted to be the leading cause of global mental disease in 2030 (Hock et al., 2012). Depression presents debilitating symptoms that could substantially impair an individual's productivity, causing reduced occupational potential (Stewart et al., 2003), which is associated with poor quality of life. In its most severe condition, depression can lead to self-harm and suicide (Lim et al., 2018; Njim et al., 2020; Orsolini et al., 2020).

Substantial evidence demonstrated that the nursing education curriculum, which was characterized by a hectic course schedule, tons of assignments, and various theoretical and practical examinations (Karaca et al., 2019; Sakai et al., 2022), had put nursing students under tremendous and prolonged stress throughout their education stages (Karaca et al., 2019; Sakai et al., 2022). As a result, nursing students must be able to adapt and cope effectively with tremendous academic burdens besides the regular stressors experienced by youth and general university students (Karaca et al., 2019). Findings from numerous empirical studies also elucidated that nursing students had a higher prevalence of mental health issues compared to the non-healthcare student population and the general population (Karaca et al., 2019; Sakai et al., 2022).

The emergence of the COVID-19 pandemic, followed by the implementation of a lockdown and social distancing policy to prevent viral transmission before the mass vaccination programme became widely available, has caused numerous negative consequences among students, such as COVID-19-specific worries, social network isolation, loneliness, lack of emotional support and interaction, difficulties to attend online learning (Fitriawan et al., 2023a), and financial difficulties due to job loss of their family member which may cause their education to discontinue. When combined with already high academic stressors, those negative consequences could potentially increase depression symptoms among nursing students (Elmer et al., 2020). Previous empirical studies revealed that the prevalence of depression among nursing students during the COVID-19 pandemic ranged from 39% to 50% (Fitriawan et al., 2023b; Hung et al., 2022; Kim et al., 2022; Kwak et al., 2022), higher than before the COVID-19 pandemic (34%) (Tung et al., 2018). Depression could cause substantial negative impacts on nursing students, such as lower attendance rates in their courses, lower cumulative grade point averages (GPA) (Abu Ruz et al., 2018), substance use, tobacco smoking, and alcohol consumption (Esmaelzadeh et al., 2018), and increased risk of suicide (Fitriawan et al., 2023b; Moraes et al., 2021; Njim et al., 2020).

The lockdown policy followed by university closure and online learning implementation during the pandemic also changed the students' social networks, where interaction and co-studying networks plummeted, and more students were studying alone (Elmer et al., 2020; Kulcar et al., 2022), which in turn potentially changed the social support pattern they received. Social support is defined as any support received by individuals from their social network in their time of need (Li et al., 2021). In contrast, perceived social support is defined as an individual's subjective perceptions regarding the support they received during their time of need from the social network members around them (Li et al., 2021). Social support can come from a variety of sources, whether natural (e.g., family members, friends, romantic partners, neighbours, community members, co-workers) or more formal (e.g., health professionals or community organizations), that are available in times of need to give support (Amoah, 2019) in the form of instrumental, emotional, informational, companionship, validation or other support (Li et al., 2021). Through its stress buffering mechanism, social support provides emotional and psychological support to the individual, elevates their psychological resilience, and ameliorates their stress (Ozbay et al., 2007), which is considered a major factor in maintaining psychological well-being (Hailey et al., 2023; Zysberg & Zisberg, 2022).

Previous studies elucidated that family support increased students' coping mechanisms and ameliorated stress, contributing to positive mental health status (Mai et al., 2021). Likewise, social support from another source, such as peers and teachers, can also elicit similar beneficial effects on students' mental health (Zhou et al., 2022). It is necessary to assess which sources of social

support contributed mostly to maintaining mental health (Coventry et al., 2004) since evidence from previous empirical studies has demonstrated that the association between different sources of social support and mental health has been inconsistent (Alsubaie et al., 2019; Mustanski et al., 2011; Wise et al., 2019). A previous study elucidated that family support, but not friend support, was associated with posttraumatic stress disorder (Wise et al., 2019) and depression symptoms (Alsubaie et al., 2019). Contrarily, another study found that friends' social support was more effective than family social support in preventing psychological distress (Mustanski et al., 2011) and depression (Kugbey et al., 2015; Perret et al., 2021).

