



The Relationship between Stress Level and Self-Harm Behavior among Nursing and Midwifery Students

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ABSTRACT

Self-harm is an emerging public mental health concern among university students, particularly those enrolled in health science programs who are exposed to academic and clinical stressors. Although several international studies have examined the stress–self-harm relationship, empirical evidence from Indonesian health polytechnic students remains limited, especially regarding gender-imbalanced cohorts and early clinical-placement semesters. This study aimed to analyze the relationship between stress levels and self-harm behavior among Nursing and Midwifery students at the Polytechnic of the Ministry of Health, East Kalimantan. A quantitative cross-sectional design with a correlational approach was employed. Respondents were selected through proportionate stratified random sampling from 1,148 active students; 186 respondents met the inclusion criteria and completed the questionnaire. Stress levels were measured using the Indonesian-adapted 14-item stress subscale of the Depression Anxiety Stress Scales (DASS-42; Cronbach's $\alpha = 0.87$ in the study sample), and self-harm behavior was measured using the Self-Harm Inventory (SHI; 22 items; Cronbach's $\alpha = 0.82$). Data were analyzed using univariate frequency distribution and bivariate Chi-Square test ($\alpha = 0.05$), supplemented by the prevalence ratio (PR) to quantify the strength of association. The results showed that 24.2% of respondents experienced severe stress, and 38.2% reported self-harm behavior. Among students with severe stress, 66.7% engaged in self-harm, compared with 24.1% among those with normal stress (PR = 2.77; 95% CI = 1.82–4.21). The Chi-Square test revealed a significant association between stress level and self-harm behavior ($p = 0.001$). These findings underscore the urgent need for institutionally embedded mental health screening, structured clinical-placement orientation, and cognitive-behavioral coping training to mitigate maladaptive coping among future health professionals.

Keywords: Academic Stress, Clinical Placement, Midwifery Students, Non-Suicidal Self-Injury, Nursing Students.

ABSTRAK

Menyakit diri sendiri (self-harm) merupakan masalah kesehatan mental masyarakat yang semakin berkembang di kalangan mahasiswa, khususnya mahasiswa program ilmu kesehatan yang terpapar berbagai stresor akademik dan klinik. Meskipun beberapa penelitian internasional telah mengkaji hubungan antara stres dan self-harm, bukti empiris dari mahasiswa politeknik kesehatan di Indonesia masih terbatas, terutama pada kelompok dengan ketidakseimbangan gender dan mahasiswa pada semester awal praktik klinik. Penelitian ini bertujuan untuk menganalisis hubungan antara tingkat stres dan perilaku self-harm pada mahasiswa Keperawatan dan Kebidanan di Politeknik Kesehatan Kementerian Kesehatan Kalimantan Timur. Penelitian ini menggunakan desain kuantitatif cross-sectional dengan pendekatan korelasional. Responden dipilih melalui teknik proportionate stratified random sampling dari 1.148 mahasiswa aktif; sebanyak 186 responden memenuhi kriteria inklusi dan menyelesaikan kuesioner. Tingkat stres diukur menggunakan subskala stres 14 item dari Depression Anxiety Stress Scales (DASS-42) versi adaptasi Indonesia (Cronbach's $\alpha = 0,87$ pada sampel penelitian), sedangkan perilaku self-harm diukur menggunakan Self-Harm Inventory (SHI; 22 item; Cronbach's $\alpha = 0,82$). Data dianalisis menggunakan distribusi frekuensi univariat dan uji Chi-Square bivariat ($\alpha = 0,05$), yang dilengkapi dengan prevalence ratio (PR) untuk mengukur kekuatan hubungan. Hasil penelitian menunjukkan bahwa 24,2% responden mengalami stres berat dan 38,2% melaporkan perilaku self-harm. Di antara mahasiswa yang mengalami stres berat, sebanyak 66,7% melakukan self-harm, dibandingkan dengan 24,1% pada mahasiswa dengan tingkat stres normal (PR = 2,77; IK 95% = 1,82–4,21). Uji Chi-Square menunjukkan adanya hubungan yang signifikan antara tingkat stres dan perilaku self-harm ($p = 0,001$). Temuan ini menegaskan kebutuhan mendesak akan penerapan skrining kesehatan mental yang terintegrasi dalam institusi pendidikan, orientasi praktik klinik yang terstruktur, serta pelatihan strategi coping berbasis kognitif-perilaku untuk mengurangi mekanisme coping maladaptif pada calon tenaga kesehatan di masa depan.

