

Global Trends and Conceptual Model of Psychological Determinants of Entrepreneurial Readiness: Bibliometric Analysis and SEM Approach

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Abstract. Entrepreneurial readiness is increasingly shaped by psychological factors that enable individuals to adapt and persist in uncertain conditions. Previous studies on this topic have largely examined psychological factors such as mental health, resilience, and adversity quotient in isolation, resulting in a fragmented understanding of their combined influence on entrepreneurial outcomes. Therefore this study aims to address the stated gap by integrating the outlined constructs within a unified framework. In order to achieve this objective, a sequential mixed-method design was adopted, combining bibliometric analysis of 356 Scopus-indexed documents (2010–2025) with Structural Equation Modeling (PLS-SEM) based on data from 412 health students. The bibliometric findings identified resilience, adversity quotient, and mental well-being as growing themes in entrepreneurship exploration. SEM results showed that adversity quotient had the strongest effect on entrepreneurial readiness ($\beta=.734$, $p<.001$), followed by resilience ($\beta=.466$, $p<.001$) and mental health ($\beta=.260$, $p=.046$). Resilience also significantly mediated these relationships. Collectively, these findings suggest that resilience, adversity quotient, and mental health are foundational components of entrepreneurial readiness and should be integrated into entrepreneurship education and student development programs.

Keywords: psychological resilience, entrepreneurial readiness, health students, mental health, structural equation modeling

Psymphathic :

Jurnal Ilmiah Psikologi

Vol. 13:1, June 2026,

Page 53-68

eISSN: 2502-2903

pISSN: 2356-3591

Article Info

Received:

October 14, 2025

Accepted:

April 21, 2026

Published:

June 30, 2026

DOI:

<https://doi.org/10.15575/psy.v13i1.51389>

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Introduction

Entrepreneurship has increasingly become a focal point in educational systems, especially among university students, as it promotes innovation, creativity, and self-reliance. The concept is considered very important because the pursuit of entrepreneurial ventures provides students with opportunities to apply academic knowledge in practical environments, while developing essential skills such as problem-solving, risk management, and adaptability. However, alongside these benefits, the demands of academic performance combined with entrepreneurial expectations may also generate significant psychological pressure. Studies have shown that students experience increased levels of stress and anxiety due to academic demands and uncertainty associated with entrepreneurial activities (Nogueira & Sequeira, 2024; Xu et al., 2025), which

may lead to psychological distress, anxiety, and burnout in competitive environments (Abbas et al., 2024; Labrague, 2022).

These conditions emphasize the importance of integrating psychological well-being into educational and entrepreneurial frameworks. Previous studies suggest that supportive environments and strong interpersonal relationships can serve as protective factors against mental health challenges among students (Nogueira & Sequeira, 2024). In this context, academic resilience, defined as the ability to recover from difficulties, has been identified as a key mechanism that mediates the relationship between academic pressures and psychological well-being (Abbas et al., 2024). Furthermore, interventions aimed at enhancing psychological well-being, such as community mental health education, have shown

positive effects on students' resilience and outlook, suggesting that integrating mental health support into entrepreneurship education may yield more comprehensive outcomes (Firdaus et al., 2023).

Mental health among students in health-related fields remains a significant issue in higher education. Heavy academic workloads, emotionally demanding learning environments, and high expectations from institutions and families contribute to increased vulnerability to anxiety, depression, and stress. Empirical evidence shows that approximately 33.8% of health students worldwide experience anxiety, with higher prevalence observed in Asia and the Middle East (Md Isa et al., 2021). Additional factors such as clinical exposure, emotional interaction with patients, and professional expectations further increase psychological distress (Marriott et al., 2023; Tao, 2024; Yang, 2023).

Considering these challenges, internal psychological resources become essential in helping students cope with academic and professional demands. Resilience, defined as the ability to adapt and recover from adversity, has been shown to support mental health and sustain learning motivation under pressure (Chidi et al., 2024). Students with higher resilience tend to manage stress more effectively, maintain emotional stability, and remain focused on long-term goals (Petersen et al., 2021).

Beyond resilience, the Adversity Quotient (AQ) represents an important psychological capacity that reflects an individual's ability to confront, interpret, and overcome difficulties. In the context of health education, AQ is particularly relevant due to the demanding nature of academic and clinical environments (Wang et al., 2023). Individuals with higher AQ typically show better coping strategies, greater satisfaction, and reduced risk of burnout (Kim et al., 2024; Mealer et al., 2012). These psychological capacities are essential not only for academic success, but also for preparing students to face future professional challenges, including entrepreneurial activities in the health sector.

Regardless of the fact that constructs such as psychological capital, grit, and self-efficacy have been widely used in entrepreneurship studies, AQ offers a distinct perspective. Dissimilar to self-efficacy, which focuses on belief in one's capabilities, as well as grit, and emphasizes perseverance toward long-term goals, AQ captures how individuals interpret and respond to adversity through its multidimensional CORE framework, comprising control, origin, ownership, reach, and endurance. This makes AQ particularly relevant in entrepreneurial contexts characterized by uncertainty, risk, and failure, positioning it as a complementary construct that enriches the understanding of psychological readiness.