The elevation of depression during the COVID-19 pandemic has been demonstrated in previous studies (Fitriawan et al., 2023b; Hung et al., 2022; Kim et al., 2022; Kwak et al., 2022). Additionally, previous studies also demonstrated the disruption of social network patterns among students during the pandemic (Elmer et al., 2020; Kulcar et al., 2022). However, currently, there is no published study exploring the source of social support associated with depression severity among nursing students in the context of the COVID-19 pandemic situation. Addressing the lack of evidence on this topic is crucial for developing more effective prevention strategies and interventions. Early identification of depression and its risk factors is a critical step to ameliorate the negative consequences of depression among nursing students. To fill these gaps in the literature, the present study aimed to explore the association between sources of social support and depression among nursing students in Indonesia during the COVID-19 pandemic.

2. Methods

2.1. Research design

A cross-sectional study was performed to assess the correlations between the sources of social support and depression among nursing students during the COVID-19 pandemic. A cross-sectional study design is a type of observational study in which the outcome and the exposures of the study participants are measured at the same time. This study design is suitable for population-based surveys, is relatively faster, and is cost-effective while still allowing the investigator to obtain information regarding the prevalence of outcomes or exposures and the association between exposures and outcomes (Setia, 2016).

2.2. Setting and samples

The researchers conducted this study at seven well-accredited universities that provide nursing education across four provinces on Java Island, Indonesia. These universities were closed during the COVID-19 pandemic, implemented fully online learning during the pandemic, used a Moodle-based learning management system to implement online learning, especially for content distribution and digital resources, and used WhatsApp groups for communication among teachers and students. Moreover, a previous study conducted during the early phase of the COVID-19 pandemic suggested that nursing students from these universities experienced numerous barriers during the online learning implementation (Achmad et al., 2021). The undergraduate nursing education system in Indonesia is a four-year program, and the total number of first-year to fourth-year undergraduate nursing students in these seven universities was 2,264. All nursing students had a WhatsApp account and joined the students' WhatsApp groups at their universities. Data collection was conducted from May until September 2021 during the second wave of the COVID-19 pandemic in Indonesia and the implementation of large-scale social restrictions and university closures.

The minimum sample size calculation for this study was achieved using G*Power software version 3.1.9.7 for correlation: bivariate normal model with the assumption of $\alpha=0.05$, power level=0.85, and an effect size of 0.1 (Kwak et al., 2022). Based on this equation, a minimum sample size of 716 was needed for this study. In this study, the participants were recruited using a convenience sampling technique. Convenience sampling was adopted in this study due to its ability to target particular groups of the population and its cost-effectiveness compared to other sampling methods (Galloway, 2005). Moreover, our study was conducted during a significant increase in the number of Variant of Concern SARS-CoV-2 delta infection cases and death tolls in Indonesia (regarded as the second wave of the COVID-19 pandemic), coupled with the fact that the SARS-CoV-2 vaccination program was still not widely available in the country at the time of the data collection period (Tenda et al., 2021). Moreover, a recent study demonstrated that during the second wave of the COVID-19 pandemic, most nursing students in Indonesia still had not

received the full dose of the SARS-CoV-2 vaccine, suggesting they had not acquired an immunoprotective phenotype against SARS-CoV-2 (Fitriawan et al., 2023c). In such conditions, convenience sampling is the most feasible method during the pandemic lockdown policy, where social distancing is mandatory but still acceptable as a sampling technique to assess association studies (AlHajri & Mohamed., 2022) including depression, as demonstrated by previous studies (Achmad et al., 2023; Al-Zawaadi et al., 2021).

The inclusion criteria for nursing students to be able to participate in this study were: first-year to fourth-year undergraduate nursing students with active academic status, participated in fully online learning during the data collection period, had a WhatsApp account that could be contacted, and joined the students' WhatsApp groups at their respective universities. The students who were taking academic leave or did not fill out the study questionnaire completely were excluded from the study.

2.3. Measurement and data collection

The researchers used self-reported standardized instruments in the Indonesian language to assess the study variables, and the instruments consisted of three sections: 1). sociodemographic questionnaire; 2). the Multidimensional Scale of Perceived Social Support (MSPSS), and 3). the Patient Health Questionnaire-9 (PHQ-9). Before data collection, permission to use the instruments and the Indonesian version was provided by the original author and translator.

In the first section, the sociodemographic profiles of the participants were assessed using an eight-item sociodemographic questionnaire adopted from a previous study (Kapasia et al., 2020), which consisted of gender, age, academic year, monthly family income, type of residence, the financial status of the family, difficulties in attending online learning, and satisfaction with academic performance.