Kata Kunci: Mahasiswa Kebidanan, Mahasiswa Keperawatan, Praktik Klinik, Self-Harm, Stres Akademik.

INTRODUCTION

The World Health Organization defines mental health as a state of psychological well-being that enables individuals to cope with life stressors, realize their abilities, learn and work productively, and contribute meaningfully to their communities (Galderisi, 2024; Halat et al., 2023). National evidence indicates that mental health problems remain substantial among Indonesian adolescents and emerging adults, with good mental health associated with family and school support, a sense of safety, effective stress management, adequate sleep, physical activity, and positive help-seeking attitudes (Wasserman et al., 2023; Yani et al., 2025). These dimensions collectively contribute to quality of life as mandated by Law No. 18 of 2014 on Mental Health.

The burden of mental disorders among young Indonesians is substantial. According to the 2023 Indonesian Health Survey (IHS) the national prevalence of depression among individuals aged ≥ 15 years was 1.4%, with the 15–24 age group showing the highest rate of 2.0%. More alarmingly, 61% of young people with depression reported suicidal ideation, while only 10.4% accessed mental health services (Badan Kebijakan Pembangunan Kesehatan, 2023). This treatment gap signals insufficient help-seeking behavior and inadequate institutional support, particularly within higher education settings.

Stress is a ubiquitous experience, but when chronic and exceeding individual tolerance it becomes a significant risk factor for adverse mental and physical outcomes (Matud et al., 2020; Setyawan, Saputri, & Lubis, 2022). Emerging adulthood is particularly vulnerable because emotional regulation capacities are still maturing while life transitions intensify. When adaptive coping strategies (e.g., problem-solving, social support, emotion regulation, and positive reframing) are insufficient, individuals may resort to maladaptive strategies, including non-suicidal self-injury (NSSI) or self-harm (Betke, Basińska, & Andruszkiewicz, 2020). The Experiential Avoidance Model posits that self-harm functions as a short-term behavioral escape from aversive internal states; although it provides transient relief, it entails substantial psychological and physical risks (Ding et al., 2022; Taylor et al., 2018).

Nursing and Midwifery students constitute a high-risk sub-population rarely examined in the Indonesian context. Unlike general undergraduates, they face clinical stressors superimposed on academic demands, including responsibility for patient safety, direct supervision by clinical preceptors, irregular practicum hours, exposure to suffering and death, and fear of clinical errors (Mohamed, Ali, Ehrahim, Ahmed, & Wahba, 2024; Visier-Alfonso et al., 2024). Midwifery students additionally cope with the high-stakes emotional load of maternal and neonatal care in an overwhelmingly female cohort (Javornická et al., 2025; Kuo et al., 2022). The transition from classroom theory to the first clinical placement typically occurring in the third or fourth semester in Indonesian Poltekkes curricula is widely recognized as one of the most stressful periods for health students (Onieva-Zafra et al., 2020; Sellberg, Palmgren, & Möller, 2022).

Despite these risks, evidence on the stress–self-harm relationship among Indonesian health polytechnic students remains scarce. Most existing Indonesian studies focus on general undergraduates or on stress alone, without quantifying the strength of its association with self-harm behavior in cohorts exposed to clinical training. Furthermore, institutional and cultural specificities of Poltekkes in eastern Indonesia including distance from family, limited on campus counseling infrastructure, and a predominantly female student body may shape the stress self-harm pathway differently from cohorts previously studied in Java or abroad. Addressing this gap, the present study aimed to analyze the relationship between stress levels and self-harm behavior among Nursing and Midwifery students at the Polytechnic of the Ministry of Health, East Kalimantan, and to estimate the strength of this association (prevalence ratio) to inform targeted institutional mental health interventions.

RESEARCH METHODS

This study employed a quantitative, correlational-descriptive design with a cross-sectional approach. The target population comprised all active Regular-class undergraduate students majoring in Nursing ($n = 744$) and Midwifery ($n = 404$) at the Polytechnic of the Ministry of Health, East Kalimantan, in the 2024/2025 academic year (total $N = 1,148$). Proportionate stratified random sampling was used, with strata defined by department (Nursing vs. Midwifery) and semester (3, 5, 7). Within each stratum, respondents were selected by simple random sampling using a computer-generated random number list from the Academic Information System roster.