Entrepreneurial readiness reflects an individual's preparedness to engage in entrepreneurial activities, shaped by both psychological and contextual factors. Previous studies have shown that attributes such as AQ, self-efficacy, and locus of control significantly contribute to entrepreneurial intentions and behaviors (Handaru et al., 2015; Maharani et al., 2020; Ramadani et al., 2023). Individuals with strong psychological capacities are more inclined to transform challenges into opportunities and sustain engagement in entrepreneurial processes (Indawati, 2022; Ramadani et al., 2023). Most existing studies, however, focus on entrepreneurial intention rather than readiness, which is a more practical and action-oriented construct. In the context of Indonesia, the gap between entrepreneurial potential and participation in the health sector remains evident. Although the number of entrepreneurs has reached 56.56 million individuals (37.86% of the workforce), only a small proportion is engaged in the health sector (3.35%), pointing to untapped opportunities and structural barriers. This invariably emphasizes the need to better understand factors that shape entrepreneurial readiness among health students as future professionals (Agustina et al., 2023; Yohana, 2021).

The present study is grounded in several established theoretical frameworks to provide a comprehensive understanding of entrepreneurial readiness. Psychological Capital Theory emphasizes the role of positive psychological resources, such as resilience, in enhancing adaptability and performance. Stress and Coping Theory explains how individuals interpret and respond to stressors, drawing a close connection to mental health and AQ. The Theory of Planned Behavior (TPB) further provides a relevant perspective in understanding readiness as a precursor to behavior, where psychological factors shape individuals' preparedness to engage in entrepreneurial activities (Dinis et al., 2013; Zulmi & Tentama, 2024).

Regardless of the fact that previous studies have examined psychological factors in entrepreneurship, important gaps remain. Existing explorations tend to treat mental health, resilience, and AQ as separate constructs, resulting in a fragmented understanding of their combined influence on entrepreneurial readiness. Empirical evidence focusing on health students, particularly in developing countries, also remains limited.

This study extends the literature by offering three key contributions. First, it shifts the focus from entrepreneurial intention to entrepreneurial readiness. Second, it integrates bibliometric analysis with PLS-SEM to provide both conceptual mapping and empirical validation. Third, the investigation provides context-specific evidence from health students in Indonesia.

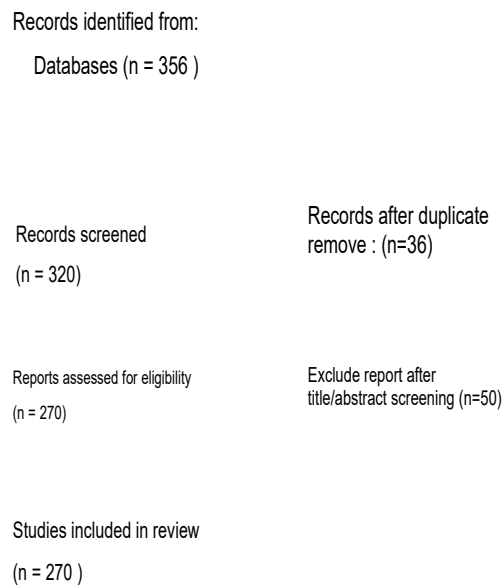


Figure 1. PRISMA Flow Chart

Despite the growing body of explorations, a lack of integrative models that simultaneously examine mental health, resilience, and AQ in explaining entrepreneurial readiness persists, particularly among health students in developing country contexts. Dissimilar to conventional studies that depend solely on established theoretical frameworks, this study adopts a sequential explanatory design in which bibliometric analysis plays a model-building role rather than serving a descriptive mapping function.

Specifically, the bibliometric findings uncovered three essential insights that directly informed the SEM model specification. First, the co-occurrence network showed a strong conceptual convergence between resilience, mental health, and entrepreneurial outcomes, suggesting that these constructs should not be examined in isolation but within an integrated framework.

Second, the thematic evolution analysis showed a shift from intention-based models toward psychological adaptability constructs, pointing to the need to extend beyond traditional intention frameworks. Third, the appearance of the AQ as a relatively recent but increasingly connected construct justified its inclusion as a central predictor rather than a peripheral variable.

Based on these findings, the SEM model was not arbitrarily constructed but was explicitly derived from empirically observed knowledge structures in the literature. Bibliometric analysis in this study, therefore, functions as a theory-enrichment and model-

specification tool, bridging fragmented literature into a unified empirical model.

Grounded in psychological capital and stress-coping perspectives, this study proposes that AQ and mental health influence entrepreneurial readiness both directly and indirectly through resilience as a mediating variable. Accordingly, the present exploration aims to develop an integrated model of psychological determinants of entrepreneurial readiness by combining bibliometric analysis and PLS-SEM to provide both conceptual and empirical contributions.

Methods

The present study adopted a sequential mixed-methods design integrating bibliometric analysis and Partial Least Squares–Structural Equation Modeling (PLS-SEM) to examine the relationships among mental health, resilience, AQ, and entrepreneurial readiness. The entire study design was theory-driven rather than purely exploratory, with the conceptual model developed based on established theoretical frameworks and prior empirical findings.

The bibliometric phase served as an initial exploratory and mapping stage to identify dominant constructs, thematic developments, and existing gaps within the literature. These findings were subsequently used to inform construct selection and hypothesis development. The SEM phase was then conducted to empirically test the theoretically derived relationships among the identified constructs. This sequential integration ensures that the mixed-method design

remains complementary, where bibliometric insights guide model development and SEM provides empirical validation.

Phase 1. Bibliometric Analysis

The present study adopted a sequential mixed-method design consisting of two phases. In Phase 1, a bibliometric analysis was conducted to map the study landscape on psychological determinants and entrepreneurial readiness.