In the next section, the social support among nursing students was measured using the Indonesian version of the Multidimensional Scale of Perceived Social Support (MSPSS) (Laksmi et al., 2020). Developed by Zimet et al (1990), the MSPSS is a standardized self-reported instrument consisting of 12 question items and is widely used to measure perceived social support adequacy from three sources: family, friends, and significant others (Zimet et al., 1990). Each item is measured on a 7-point Likert scale ranging from "very strongly disagree" (1 point) to "very strongly agree" (7 points). The MSPSS consisted of three subscales intended to assess the different sources of social support: the MSPSS-Family subscale was assessed using 4 items (items 3, 4, 8, and 11), the MSPSS-Friends subscale was assessed using 4 items (items 6, 7, 9, and 12), and MSPSS-Significant Others subscale was assessed using four items (items 1, 2, 5, and 10). The MSPSS total score ranges from 12-84, and higher scores indicate higher social support as perceived by an individual. The social support mean score on each of the three subscales (family, friends, and significant others) can be obtained by adding the items in each subscale and then dividing by 4 (Laksmi et al., 2020). Based on the social support mean score of each subscale, the social support level from each source (family, friends, and significant others) can be categorized as follows: a mean score of 1 - 2.9 is regarded as low support, the mean score of 3 - 5 is regarded as moderate support, and the mean score of 5.1 - 7 represents high support (Samson, 2020). Based on the previous study, the Indonesian version of MSPSS is a valid and reliable instrument. Validity using Confirmatory Factor Analysis (CFA) demonstrated the goodness of fit between the observed data and the hypothesized model, where $\chi^2/df = 2.468$, RMSEA = 0.070, GFI = 0.935, CFI = 0.948, TLI = 0.933, and SRMR = 0.047. Using standardized estimates, the factor loadings ranged from 0.49 to 0.80, and all of them were significant ($p < 0.05$). This instrument also demonstrated high internal reliability, as indicated by a Cronbach α of 0.81 for the MSPSS-Family subscale, 0.82 for the MSPSS-Friends subscale, and 0.75 for the MSPSS-Significant Others subscale (Laksmi et al., 2020).

In the last section, depression among nursing students was assessed using the Indonesian version of the Patient Health Questionnaire-9 (PHQ-9) (van der Linden, 2019). Developed by Kroenke et al (2001), the PHQ-9 is a brief self-reported instrument widely used to screen for depression in both clinical and non-clinical populations (Kroenke et al., 2001), including depression among nursing students (Mcdermott et al., 2020; Achmad et al., 2023). This instrument consisted of 9 question items, and each item asked about depression symptoms experienced by respondents in the last 2 weeks. They were asked to choose the answer on a 4-point Likert scale ranging from 0 (never at all) to 3 (almost every day). The PHQ-9 total score

ranges between 0-27, and higher scores indicate higher depression severity levels (Kroenke et al., 2001; Mcdermott et al., 2020; Tin et al., 2015). Based on the PHQ-9 total score, the depression status can be categorized as follows: no depression (PHQ-9 total score <10) and depression (PHQ-9 total score \geq 10) (Mcdermott et al., 2020; Tin et al., 2015). Based on the previous study, the Indonesian version of PHQ-9 is a valid and reliable instrument. Validity using the Spearman correlation between PHQ-9 and BDI demonstrated a correlation coefficient (Rho) of 0.53 when BDI was enrolled as a dependent variable. Cronbach's α value of 0.84 indicates that this instrument has high internal reliability (van der Linden, 2019).

In this study, an online questionnaire was created using Google Forms to collect the data due to the large-scale social restrictions enforced by the Indonesian government at the time of the study. The data collection process is shown in Figure 1.