The required sample size, computed with the Slovin formula ($e = 0.05$), was 297 respondents, proportionally allocated to strata. Online questionnaires were distributed via institutional class coordinators to 461 invited students (oversampling to compensate for anticipated non-response). A total of 186 students (response rate 40.3%) returned complete responses and were included in the final analysis. Non-responders and those with incomplete data did not differ significantly from responders on available demographic indicators (age, department), mitigating but not eliminating the potential for non-response bias a limitation acknowledged in the Discussion.

Inclusion criteria were: (a) active Regular-class undergraduate status in the Nursing or Midwifery Department, (b) aged 18–25 years, (c) enrolled in semester 3, 5, or 7, and (d) providing informed consent. Exclusion criteria were incomplete questionnaires and current psychiatric treatment that could confound symptom reporting.

Stress levels were measured using the 14-item stress subscale of the Depression Anxiety Stress Scales (DASS-42) originally developed by Sulak & Koklu (2024) and used in its Indonesian adaptation validated by Muttaqin & Ripa (2021). Each item uses a 4-point Likert scale (0 = never to 3 = almost always), with total scores categorized as normal (0–14), moderate (15–25), and severe (26–42). In the current sample, the stress subscale demonstrated excellent internal consistency (Cronbach's $\alpha = 0.87$). Recent validation evidence supports the DASS structure across age groups (Śliwerski, Koszałkowska, & Socha, 2025).

Self-harm behavior was measured using the Self-Harm Inventory (SHI) developed by Sansone, Wiederman, and Sansone (1998), a 22-item dichotomous (Yes = 1 / No = 0) instrument in its Indonesian-translated version. Back-translation and expert review ensured semantic and conceptual equivalence. The established cut-off of ≥ 5 endorsed items indicates clinically relevant self-harm behavior; scores 0–4 indicate non-self-harm. Internal consistency in the current sample was good (Kuder-Richardson KR-20 = 0.82).

Data collection ran for 21 days (18 November – 8 December 2024) through Google Forms. The questionnaire was preceded by a digital informed consent page and included attention-check items. IP addresses were not stored; responses were anonymized and encrypted at rest. Data were analyzed in IBM SPSS Statistics v26. Univariate analyses produced frequency distributions. Bivariate analyses used the Chi-Square test of independence ($\alpha = 0.05$) after verifying that all expected cell counts ≥ 5 . Effect size was reported as Cramér's V, and the strength of association as the prevalence ratio (PR) with 95% confidence intervals (CI), calculated by comparing severe-stress and normal-stress strata. Ethical approval was obtained from the Health Research Ethics Commission of the Polytechnic of the Ministry of Health, East Kalimantan (No. DP.04.03/F.XLII.25/0733/2024).

RESULTS

A total of 186 Nursing and Midwifery students completed the questionnaire between 18 November and 8 December 2024. Table 1 presents the integrated distribution of respondent characteristics, stress levels, and self-harm behavior. All respondents were in the 18–25-year age range; the sample was predominantly female (82.3%), aligning with the typical gender composition of Indonesian health polytechnic programs. Residential status was roughly balanced between living with parents (49.5%) and boarding (50.5%). Respondents were distributed across semesters 3 (39.8%), 5 (25.8%), and 7 (34.4%), and across Nursing (75.3%) and Midwifery (24.7%) departments. Regarding stress, 44.6% reported normal levels, 31.2% moderate, and 24.2% severe. Self-harm behavior was reported by 38.2% of respondents.

Table 1. Sociodemographic characteristics, stress levels, and self-harm behavior of respondents.

Variable / Category	Frequency (n)	Percentage (%)
Age (18-25 years old)	186	100
Sex		
Male	33	17,7
Women	153	82,3
Residential Status		

Living with parents	92	49,5
Boarding/rented room	94	50,5
Semester		
Semester 3	74	39,8
Semester 5	48	25,8
Semester 7	64	34,4
Department		
Nursing	140	75,3
Midwifery	46	24,7
Stress Level		
Normal (0–14)	83	44.6
Moderate (15–25)	58	31.2
Severe (26–42)	45	24.2
Self-Harm Behavior (SHI)		
No Self-Harm (<5)	115	61.8
Self-Harm (≥5)	71	38.2

Note: stress scores based on the *dass-42* stress subscale ($\alpha = 0.87$); self-harm based on the *shi* ($\text{kr-20} = 0.82$).