This phase aimed to identify global study trends, thematic clusters, and conceptual structures that provide a theoretical basis for model development. Data were retrieved from the Scopus database due to its extensive coverage of peer-reviewed international publications. A Boolean search strategy was subsequently adopted to capture relevant studies using combinations of key constructs:

("entrepreneurial readiness" OR "entrepreneurial intention" OR "entrepreneurial mindset" OR "entrepreneurship readiness") AND ("mental health" OR "psychological well-being" OR "emotional well-being" OR "mental well-being") AND ("resilience" OR "psychological resilience" OR "mental toughness") AND ("adversity quotient" OR "adversity intelligence" OR "adversity competence" OR "grit" OR "persistence" OR "perseverance").

The search strategy was designed to balance specificity and coverage. While the inclusion of multiple keywords ensured conceptual relevance, it may have limited the inclusion of studies using alternative terminologies. This approach was therefore complemented by systematic screening procedures to enhance the relevance and quality of the dataset.

The study selection process followed PRISMA principles to ensure transparency and reproducibility. The inclusion criteria were (1) articles published between 2010 and 2025; (2) indexed in the Scopus database; (3) written in English; (4) focused on entrepreneurship and relevant psychological constructs; and (5) peer-reviewed journal articles. The exclusion criteria comprised duplicate records, non-peer-reviewed articles, irrelevant studies based on title and abstract screening, and incomplete full-text articles. The initial search identified 356 records, but after omitting duplicates and conducting title and abstract screening, followed by full-text eligibility assessment, a total of 270 articles were included in the final dataset (Figure 1).

Bibliometric analysis was conducted using VOSviewer to generate network visualizations, including co-occurrence of keywords, thematic clusters, and study trends. The interpretation focused on identifying thematic evolution, developing constructs, and conceptual convergence within the field, thereby providing a deeper analytical basis for model development. Beyond descriptive mapping, the

findings from this phase were used to identify key constructs, namely mental health, resilience, and AQ, as dominant and developing themes. These insights directly informed the development of the conceptual model and hypotheses tested in the SEM phase, ensuring a coherent and integrated study design.

Phase 2. Quantitative Study

The second phase includes a quantitative study using PLS-SEM to test the proposed conceptual model. Data were collected through a structured self-administered questionnaire distributed to students enrolled in health-related higher education programs.

Participants were recruited using purposive sampling, targeting individuals who met the inclusion criteria, namely actively enrolled as health students, willing to participate voluntarily, and completing all questionnaire items. This sampling approach ensured relevance to the study objectives and is appropriate for applied investigations in social and health sciences (Appelbaum et al., 2018). A total of 412 valid responses were obtained, exceeding the recommended minimum sample size for PLS-SEM and providing sufficient statistical power for model estimation.

Specifically, participants were selected based on the following criteria (1) actively enrolled as health students (e.g., medicine, nursing, public health, pharmacy). (2) At least in the third semester to ensure sufficient academic exposure; and (3) having an interest or exposure to entrepreneurship-related activities.

The constructs were measured using validated instruments. Mental health was assessed using the Depression Anxiety Stress Scale (DASS-42). Resilience was measured using the Connor-Davidson Resilience Scale (CD-RISC). AQ was assessed based on Stoltz's CORE dimensions, including Control, Origin and Ownership, Reach, and Endurance. Entrepreneurial readiness was measured using an adapted scale capturing competence, motivation, intention, and conceptual skills. All items were rated on a five-point Likert scale ranging from "strongly disagree" to "strongly agree."

To examine potential differences across study programs, a multigroup analysis (MGA) was conducted within the PLS-SEM framework. This analysis assessed whether structural relationships differ significantly between groups.

Model evaluation followed established PLS-SEM procedures. The measurement model was assessed using indicator reliability (factor loadings $>.70$), internal consistency reliability (Cronbach's alpha and composite reliability $\geq .70$), convergent validity (AVE $>.50$), and discriminant validity using the Fornell-Larcker criterion and HTMT ratio ($<.90$). Given the high reliability values observed, additional attention

was directed toward potential item redundancy and construct distinctiveness.

The structural model was evaluated using path coefficients, bootstrapping significance testing, coefficient of determination (R^2), effect sizes (f^2), and predictive relevance (Q^2). Considering the very high R^2 values, collinearity diagnostics and model specification were carefully examined to reduce the risk of overfitting and ensure robustness.

To address potential common method bias, both procedural and statistical approaches were applied. Procedurally, participants' anonymity was ensured, and evaluation apprehension was minimized. Statistically, Harman's single-factor test showed that no single factor accounted for the majority of variance ($< 50\%$), and full collinearity VIF values remained below the threshold of 3.3, suggesting that common method bias was not a major concern.

Demographic characteristics of the study participants are presented in Table 1. The majority were female (78.9%) and aged above 20 years (69.9%). Participants represented diverse health disciplines, with Public Health (22.6%) and Nursing (19.9%) as the largest groups. Regarding entrepreneurial interest, the most common categories were culinary (30.1%) and health services (23.3%).

Data Analysis

Data analysis was conducted in two stages. First, descriptive statistics were used to summarize the demographic characteristics of participants. Second, the proposed conceptual model was tested using Partial Least Squares Structural Equation Modeling (PLS-SEM) in SmartPLS 4.0. PLS-SEM was selected because this study aimed to evaluate a prediction-oriented structural model comprising multiple latent variables and mediating relationships, rather than solely reproducing a covariance matrix for strict theory confirmation. PLS-SEM is also suitable for complex models with multiple constructs and indicators and is commonly applied in behavioral and educational research to assess both measurement quality and structural relationships simultaneously. The measurement model was assessed using indicator reliability, internal consistency reliability (Cronbach's alpha and composite reliability), convergent validity (AVE), and discriminant validity (HTMT). The structural model was evaluated using path coefficients, bootstrapping significance tests, coefficient of determination (R^2), effect sizes (f^2), and predictive relevance (Q^2). To address potential confounding effects, demographic covariates — gender, age group, and study program — were included as control variables in the structural model when estimating the effects of mental health, resilience, and AQ on entrepreneurial readiness.