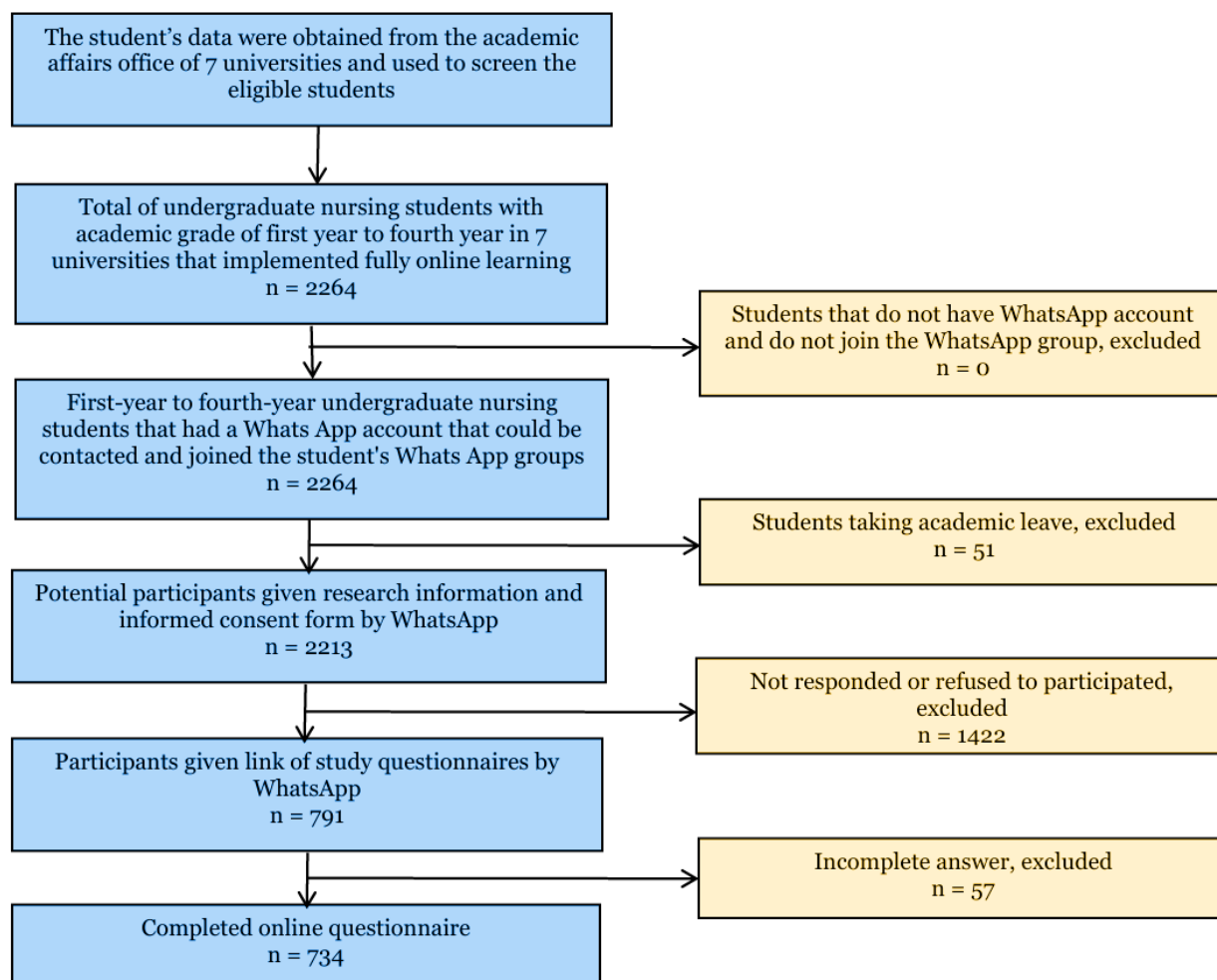


Figure 1. Flow chart of the data collection process

The researchers accessed the nursing student's data, including name, student ID number, academic year, academic leave status, and WhatsApp number from the academic affairs of the selected universities as a basis for screening eligible participants. The academic affairs of the selected university also gave the research team permission to be enrolled in student WhatsApp groups. A total of 2,264 first-year to fourth-year undergraduate nursing students had a WhatsApp account and joined the student's WhatsApp groups at their respective universities. Of them, 51 nursing students were taking academic leave and excluded from the study, and 2,213 nursing students were eligible as study participants. Firstly, the researchers distributed a Google Form link consisting of research information and informed consent through student's WhatsApp groups. Less than half of the nursing students agreed to participate in the study by completing online informed consent (n=791; 35.7%). After that, the researchers sent the Google Form link consisting of the study questionnaires to each of the students who had completed the informed

consent through a WhatsApp message, and they were instructed to fill out the questionnaires completely. The researchers also informed the participants that they could contact the researchers through WhatsApp if they had any questions regarding the questionnaires, and the researchers would be happy to respond. Additionally, the researchers informed the participants that they had one week to complete the study questionnaires after receiving them. Only 734 nursing students (33.2%) completed the questionnaires, while 57 (7.8%) had missing data on one or more of the study questionnaires and were excluded from the study. Hence, the final number of participants included in the statistical analysis was 734, exceeding the minimum sample size required.

