A Mixed-Method Analysis of Entrepreneurship Training and Disaster Preparedness

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ABSTRACT

The study employed a mixed-methods design. In the quantitative phase, 60 vocational nursing students who had completed an entrepreneurship training module participated in a post-test survey using two validated Likert-scale instruments: one to assess entrepreneurial attitude and the other to measure disaster readiness thru innovative social business. Simple linear regression and descriptive statistics were used in the analysis. Semi-structured interviews with ten carefully chosen students were conducted throughout the qualitative phase to investigate their learning experiences and perceptions. Thematic analysis was used to interpret the qualitative data. A regression research showed a significant positive link between entrepreneurial mentality and disaster readiness (R^2 = 0.314, β = 0.560, $p < 0.01$). The qualitative findings corroborated the statistical findings, with themes including greater crisis self-efficacy, proactive thinking, leadership attitude, and the perceived application of entrepreneurship to disaster circumstances. Entrepreneurial training helps nursing students prepare for disasters. The combination of quantitative indicators and student narratives provided a more in-depth knowledge of how entrepreneurial skills translate into disaster preparedness. The findings emphasize the need to incorporate innovation-driven approaches into nursing school curricula.

Key words:
Disaster Preparedness, Entrepreneurship, Nursing Education, Leadership

SARI PATI

Penelitian ini menggunakan desain metode campuran. Pada tahap kuantitatif, 60 mahasiswa keperawatan vokasional yang telah menyelesaikan modul pelatihan kewirausahaan berpartisipasi dalam survei pasca-tes menggunakan dua instrumen skala Likert yang telah divalidasi: satu untuk menilai sikap kewirausahaan dan yang lainnya untuk mengukur kesiapsiagaan bencana melalui inovasi bisnis sosial. Regresi linier sederhana dan statistik deskriptif digunakan dalam analisis. Wawancara semi-terstruktur dengan sepuluh mahasiswa terpilih dilakukan sepanjang tahap kualitatif untuk menyelidiki pengalaman belajar dan persepsi mereka. Analisis tematik digunakan untuk menginterpretasikan data kualitatif. Sebuah penelitian regresi menunjukkan hubungan positif yang signifikan antara mentalitas kewirausahaan dan kesiapsiagaan bencana (R^2 = 0,314, β = 0,560, $p < 0,01$). Temuan kualitatif menguatkan temuan statistik, dengan tema-tema yang mencakup peningkatan efikasi diri dalam menghadapi krisis, pemikiran proaktif, sikap kepemimpinan, dan persepsi penerapan kewirausahaan dalam situasi bencana. Pelatihan kewirausahaan membantu mahasiswa keperawatan mempersiapkan diri menghadapi bencana. Kombinasi indikator kuantitatif dan narasi mahasiswa

memberikan pengetahuan yang lebih mendalam tentang bagaimana keterampilan kewirausahaan diterjemahkan menjadi kesiapsiagaan bencana. Temuan ini menekankan perlunya memasukkan pendekatan berbasis inovasi ke dalam kurikulum keperawatan.

INTRODUCTION

Disasters, whether natural or man-made, necessitate an immediate and effective response from healthcare professionals, notably nurses. Despite this crucial responsibility, many nursing students graduate without having received proper emergency preparedness training. Traditional programs emphasize clinical competencies, but they frequently overlook adaptive skills like critical thinking, leadership, and creativity. These skills are critical in uncertain, resource-constrained crisis scenarios (Muñoz et al., 2019). According to BNBP data, Hydrometeorological disasters, both dry and wet, made up 98.36% of all disasters in Indonesia. Flooding was the most common, followed by landslides, severe weather, and forest fires. Conversely, geological disasters, earthquakes, and volcanic eruptions occurred just once out of 122 known disasters in Indonesia (The National Disaster Management Agency, 2024).

Healthcare workers, including nurses, are prepared to learn adaptive skills in reaction to disasters in their communities. This sensitivity and reactivity cannot be acquired overnight. Creating or creating social enterprises is also a smart option in locations with islands, mountains, and other hazards where several disasters are likely to occur unexpectedly and require various components of readiness to recover from. When modern nursing services are integrated with nursepreneurship by increasing access, it displays the value of product quality, financial value, emotional value, and social value, all of which are crucial in achieving optimal care services with applicable capabilities (Nursanti et al., 2024). Most nurses seek to conduct nurse entrepreneurship by opening independent practices such as modest wound care, but not all do so because to licensing issues (Sudrajat et al., 2024).