Table 1.

Respondent Characteristic

Variable	Frequency	Percentage
Gender		
Female	325	78.9
Male	87	21.1
Age		
> 20 years	288	69.9
≤ 20 years	124	30.1
Study Program		
Public Health	93	22.6
Nursing	82	19.9
Medicine	52	12.6
Pharmacy	51	12.4
Psychology	48	11.7
Midwifery	45	10.9
Dental Nursing	22	5.3
Medical Laboratory Technology	19	4.6
Entrepreneurship Category		
Culinary / Food & Beverages	124	30.1
Health and Clinic	96	23.3
Fashion & Accessories	42	10.2
Services	39	9.5
Online Shop/ Reseller / Dropship	29	7.0
General Trade / Retail / MSMEs	28	6.8
Creative / Innovation/Merchandise	24	5.8
Agriculture / Animal	15	3.6
Husbandry		
No Business Plan Yet	15	3.6

The results of Harman's single-factor test showed that the first factor accounted for less than 50% of the total variance, confirming that common method bias would not be a major concern. Full collinearity VIF values for all constructs were below the threshold of 3.3, further supporting the absence of significant common method bias.

This study obtained ethical approval from the Health Research Ethics Committee, Faculty of Medicine and Health Sciences, Universitas Jambi (Number: 3354/UN21.8/PT.01.04/2025). Participation was voluntary, and respondents provided informed consent with full assurance of confidentiality and anonymity.

Results and Discussion

Phase 1

Results of Bibliometric Findings

Figure 2 presents the annual publication trends in this field from 2010 to 2025. Study output remained relatively low until 2018, after which it began to grow steadily. A significant increase occurred after 2020,

with a sharp rise from 2022 to 2025, reaching more than 70 publications in 2025. This upward trajectory reflects the growing scholarly attention toward the psychological determinants of entrepreneurial readiness, particularly concerning mental health, resilience, and AQ.

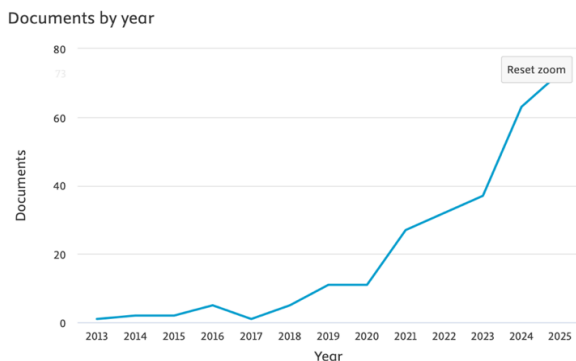


Figure 2. Annual Trends of Publications Related to Mental Health, Resilience, Adversity Quotient, and Entrepreneurial Readiness (2010–2025)

As shown in Table 2, *Frontiers in Psychology* was the leading journal publisher on mental health, resilience, AQ, and entrepreneurial readiness, contributing 19 articles. This was followed by the *Journal of Business Venturing* (13 articles) and both the *International Journal of Entrepreneurial Behavior and Research* and *Sustainability* (Switzerland), each with 11 publications. Prominent entrepreneurship and management journals such as *Entrepreneurship Theory and Practice*, *Journal of Business Research*, and *Journal of Small Business Management* also made significant contributions. These results confirm that the topic attracts attention across both psychological and business-oriented disciplines, reflecting its multidisciplinary relevance.

As presented in Table 2, the United States ranked first as the leading contributor to research on mental health, resilience, AQ, and entrepreneurial readiness, producing 70 articles, followed by China (57) and the United Kingdom (28). Other major contributors included Germany (21), Australia (20), and Malaysia (19), reflecting the topic's global reach across both Western and Asian contexts. Indonesia and Canada each produced 17 publications, signifying developing contributions from expanding study environments.

A diverse set of countries, including those in Europe, the Middle East, and Southeast Asia, also participated with smaller but meaningful publication numbers. The broad distribution of contributing nations confirms that psychological and entrepreneurial readiness explorations are a globally relevant and interdisciplinary theme, bridging the fields of psychology, business, and education.

Table 2. Top Contributing Countries / Affiliations

Country	Frequency
United States	70
China	57
United Kingdom	28
Germany	21
Australia	20
Malaysia	19
Indonesia, Canada	17
Spain	14
France	11
Thailand, Saudi Arabia, India	10
Pakistan	9
Iran	8
Netherland, Italy	7
UEA, Singapore, Oman, Finland, Egypt, Austria	6
Vietnam, Turkey, Sweden, Poland, Ghana, Denmark, Brazil	5
Uganda, Taiwan, Switzerland, Portugal, Nigeria, New Zealand, Ireland, Chile, Bangladesh	4
South Korea, Philippines, Macao, Israel, Hong Kong, Belgium	3
South Africa, Russian Federation, Norway, Japan, Greece, Ecuador, Czech Republic, Colombia	2
Peru, North Macedonia, Nepal, Morocco, Lebanon, Kyrgyzstan, Jordan, Ethiopia, Bosnia and Herzegovina, Afghanistan	1

The visualization in Figure 3 shows the network of co-occurring keywords within the field of entrepreneurship, resilience, and mental health research. The map identifies five major clusters representing distinct but interconnected research themes. The blue cluster is centered on entrepreneurship and psychology, drawing attention to terms such as well-being, career, self-efficacy, and psychological capital, which reflect the psychological aspects underlying entrepreneurial behavior. The red cluster emphasizes resilience, entrepreneurial intention, and psychological capital, suggesting that personal adaptability and cognitive resources are central topics in this area. The green cluster relates to entrepreneurial intention, grit, personal initiative, and resourcefulness, pointing to a strong focus on motivational and behavioral dimensions of entrepreneurship.