2.4. Data analysis

For univariate analysis, frequency and percentage were used to describe the categorical data, whereas mean and standard deviation were used to describe the numerical data. Each of the three social support subscales and depression scores had abnormally distributed data as indicated by the Kolmogorov-Smirnov test with $p < 0.05$. Spearman's rank test was used to examine the correlation between the three sources of social support (family, friends, and significant others) with depression, and $p < 0.05$ was considered statistically significant. Correlation coefficients (r) were obtained to assess the correlation's direction and strength. The statistical analysis was conducted in IBM SPSS for Windows Version 24 (IBM Corp, Armonk, NY) and GraphPad Prism 9 for macOS Version 9.5.0 (GraphPad Software, LLC, Armonk, NY).

2.5. Ethical consideration

The Medical and Health Research Ethics Committee of Universitas Gadjah Mada, Indonesia, granted ethical clearance for this study protocol (approval number: KE/FK/1067/EC/2020). Prior to data collection, each participant gave their informed consent. Throughout the study, all participant information was guaranteed to remain confidential.

3. Results

3.1. Sociodemographic characteristics of the study participants

A total of 734 undergraduate students completed the survey, and their sociodemographic characteristics are shown in Table 1.

Table 1. Sociodemographic characteristics of the study participants (n=734)

Characteristics	Frequency (f)	Percentage (%)
Age (years) - Mean(Standard Deviation)	19.94(1.42)	
Gender		
Male	109	14.9
Female	625	85.1
Monthly family income (Indonesian Rupiah/IDR)		
<3 million	479	65.3
≥3 million	255	34.7
Academic year		
First-year	353	48.1
Second year	136	18.5
Third year	131	17.8
Fourth-year	114	15.5
Type of residence		
Living in own home	597	81.3
At another place	137	18.7
Financial problems at the time of the COVID-19 pandemic		
No	158	21.5
Yes	576	78.5
Difficulties in attending online learning during the COVID-19 pandemic		
No	232	31.6
Yes	502	68.4
Satisfaction with academic performance		
Satisfied	247	33.7
Dissatisfied	487	66.3

As seen in Table 1, the mean age of the participants was 19.94 years (SD=1.42), and most were female (n=625; 85.1%). The undergraduate nursing education program in Indonesia took four years to complete, and in this study, most of the participants were first-year students (n=353; 48.1%). Most participants had a monthly family income of less than IDR 3 million (n=479; 65.3%) and reported financial difficulties during the pandemic (n=576; 78.5%). Most of the participants living at their own homes during the COVID-19 pandemic (n=597; 81.3%) had barriers during online learning implementation (n=502; 68.4%) and were not satisfied with their academic performance (n=487; 66.3%).

3.2. Profile of social support among nursing students

The level of family support, friends support, and significant others support based on MSPSS was shown in Table 2. Most of the nursing students perceived the family support they received as high (n=465; 63.4%), whereas most of them perceived the friends' support (n=415; 56.5%) and significant others' support (n=437; 59.5%) received as moderate.

Table 2. Profile of social support among nursing students (n=734)

Source of Social Support	Frequency (f)	Percentage (%)
Family support		
High	465	63.4
Moderate	253	34.4
Low	16	2.2
Friends support		
High	299	40.7
Moderate	415	56.5
Low	20	2.7
Significant others support		
High	217	29.6
Moderate	437	59.5
Low	80	10.9

3.3. Severity of depression among nursing students

Table 3 shows detailed information about depression among nursing students based on PHQ-9. Our study revealed that 313 students (42.6%) experienced depression, as indicated by a total PHQ-9 score ≥ 10 .

Table 3. Depression among nursing students (n=734)

Depression	Total PHQ-9 Score Range	Frequency (f)	Percentage (%)
No Depression	0-9	421	57.4
Depression	10-27	313	42.6

3.4. Correlation between the source of social support and depression

The correlation between sources of social support and depression was analysed using Spearman's rank tests, and the results were shown in Figure 2.