Expand their horizons and provide nurses with options for the business image that will be run in terms of health science standards, and also with contemporary technological improvements. A nutritious diet is essential for achieving the Sustainable Development Goals (SDGs), as it protects against all forms of malnutrition. Seizing chances in this program can also provide nurses with an alternative business opportunity, such as education or food goods (Sari et al., 2021). (Gentry & Prince-Paul, 2021) Nurses can eventually become nurse influencers by using a digital platform to share knowledge, ideas, and inspiration about the health profession they have practiced. (Brooks, 2025) Digital transformation research displays an interest in innovation, discovery,

and nursing entrepreneurship. Nurses' entrepreneurial roles heavily influence their creativity.

Although disaster preparedness has become an important topic in nursing education, most curricula still focus on clinical and procedural skills. Leadership, inventiveness, swift decision-making, and invention are all examples of adaptive qualities that are frequently neglected. Meanwhile, research has demonstrated that entrepreneurship education promotes proactivity, critical thinking, and problem-solving orientation all of which are essential skills in disaster situations. However, research that explicitly incorporates entrepreneurship into nursing education, particularly in the context of disaster preparedness, is limited. This gap emphasizes the critical need to investigate how entrepreneurship training might improve nursing students' disaster preparedness, particularly in disaster-prone nations such as Indonesia.

Disasters occur often in Indonesia. As a result of this phenomenon, researchers are interested in studying nurses' roles not just as wound care providers, but also as entrepreneurs who may help recover and deal with disasters more swiftly by inventing health products and services. This study fills a gap by examining how entrepreneurship training can improve disaster preparedness among vocational nursing students using a mixed-method approach, providing both statistical evidence and narrative

insights to strengthen the integration of entrepreneurial competencies into nursing education.

METHODS
The study used a mixed-method sequential explanatory design (Ivankova et al., 2006), with a dominant quantitative phase followed by a qualitative phase. This method was used to gain a more complete knowledge of how entrepreneurship training affects disaster preparedness among vocational nursing students. The conceptual framework is illustrated in Figure 1.

The quantitative phase involved 60 vocational nursing students who had completed an entrepreneurship training program centered on disaster preparedness and innovation. All participants were chosen using the total sampling approach. For the qualitative phase, ten students were chosen on purpose based on differences in their post-test scores.

Instruments and Data Collection, Quantitative Phase: Two self-administered instruments were used: the Entrepreneurial Attitude Questionnaire (5 items, 5-point Likert scale) and the Disaster Preparedness Questionnaire (5 items, 5 point Likert scale). Before data collection began, these instruments were validated for reliability and construct validity. The qualitative phase involved semi-structured interviews with a prepared interview guide. Questions focused on students' observations, reflections, and
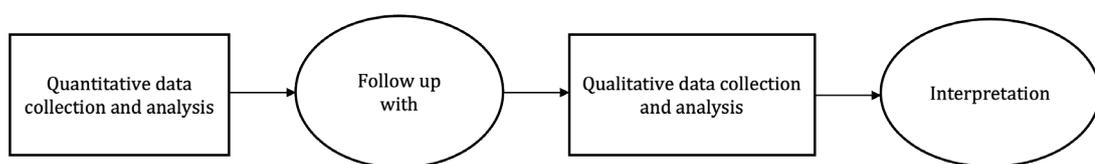

Figure 1. Conceptual Framework

experiences during and after the program, with a specific emphasis on disaster preparedness and entrepreneurial thinking. Quantitative Analysis: Data were examined using descriptive statistics and simple linear regression to determine the impact of entrepreneurial attitude on disaster preparedness. The analysis was carried out using SPSS version 25. Qualitative Analysis: Interview data were transcribed and examined thematically. Coding was done manually to discover major patterns and themes that reflect students' real experiences. The qualitative findings were incorporated into the interpretation step to help explain and supplement the quantitative results. This integration revealed insights into the practical and emotional aspects of student preparedness that were not captured by the survey data.

RESULTS AND DISCUSSION
Results
1. Quantitave Results:
The collected data were examined using simple linear regression to determine the impact of entrepreneurial mindsets on disaster preparedness. The analysis yielded a correlation value (R) of 0.560, indicating a relatively significant association between the two variables. The coefficient of determination (R Square) value of 0.314 suggests that entrepreneurial attitudes explain 31,4% of the variation in student disaster preparedness, with the remaining 68.6% impacted by non-model factors. The adjusted R Square value of 0.302 demonstrates the constancy of the entrepreneurial variable's effect, even after adjusting for sample size. Meanwhile, the standard inaccuracy of the estimate of 0.924 indicates a prediction inaccuracy between the observed and model values. This is normal in regression analysis because the model cannot explain all of the variation in the data. The magnitude of the error remains within acceptable limits, therefore the model is still considered representative.