The orange cluster captures self-confidence, quality of life, entrepreneurial behavior, and sustainable development, connecting entrepreneurship with life satisfaction and broader societal impact. The purple cluster connects keywords such as stress, emotional regulation, and psychological well-being, re-

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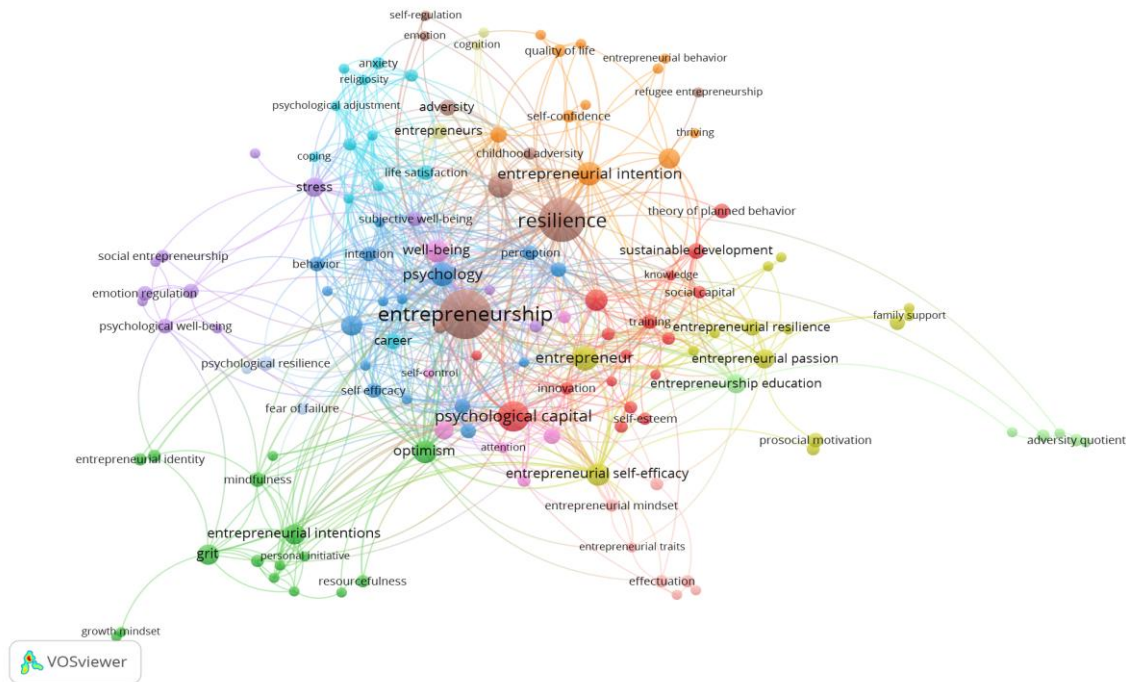


Figure 3. Annual Trends of Publications Related to Mental Health, Resilience, Adversity Quotient, and Entrepreneurial Readiness (2010–2025)

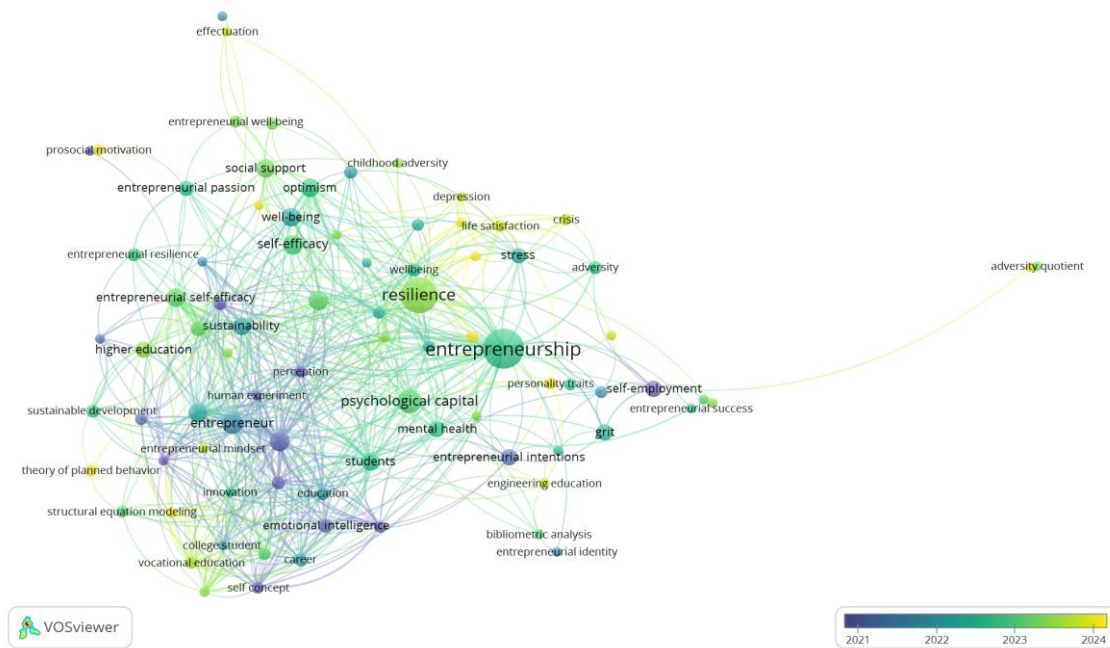


Figure 4. Thematic Evolution Map / Conceptual Structure Map

flecting the mental health dimension in entrepreneurial contexts. Essentially, the visualization confirms that entrepreneurship, resilience, and psychological capital are the conceptual cores of this field, surrounded by themes of well-being, entrepreneurial intention, and

stress management that support a holistic understanding of entrepreneurial resilience.