The Spearman's rank test results showed no significant correlation between the MSPSS - Friends mean score and MSPSS - Significant Others mean score with PHQ-9 score ($p=0.104$ and $p=0.920$, respectively). This finding suggests that social support from friends and significant others did not significantly correlate with depression among nursing students. Spearman's rank test results demonstrated a significant inverse and moderate correlation between MSPSS - Family mean score and PHQ-9 score ($p<0.001$; $Rho= -0.492$). This result indicates the significant inverse correlation between family support and depression among nursing students during the pandemic lockdown. The students with lower family support levels were more likely to have higher depression severity, and vice versa.

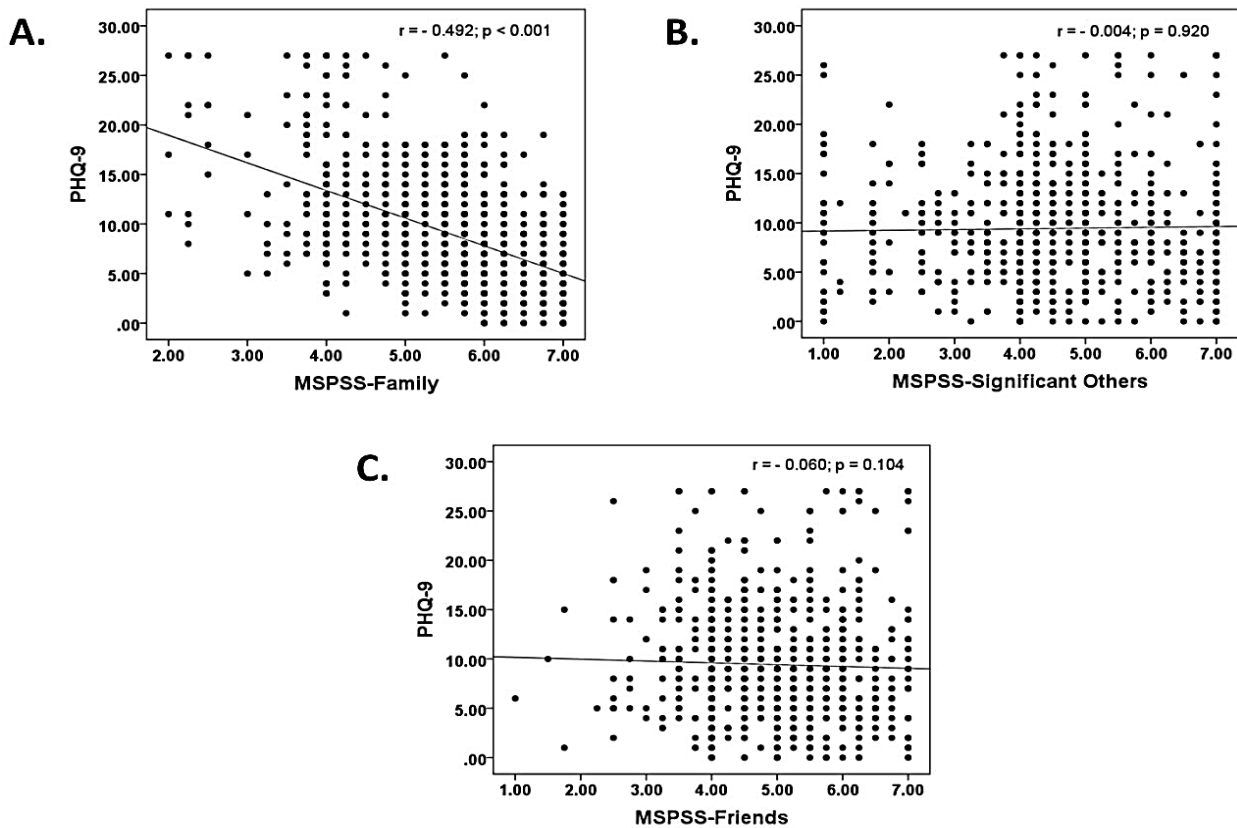


Figure 2. The correlation between sources of social support and depression

As shown in Figure 2, of the three sources of social support, only family support had a significant inverse correlation with depression among students during the lockdown; A. Family support had a significant moderate inverse correlation with depression ($p < 0.001$); B and C. There is no significant correlation between significant others and friends' support with depression ($p = 0.920$ and $p = 0.104$, respectively).

4. Discussion

This study investigated the status of perceived social support based on its sources (family, friends, and significant others) and the prevalence of depression among Indonesian nursing students during the COVID-19 pandemic lockdown, as well as the associations between different sources of social support and depression. The results revealed a high prevalence of depression among Indonesian nursing students. In this unprecedented situation, nursing students reported a high level of family support, while they reported moderate support from friends and significant others. Furthermore, this study also demonstrated the protective effect of higher family support against depression.