The ANOVA Table 2. test yielded a calculated F value of 26.492, with significance level of 0.000 (<0.05). This indicates that the created regression model is statistically significant, implying that entrepreneurship influences students' disaster preparedness. The Sum of Squares Regression value of 22.633 is more

Tabel 1. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.560[a]	.314	.302	.924

a. Predictors: (Constant), KWU

Tabel 2. ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	22.633	1	22.633	26.492	.000[b]
	Residual	49.551	58	.854		
	Total	72.183	59			

a. Dependent Variable: GADAR
b. Predictors: (Constant), KWU

than the Sum of Squares Residual of 49.551, indicating that the variation explained by the model outweighs the unexplained variation. Therefore, the simple regression model is appropriate for application.

The coefficient Table 3. test results demonstrate a constant value of 1.725 at a significance level of 0.000, implying that even if entrepreneurial attitudes were zero, students' disaster preparation would stay at 1.725. The regression coefficient for entrepreneurship was 0.535 with a significance level of 0.000 (<0.05), demonstrating a positive and significant impact on disaster preparedness. This indicates that every one-unit rise in the entrepreneurship score raises the disaster preparation score by 0.535.

Moreover, the Standardized Beta value of 0.560 and the estimated t-value of 5.147, which is bigger than the t-table (2.002 for n=60, α=0.05), suggest that entrepreneurship contributes significantly to predicting students' disaster readiness.

Overall, this study found that entrepreneurial mindsets have a favorable and significant impact on disaster preparedness among nursing students. Students with more entrepreneurial attitudes are more likely to think creatively, innovatively, and focus on problem solutions, which improves disaster preparedness.

2. Qualitative Results:

The qualitative phase provides in-depth insights into students' experiences following disaster preparedness entrepreneurship training. Five main themes emerged: crisis self-efficacy, proactive thinking, the importance of entrepreneurial abilities, crisis decision-making, and the leadership attitude.

a. Self-efficacy during a crisis

Many pupils reported increased confidence in coping with emergency circumstances. One participant stated (Student 1),

"I feel more confident in handling emergency situations"

This suggests that the training enchanced not only technical knowledge but also psychological preparedness, which is critical in disaster response.

b. Proactive thinking

Students emphasized the necessity of predicting issues before they arise. A participant stated (Student 2),

"I started to think about alternative solutions before problems occur"

This proactive attitude represents a transition from reactive issue solving to anticipatory thinking, which is consistent with entrepreneurial activity and disaster preparedness measures.

Tabel 3. Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.725	.386		4.463	.000
	KWU	.535	.104	.560	5.147	.000

a. Dependent Variable: GADAR

c. The importance of entrepreneurial skills

Several attendees understood that entrepreneurship could be useful in disaster management. One student stated that (Student 3),

"Entrepreneurship can actually be applied in disaster situations, for example, by optimizing limited resources"

This demonstrates how entrepreneurial abilities, such as resourcefulness and invention, are useful for nurses in emergency situations.

d. Crisis Decision Making

Quick and effective decision-making was also identified as an important learning outcome. According to one participant (Student 4),

"This training taught me to make decisions quickly, because in crisis situations, there is no time to think too long"

Such stories emphasize the importance of entrepreneurship education in developing decisiveness under duress.

e. Leadership mindset

Finally, pupils reported acquiring leadership skills that may be used during an emergency. A participant stated (Student 5),

"I feel I can lead in an emergency, guiding my peers and community to remain calm"

This demonstrates the convergence of entrepreneurial and leadership skills, both of which are essential for health professionals involved in disaster response.

3. Integration of Findings:

The integration of quantitative and qualitative findings highlights a consistent relationship between entrepreneurial attitudes and disaster readiness among vocational nursing students. Quantitative analysis demonstrated that entrepreneurial attitudes significantly predicted disaster preparedness ($R^2 = 0.314$, $\beta = 0.560$, $p < 0.01$). This statistical evidence suggests that the more positive the entrepreneurial mindset of students, the better their capacity to respond to crisis situations.

The qualitative phase reinforced this result by illustrating how students internalized entrepreneurial skills during disaster-related training. Themes such as self-efficacy in crisis and proactive thinking exemplify the mechanisms through which entrepreneurial attitudes translate into practical readiness. For instance, students expressed increased confidence in handling emergencies ("I feel more confident during critical situations") and an ability to anticipate challenges ("I started to think of alternative solutions before the crisis happens").