Figure 4 presents the keyword co-occurrence network generated using VOSviewer software, illustrating the interrelationships among key study topics related to the psychological determinants of

entrepreneurial readiness. Each node represents a keyword, with the size of the node reflecting its frequency of occurrence and the thickness of the connecting lines representing the strength of the association between terms. The color gradient, ranging from purple to yellow, denotes the average publication year, where purple represents earlier studies, around 2021, and yellow represents more recent research, around 2024.

Beyond the co-occurrence structure, the bibliometric findings also signal a shift in study focus over time. Earlier studies tended to emphasize entrepreneurial intention and individual traits, while more recent studies increasingly integrate psychological constructs such as resilience, mental health, and psychological capital. This shift points to a growing recognition of the role of psychological adaptability in shaping entrepreneurial outcomes.

The visualization identifies entrepreneurship, resilience, and psychological capital as the central and most frequently occurring keywords, affirming their essential roles in current scholarly discussions. These concepts are highly interconnected with related terms such as mental health, emotional intelligence, self-efficacy, well-being, and entrepreneurial intentions, forming a dense cluster that reflects the psychological and behavioral dimensions of entrepreneurship.

Interestingly, the term AQ appears as a relatively new and developing concept, positioned somewhat at the periphery of the network but directly connected to entrepreneurship and resilience. This pattern suggests growing academic interest in the role of AQ as a psychological determinant influencing entrepreneurial behavior and readiness. Its position at the periphery, yet connected to core constructs such as resilience and entrepreneurship, confirms that it represents a developing study direction warranting further empirical investigation.

Collectively, these findings suggest a conceptual convergence between psychological resilience, well-being, and entrepreneurial behavior, underscoring the importance of integrating multiple psychological dimensions into a unified model. This convergence provides a strong rationale for the subsequent SEM analysis, which empirically tests the relationships among these constructs. The co-occurrence network reinforces this conceptual convergence between resilience-related constructs and entrepreneurial outcomes, emphasizing that psychological capital and adaptability have become central in explaining entrepreneurial readiness in recent years.

The bibliometric analysis spanning 2010 to 2025 recorded a substantial increase in studies on the psychological determinants of entrepreneurial readiness, particularly after 2020. The trend confirms that scholarly attention has gradually shifted from

foundational topics such as entrepreneurial intention toward more integrative constructs such as resilience, psychological capital, and mental health. The keyword co-occurrence network further establishes that these constructs are strongly interconnected, forming the conceptual backbone of current entrepreneurship psychology studies. Moreover, the growth of the AQ as a recent and expanding theme marks a new study direction, emphasizing how individuals' ability to cope with challenges shapes their entrepreneurial capacity. These bibliometric findings were used to guide construct selection and hypothesis development for the subsequent SEM phase.

Discussion of Bibliometric Findings

The present study contributes to the existing literature by extending previous work on entrepreneurship and psychological factors in several important ways. Dissimilar to prior studies that primarily focus on entrepreneurial intention, the present exploration emphasizes entrepreneurial readiness as a more applied and outcome-oriented construct. The integration of bibliometric analysis and SEM further provides a more comprehensive approach by combining global trend analysis with empirical validation. The focus on health students in a developing country context also adds contextual relevance that has been relatively limited in previous studies.

Combining bibliometric mapping with SEM analysis allows this study to bridge global scholarly trends with empirical validation, providing a more comprehensive understanding of the psychological determinants of entrepreneurial readiness. Rather than functioning solely as descriptive mapping, the bibliometric findings serve as a conceptual foundation that informs construct selection and draws attention to developing directions within the field.

The bibliometric analysis conducted on the psychological determinants of entrepreneurial readiness uncovered significant trends and shifts within this multidisciplinary field. The surge in publications from 2018 onwards, particularly after 2020, reflects increasing scholarly attention toward the integration of psychological dimensions within entrepreneurship studies. This trend suggests a paradigm shift from traditional economic and behavioral models toward more psychologically grounded frameworks. Prior studies confirm that psychological factors play an essential role in advancing entrepreneurial intentions and capacities, particularly attributes such as self-efficacy, emotional intelligence, and resilience (Yulastri et al., 2023).

The co-occurrence network further illustrates that psychological constructs are not isolated, but form interconnected thematic clusters. The prominence of keywords such as entrepreneurial intention, psychological capital, and well-being suggests that ind-

Table 3.

Validity and Construct Reliability

Construct	α	rho_a	rho_c	AVE
AQ	.998	.998	.998	.920
MH	.997	.997	.998	.922
ER	.995	.996	.996	.843
RS	.997	.997	.997	.913

Note: AQ= Adversity Quotient, MH=Mental Health, ER=Entrepreneurial Readiness, RS=Resilience; AVE=Average variance extracted

Table 4.

Predict, R-Square Values, and Effect Size f^2

Construct	Q2	R ²	R ² adjusted	f^2
ER	.998	.989	.989	
RS	.995	.995	.994	
AQ → ER				.060
AQ → RS				.404
MH → ER				.003
MH → RS				.137
RS → ER				.092

Note: AQ= Adversity Quotient, MH=Mental Health, ER=Entrepreneurial Readiness, RS=Resilience

Table 5.