Our study elucidated that 42.6% of nursing students had depression during the COVID-19 pandemic. This prevalence was remarkably higher compared to several other studies conducted in Brazil (19.2%), China (28.7%), the United States (26%), and Cameroon (26.4%) (Facioli et al., 2020; Mcdermott et al., 2020; Njim et al., 2020; Zeng et al., 2019). A previous systematic review found that the global depression prevalence among nursing students was 34% (Tung et al., 2018). The prevalence of depression in our study was higher than in those studies, probably related to the unprecedented disruption derived from the COVID-19 pandemic when this novel pathogenic human coronavirus emerged and generated fear in everyone. The previous study was conducted before the COVID-19 pandemic, whereas our study was conducted during the enforcement of the lockdown policy coupled with distance learning implementation in the midst of the second wave of the COVID-19 pandemic in Indonesia. The prevalence of depression is expected to increase, especially when compared to before the COVID-19 pandemic. Although substantial evidence before the pandemic suggested that depression is a complex phenotype and its development involving complex interactions between biological (epigenetic, genetic polymorphism/single

nucleotide polymorphism, molecular), psychological, and social factors (Remes et al., 2021), recent findings demonstrated that unprecedented disruption in the students daily lives during the COVID-19 pandemic, such as a fear of COVID-19, sparser social network and social isolation, online learning issues, and financial difficulties negatively impacted their mental health and contributed to depression (Al-Tammemi et al., 2020; Kurniawan et al., 2024). A previous study demonstrated that a higher level of fear of COVID-19 was linked with more severe depression symptoms among university students (Yao et al., 2023). Another study found that loneliness that arises as a consequence of the pandemic lockdown policy was positively associated with depression among students (Bokszczanin et al., 2023; Elmer et al., 2020; Hager et al., 2022), and this relationship was mediated by boredom and negative thinking (Hager et al., 2022). Factors related to online learning have also been found to contribute to depression during the COVID-19 pandemic, such as self-study, negative effect on knowledge level, low online learning motivation (Rutkowska et al., 2022), the perception that the internet quota for online learning is expensive, poor Internet connection, and low self-efficacy and readiness in online learning (Fitriawan et al., 2023a). Comparatively, the prevalence of depression among nursing students during the COVID-19 pandemic ranged from 39% to 50% (Fitriawan et al., 2023b; Hung et al., 2022; Kim et al., 2022; Kwak et al., 2022). This finding further supports the negative consequences of the pandemic crisis on nursing students' mental health in Indonesia.

Our study also found that most nursing students perceived high family support during the COVID-19 pandemic. On the other hand, most of them perceived moderate support from friends and significant others. Consistent with our findings, another study conducted during the COVID-19 pandemic demonstrated that university students had a high level of perceived family support as well as a moderate level of perceived friend support (Cahuas et al., 2023; Sun et al., 2023). In contrast, a recent study in the US found that university students reported a high level of significant other support (Cahuas et al., 2023). Our study was conducted during the social restrictions policy and online learning implementation due to the significant increases of the variants of concern SARS-CoV-2 delta infection cases in Indonesia when 81.3% of the participants in our study were living in their own homes. A previous study demonstrated that students' interaction with their peers and their co-studying networks had become sparser, and most students were studying alone during the lockdown compared to before the COVID-19 pandemic (Elmer et al., 2020). Another study elucidated those students had difficulties building new and maintaining existing friendships during the pandemic (Kulcar et al., 2022). The decreased interaction with their friends could lead to lesser social support provided by their friends. In lockdown conditions, the family became the most intimate environment for students, and the family was the only social network available and ready to provide social support in times of need.

Based on the source of social support, our study demonstrated that family support had a significant moderate inverse correlation with depression. Our results provided evidence regarding the positive effect of family support on students' mental health during the COVID-19 pandemic. Consistent with our results, several previous studies provided some evidence for the theoretical relationship between perceived family support and mental health. The higher quantity and quality of family support had a protective effect against depression (Alsubaie et al., 2019; Samrock et al., 2021; Wang et al., 2021), with family dysfunction and less family support strongly associated with depression (Guerrero-Muñoz et al., 2021; Wang et al., 2021). In their study, Kamen et al. (2011) found that higher family support was associated with lower depression severity and higher recovery from depression among depressed individuals. Through its stress buffering mechanism, family support acts as a buffer that protects individuals from the negative impacts of stressful life events regardless of their history of depression (Manczak et al., 2018). Family support preserves positive mental health status by buffering loneliness (Li & Xu, 2022) and increasing self-esteem (Huang et al., 2022). Another study found that family support increased students coping mechanisms, ameliorated stress, and prevented mental health problems, thereby maintaining their mental health status (Mai et al., 2021).