Furthermore, the theme of leadership mindset revealed that entrepreneurial training supported students in developing a sense of agency, enabling them to take initiative in disaster contexts. Likewise, the recognition of the relevance of entrepreneurial skills underscores the adaptability of entrepreneurial competencies such as decision-making and problem solving to emergency healthcare settings.

Taken together, the convergence of statistical results and thematic narratives provides robust evidence that entrepreneurship-based education enhances not only the conceptual

understanding of disaster readiness but also the practical skills needed in real-world scenarios. This integration strengthens the argument that embedding entrepreneurial training into nursing curricula can serve as an innovative strategy to cultivate both preparedness and resilience in future healthcare professionals.

Discussion

The results of this study show that entrepreneurial mindsets greatly improve disaster preparedness among vocational nursing students. The regression results (R^2 = 0.314; β = 0.560; $p < 0.01$) show a moderate but significant effect, indicating that students with strong entrepreneurial mindsets are better suited to predict and manage crisis circumstances. These findings are consistent with research showing that an entrepreneurial approach helps transition and mobilize the resilience of small and medium-sized businesses to survive disasters by encouraging risk-taking, creativity, and proactivity, hence promoting the development of new capacities (Zighan et al., 2021). Additionally, public awareness of the dangers and consequences of calamities can lead to major investment in disaster management (Khan et al., 2018).

Qualitative studies show that entrepreneurship training leads to practical preparedness, such as proactive thinking, swift decision-making, and a leadership mindset, impacting attitudes while also developing actionable competencies. (Lumantao et al., n.d.) The study found that simulation-based teaching greatly increased nursing students' self-confidence and preparation.

A particularly notable finding was the establishment of a leadership mindset; trainees felt empowered to coach colleagues and take immediate action in disaster situations. This is consistent with broader research on the role of disaster nursing, which emphasizes strategic leadership and active participation of nurses in crisis response planning (Ličen & Prosen, 2025) (Kagawa, F & Selby, 2014). The combination of entrepreneurial orientation and leadership development proposes a comprehensive framework in which entrepreneurial education improves both individual preparedness and role-based agency in disaster situations (Sabie Aridi, 2025).

The practical consequences are significant: including entrepreneurial modules into nursing programs, especially those that imitate or relate to disaster circumstances, can improve both preparedness and adaptive professional competencies. This approach is mirrored by advocates for adding simulation and experience learning into disaster education to improve knowledge, confidence, and actionable abilities (Silenas et al., 2008). Educational institutions and policymakers in disaster-prone locations must examine these innovation criteria to prepare clinically competent educators who are resilient, innovative, and capable of leading in high-risk contexts.

MANAGERIAL IMPLICATION

This study's findings have important implications for nursing education institutions and health workforce policymakers. First, including entrepreneurship-oriented training into nursing courses might be a smart way to improve students' disaster preparation by providing them with not just clinical competence but also inventive problem-solving abilities during crises. Second, curriculum designers and academic leaders should prioritize active learning

models such as simulation, project-based entrepreneurship, and scenario based training that promote both entrepreneurial attitude and disaster preparedness. Third, collaboration among higher education institutions, local governments, and disaster management agencies is critical for aligning entrepreneurship training with real-world disaster response demands and assuring graduates' adaptability and resilience. Finally, for managerial practice, incorporating entrepreneurship into disaster preparedness programs provides a long-term avenue for developing future healthcare professionals capable of leading, inventing, and responding successfully in unanticipated emergency situations. Because entrepreneurship in the health industry is covered in a separate course as part of an entrepreneurial development program for health students.

CONCLUSION

This mixed-method study finds empirical evidence that entrepreneurship training improves disaster preparation among vocational nursing students. Entrepreneurial attitudes were found to be highly predictive of crisis management readiness, while students reported greater self-efficacy, proactive thinking, rapid decision-making, and leadership orientation as direct training effects. These findings show that entrepreneurial skills are not confined to corporate contexts and may be effectively applied to improve disaster nursing capacities.

The findings emphasize the necessity of incorporating innovative, experiential learning modules into nursing education, especially in disaster-prone areas. Integrating entrepreneurial concepts into curricula helps foster not only professional competence, but also adaptation for business planning as a social innovation, resilience, and leadership in emergency situations. Extend the Restrictions Future studies should examine the long-term impacts and scalability of such interventions across a range of nursing education. The sample size (n=60) is a limitation. ◄

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