Direct and Indirect Effects

Path	β	Mean	SD	t	p
AQ → ER	.734	.736	.130	5.639	.000
MH → ER	.260	.258	.130	1.997	.046
RS → ER	.466	.464	.115	4.045	.000
AQ → RS → ER	.293	.295	.097	3.037	.003
MH → RS → ER	.171	.168	.070	2.462	.014

individual-level psychological resources are central in shaping entrepreneurial behavior (Komalasari & Anafarhanah, 2022). Accordingly, it is important to comprehend that the growing presence of the AQ as a relatively recent keyword confirms that this construct is gaining attention as a complementary dimension in understanding how individuals cope with challenges in entrepreneurial contexts (Komalasari & Anafarhanah, 2022).

Despite this growing body of literature, the bibliometric findings also expose fragmentation in how these constructs are studied. Most studies tend to examine psychological variables independently rather than within an integrated framework, a tendency that limits a holistic understanding of how multiple psychological factors interact to influence entrepreneurial readiness. This study directly responds to the identified gap by proposing and empirically testing a unified model that integrates mental health, resilience, and AQ.

Phase 2

Results of Structural Equation Modeling Analyze

Measurement model analysis. Table 3 presents the construct reliability and validity results. All constructs, including Adversity Quotient (AQ), Mental Health

(MH), Entrepreneurial Readiness (ER), and Resilience (RS), show very high reliability, with Cronbach’s alpha and composite reliability (rho_a and rho_c) values exceeding the recommended threshold of 0.70. The Average Variance Extracted (AVE) values for all constructs are also above 0.50, confirming strong convergent validity. Collectively, these results establish that the measurement model is both reliable and valid for further structural analysis.

Table 4 presents the construct reliability and validity results. All constructs — Adversity Quotient (AQ), Mental Health (MH), Entrepreneurial Readiness (ER), and Resilience (RS) — show very high reliability, with Cronbach’s alpha and composite reliability (rho_a and rho_c) values exceeding the recommended threshold of .70. The AVE values for all constructs are also above .50, confirming strong convergent validity. Collectively, these results establish that the measurement model is both reliable and valid for further structural analysis.

Although all constructs show high reliability and convergent validity, the extremely high values of Cronbach’s alpha and AVE may point to potential item redundancy. Values above .95 suggest that some indicators may be highly similar in content, which

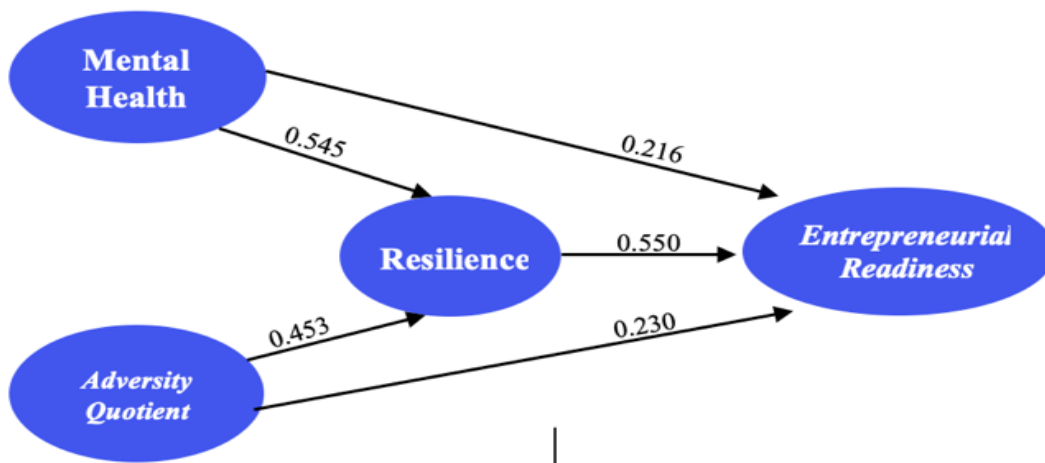


Figure 5. Path diagram

could inflate internal consistency estimates. The measurement model was therefore carefully re-examined to ensure that each indicator represents a distinct aspect of the construct. Discriminant validity was further assessed using the HTMT criterion, and all values fell below the recommended threshold of .90, confirming that the constructs are empirically distinct despite high correlations. These findings suggest that the relationships observed in the model are unlikely to be substantially shaped by common method variance.

Table 5 presents the direct and indirect effects among the study variables. Adversity Quotient (AQ) recorded a strong and significant direct effect on Entrepreneurial Readiness (ER) ($\beta = .734, p < .001$), while Resilience (RS) also had a significant influence on ER ($\beta = .466, p < .001$). Mental Health (MH) showed a weaker but significant direct effect on ER ($\beta = .260, p = .046$). Regarding mediation, both AQ and MH significantly affected ER indirectly through RS, with path coefficients of .293 ($p = .003$) and .171 ($p = .014$), respectively. These findings underscore the pivotal role of resilience as a mediating factor in strengthening the influence of psychological variables on students' entrepreneurial readiness.

The R^2 value for entrepreneurial readiness is very high, reflecting strong explanatory power. Such a high value should, however, be interpreted with caution, as it may also suggest potential overlap among constructs or model overfitting. Additional assessments — including discriminant validity and collinearity diagnostics — were therefore carefully examined to ensure the robustness of the model. The MGA results showed no significant differences in structural paths across study program groups ($p > .05$), suggesting that the proposed model is invariant across different health disciplines.