Interestingly, our study found no significant relationship between friends' and significant others' support with depression. Contrary to our findings, several studies showed that social support from friends and significant others had a significant inverse relationship with depression (Alsubaie et al., 2019; Kugbey et al., 2015; Perret et al., 2021) and social support from friends is more important for university students compared to support from family and significant others (Kugbey et al., 2015). Another study also demonstrated that friend support was positively

correlated with resilience (Putri & Nursanti, 2020), positive achievement emotions (Lee et al., 2021), learning satisfaction (Lee et al., 2021), and psychological well-being among students (Zhou, 2020). This difference could be due to the different study periods. Those previous studies were conducted before the COVID-19 pandemic when the education process was conducted using traditional face-to-face learning. In such conditions, students' interactions with their friends were more intensive than with their families. Being away from family and relatives makes friends become the most intimate environment for nursing students (Putri & Nursanti, 2020). Adolescents are searching for the social support they need from sources that are familiar, mature, and, most importantly, trustworthy (Camara et al., 2017). Our study was conducted during the lockdown policy coupled with university closure and online learning implementation. Similar to our finding, previous studies conducted during the COVID-19 pandemic demonstrated no association between friend support and depression (Liu et al., 2022; Padmanabhanunni et al., 2023). Lockdown and social distancing resulted in lesser student interaction with their peers, lesser perceived friends' support, and lesser protective effect of friends' support on students' mental health during the pandemic. Without close social interaction with friends, students might experience an increased sense of loneliness, which in turn contributes to depression (Liu et al., 2022). Although online interaction with friends was still possible during the pandemic, a previous study demonstrated that nursing students in Indonesia experienced poor internet connection and a limited internet quota due to financial hardship (Achmad et al., 2021), which limited their online interaction with friends.

5. Implication and limitation

This study's findings emphasize the need to develop and strengthen the student's mental health services at the university level that can provide offline and online mental health care and develop programs to detect depression and ameliorate depression among undergraduate nursing students. These findings also demonstrated the protective effect of family support against depression among nursing students during the pandemic lockdown, indicating that more proactive strategies to improve family support and providing effective support systems during the lockdown policy and implementation of distance learning could be useful to ameliorate depression among nursing students.

However, the current study is subject to at least four caveats that should be considered. First, the study participants were recruited using convenience sampling, a non-probability sampling type, hence limiting our findings' generalizability. Second, all data were collected using online questionnaires due to the social restrictions policy at the time of data collection. This could result in sample selection bias, wherein nursing students without internet access could not participate in our study. Third, since self-administered questionnaires were used as the study instrument, our study was prone to recall and social desirability biases. Fourth, the history of mental illness among participants was not considered, which could affect the study results.

6. Conclusions

Our study provides evidence that the prevalence of depression among nursing students in Indonesia in the midst of the COVID-19 pandemic is high, with most of them regarded as having mild depression. Moreover, family support had a significant inverse correlation with depression. Our findings emphasize the need to develop mental health services at the university and programs to assess and ameliorate depression among nursing students. These findings also highlight that a strategy to improve family support and provide support systems during the pandemic lockdown could be useful in ameliorating depression among nursing students.

The findings of this study could be used as a basis for future studies to investigate effective methods to maintain robust social support and ameliorate depression symptoms among nursing students during distance learning. Since depression is regarded as a complex multifactorial phenotype, future studies to identify other possible protective factors and risk factors of depression during distance education should be conducted with more robust methods that address the limitations of this study.

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Author contribution

Conceptualization: DK, ASF, WAWS; Methodology: DK, ASF, WAWS; Investigation: DK, ASF, ANW, EBW, ES, GS, BFA, PES; Data curation: LNR, PES; Formal Analysis: BFA, GS; Visualization: WAWS, LNR; Writing-Original draft: DK, ASF, WAWS; Writing-Review and Editing: DK, ASF, WAWS; Project Administration: LNR, PES.

Conflict of interest

We declare that there is no conflict of interest.

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