Table 2 presents the bivariate analysis of stress levels and self-harm behavior. A clear gradient was observed: among respondents with normal stress, 24.1% reported self-harm; among those with moderate stress, 36.2%; and among those with severe stress, 66.7%. The Chi-Square test of independence confirmed that all expected cell counts exceeded 5 and yielded $\chi^2(2) = 24.18$, $p = 0.001$, with a moderate effect size (Cramér's $V = 0.36$). The prevalence ratio comparing severe-stress to normal-stress strata was 2.77 (95% CI = 1.82–4.21), indicating that students with severe stress were approximately 2.8 times more likely to engage in self-harm than those with normal stress.

Table 2. Bivariate analysis of stress level and self-harm behavior.

Stress Level	No Self-Harm		Self-Harm		Total		p-value
	n	%	n	%	n	%	
Normal	63	75.9	20	24.1	83	100	0.001*
Moderate	37	63.8	21	36.2	58	100	
Severe	15	33.3	30	66.7	45	100	
Total	115	61.8	71	38.2	186	100	

Note: $\chi^2(2) = 24.18$; Cramér's $V = 0.36$ (moderate effect); PR (severe vs. normal) = 2.77, 95% CI = 1.82–4.21. *Significant at $\alpha = 0.05$.

DISCUSSION

This study demonstrates a statistically significant and moderately strong association between stress level and self-harm behavior among Nursing and Midwifery students at Poltekkes Kemenkes East Kalimantan ($\chi^2 = 24.18$; $p = 0.001$; $V = 0.36$; $PR = 2.77$). The gradient 24.1% self-harm prevalence in the normal-stress stratum rising to 66.7% in the severe-stress stratum is consistent with the dose response patterns reported by (Wan et al., 2023). in a longitudinal Chinese adolescent cohort and by (Renteria et al., 2020) in Mexican college students, though the magnitude in our sample is somewhat higher, likely reflecting the specific stressor profile of health-sciences training. Because the design is cross-sectional, however, the direction of causation cannot be established; bidirectional or common-cause pathways (e.g., pre-existing emotion-regulation deficits amplifying both stress perception and self-harm) must be considered.

Among respondents with normal stress, 75.9% did not engage in self-harm. This pattern is consistent with the evidence that effective emotion regulation and adaptive coping mediate lower perceived stress in health-discipline students (Enns, Eldridge, Montgomery, & Gonzalez, 2018; Hawsawi, Nixon, & Nixon, 2025). However, because our study did not directly measure coping

style or emotional intelligence, these explanations remain inferential. Future research should include validated coping and emotion-regulation measures to test the mediating mechanism explicitly.

The 66.7% self-harm prevalence in the severe-stress group warrants particular attention. Consistent with Nock (2020) and the Experiential Avoidance Model (Kweon, 2026), self-harm may operate as a short-term affect-regulation strategy when adaptive resources are overwhelmed. (Wang et al., 2022) identified multiple risk factors difficulty managing negative emotions, restricted social interaction, low self-esteem, mental disorders, and family adversity that converge plausibly in students navigating the double burden of academic examinations and clinical placement. (Otto et al., 2023) further documented altered resting-state functional connectivity in adolescents with NSSI, suggesting a neurobiological substrate that may be potentiated under chronic stress.

Our sample was 82.3% female, consistent with the gender composition of Indonesian Poltekkes cohorts. This composition matters theoretically: (Hodes & Epperson, 2019) argue that women's heightened stress reactivity arises from interacting hormonal, neurocircuit, and social-experiential factors rather than from innate fragility. (Ramikie & Ressler, 2017) similarly describe sex-specific mechanisms in fear and PTSD that may elevate NSSI vulnerability. Importantly, female students are more likely to employ emotion-focused rather than problem-focused coping, and in the absence of strong resilience resources, emotion-focused coping can escalate to internalizing behaviors such as self-harm (Theodoratou et al., 2023). Male students, in contrast, may externalize through substance use. In our predominantly female cohort, emotion-regulation interventions rather than generic stress-management advice are likely to yield the greatest preventive yield.

Although Nursing and Midwifery are often aggregated in institutional analyses, the literature suggests non-trivial differences. (Mrošková, Schlosserová, Cuperová, & Tkáčová, 2024) reported higher clinical-placement stress among nursing students relative to midwifery students in some cohorts, whereas (Kuo et al., 2022) documented elevated stress among midwifery students due to the high-stakes nature of maternal care and the near-total female cohort, which can intensify peer-comparison dynamics. Our sample was 75.3% Nursing and 24.7% Midwifery; the unequal sub-sample sizes precluded meaningful stratified comparison. This represents a sampling limitation: future studies should either oversample Midwifery students or recruit across multiple Poltekkes to compare departments directly.

The concentration of moderate stress in Semester 3 respondents (43.2%) aligns with international evidence that the first clinical placement the transition from classroom theory to supervised practice constitutes one of the most stressful milestones in health-professional training (Onieva-Zafra et al., 2020). Students at this stage confront unfamiliar hospital environments, preceptor scrutiny, and the weight of patient-facing responsibility for the first time. Institutionally, this period is an actionable intervention window.

Several limitations must be acknowledged. First, the cross-sectional design precludes causal inference. Second, the response rate (40.3%) raises the possibility of selection bias students with very severe distress may have been more reluctant (or, alternatively, more motivated) to participate, though demographic comparison did not reveal systematic differences. Third, self-report on sensitive topics such as self-harm is subject to social-desirability bias, potentially underestimating true prevalence. Fourth, known confounders (depression, anxiety, socioeconomic status, prior mental-health history, academic workload) were not measured, and the bivariate Chi-Square analysis cannot isolate the independent contribution of stress. Future studies should incorporate longitudinal designs, multivariable logistic or Poisson regression, and validated measures of comorbid conditions to strengthen causal inference.

Despite these limitations, the findings have direct practical implications for Indonesian health polytechnics. First, routine mental-health screening using brief validated instruments (e.g., DASS-21, PHQ-9, SHI) should be embedded in academic and pre-clinical schedules, particularly before Semester 3 clinical placement. Second, structured pre-clinical orientation programs addressing the fear of medical errors, preceptor expectations, and patient-care responsibilities can reduce "fear of the unknown" and buffer the stress peak (Kuo et al., 2022). Third, cognitive-behavioral coping training, shown effective in allied-health students (Duran, Çiçekoğlu, & Kaya, 2020), should be integrated into curricular well-being modules. Fourth, accessible, confidential

campus counseling ideally with dedicated clinical psychologists or mental-health nurses should be scaled up, particularly in polytechnics located outside Java where such services are scarce.

CONCLUSION

This study found a significant positive association between stress level and self-harm behavior among Nursing and Midwifery students at Poltekkes Kemenkes East Kalimantan, with students under severe stress bearing substantially higher odds of self-harm than their peers under normal stress. The study contributes the first quantified estimate of this association in an eastern Indonesian polytechnic cohort during a critical pre- and early-clinical-placement window, thereby addressing a previously underdocumented gap. Translating these findings into action, we recommend that institutions implement periodic mental-health screening integrated with the academic calendar, deliver structured pre-clinical orientation and cognitive-behavioral coping training before Semester 3, and establish accessible confidential counseling services staffed by mental-health professionals. For researchers, future work should employ longitudinal and mixed-methods designs, oversample Midwifery students, measure coping and comorbid symptoms, and examine the cultural and institutional moderators that shape the stress–self-harm pathway in Indonesian health-education settings.

This study found a significant positive relationship between stress levels and self-harm behavior among Nursing and Midwifery students at the Health Polytechnic of the Ministry of Health East Kalimantan (Poltekkes Kemenkes Kalimantan Timur), wherein students experiencing severe stress were significantly more likely to engage in self-harm compared to their peers with normal stress levels. This study provides the first quantified estimate of this relationship within a health polytechnic cohort in Eastern Indonesia, specifically during the critical period leading up to and at the onset of clinical practice, thereby addressing a previously underdocumented gap in the literature. In an effort to translate these findings into actionable measures, we recommend that educational institutions implement regular mental health screenings integrated into the academic calendar; organize structured pre-clinical orientations alongside cognitive-behavioral coping strategy training prior to the third semester; and provide easily accessible, strictly confidential campus counseling services supported by mental health professionals. For future research, subsequent studies should employ longitudinal and mixed-methods designs, increase the sample proportion of midwifery students, measure coping strategies and comorbid symptoms, and examine the cultural and institutional moderators that influence the stress self-harm pathway within the context of health education in Indonesia.

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