Figure 5 presents the SEM results generated using SmartPLS, depicting the relationships among the latent

constructs of Mental Health (MH), Resilience (RS), Adversity Quotient (AQ), and Entrepreneurial Readiness (ER). Each construct is represented by a blue circle, with multiple indicators (yellow boxes) connected to their respective sub-constructs, reflecting the measurement model. The path coefficients showed on the connecting lines capture the strength and significance of the relationships between constructs, while the outer loadings reflect the contribution of each indicator to its latent variable. Overall, the model covers both the measurement and structural components, providing a comprehensive overview of how mental health, resilience, and AQ influence entrepreneurial readiness.

The measurement and structural model assessments confirm that the constructs meet the reliability and validity requirements, with strong explanatory power and predictive relevance. Both direct and indirect effect analyses emphasize the significant roles of mental health, AQ, and resilience in shaping entrepreneurial readiness among health students. These findings provide a solid basis for further interpretation and theoretical discussion.

The present study's findings can be explained through psychological mechanisms of stress adaptation. Students with a higher AQ are more capable of reframing academic and clinical stressors as manageable challenges, which strengthens their confidence and readiness to engage in uncertain environments such as entrepreneurship. Resilience further supports this process by enabling emotional regulation and sustained motivation under pressure.

Control Variables (Covariates). Demographic covariates were incorporated into the SEM model to control for potential confounding influences on entrepreneurial readiness. Specifically, gender, age group, and study program were included as control

variables when estimating the effects of mental health, resilience, and AQ on entrepreneurial readiness. After controlling for these covariates, the hypothesized relationships among the main latent constructs remained consistent, confirming that the proposed model is robust and not substantially driven by demographic differences. This adjustment strengthens the interpretability of the findings by ensuring that the estimated effects primarily reflect the psychological determinants specified in the conceptual framework.

Discussion of SEM Findings

The SEM results provide empirical support for the proposed relationships among mental health, resilience, AQ, and entrepreneurial readiness. The strong effect of AQ on entrepreneurial readiness ($\beta = .734, p < .001$), along with its significant influence on resilience ($\beta = .406, p < .001$), suggests that the ability to interpret and manage adversity plays a central role in shaping entrepreneurial preparedness. This finding extends previous studies that primarily emphasize self-efficacy and motivation by underscoring the importance of cognitive appraisal and adaptive coping mechanisms in uncertain and high-pressure environments. The mediating role of resilience further affirms the complex interplay among psychological constructs. Rather than acting as independent predictors, AQ, and mental health appear to influence entrepreneurial readiness through resilience as a key adaptive mechanism. This supports the theoretical integration of psychological capital and stress-coping perspectives, suggesting that resilience functions as a bridge between psychological conditions and behavioral readiness outcomes.

Although the model shows high explanatory power, the exceptionally high R^2 value warrants careful interpretation. In social science studies, such values may point to potential issues such as construct overlap, measurement redundancy, or overfitting. While the results remain statistically significant, each should be interpreted with caution, and future studies are encouraged to validate the model using different samples and refined measurement instruments.

The strong role of AQ is consistent with prior findings confirming its importance in entrepreneurial success. Individuals with high AQ are more capable of reframing challenges as opportunities and maintaining persistence in the face of obstacles (Tambunan, 2020; Yohana, 2021). Moreover, resilience has been shown to enhance individuals' ability to transform adversity into actionable strategies, particularly when supported by educational interventions (Sumathi & Padhy, 2024). This is consistent with studies suggesting that emotional intelligence and mental health contribute to adaptive coping strategies essential for entrepreneurship (Tisu et al., 2023).

The relatively weaker effect of mental health compared to the AQ presents an interesting contrast to some previous studies. Certain studies position mental health as a primary determinant of entrepreneurial outcomes (Climent-Rodríguez et al., 2020), while others report that poor mental health may negatively affect entrepreneurial performance, particularly in high-risk self-employment contexts (García-Gasalla et al., 2021; Hatak & Zhou, 2019). This inconsistency suggests that the role of mental health may be context-dependent. In the case of health students, structured training environments may enable individuals to manage psychological distress, thereby making adaptive capacities such as resilience and AQ more influential than general mental well-being.

In the context of health students, these relationships become more pronounced due to their unique academic and clinical environment. Dissimilar to general students, health students — particularly in medicine and nursing — are exposed to emotionally demanding situations, clinical responsibilities, and high-stakes decision-making. In such contexts, a high AQ enables individuals to cope with uncertainty, manage emotional stress from patient interactions, and maintain performance under pressure. This adaptive capacity is particularly relevant for entrepreneurial readiness, as entrepreneurship similarly requires risk tolerance, emotional stability, and persistence in uncertain conditions.

From a broader theoretical perspective, these findings contribute to the advancement of entrepreneurship studies by integrating psychological capital and stress-coping theories into a unified model of entrepreneurial readiness. Where previous studies often examine constructs such as self-efficacy, emotional intelligence, or psychological capital independently, this study shows how multiple psychological dimensions interact dynamically to influence readiness outcomes.

The findings also reinforce the importance of educational interventions in shaping entrepreneurial capacity. The development of an entrepreneurial mindset — characterized by flexibility, creativity, and risk-taking — can be enhanced through structured educational programs, which in turn strengthen AQ and resilience (Manafe et al., 2023; Wang et al., 2021). Self-efficacy and emotional intelligence have similarly been shown to mediate the relationship between education and entrepreneurial outcomes (Subagya & Mahmud, 2022).

It is important to recognize, however, that not all findings in the literature are fully consistent. Many studies emphasize psychological readiness as a predictor of entrepreneurial engagement, while others draw attention to the role of external factors such as

institutional support, access to resources, and socio-economic conditions (Cahyani et al., 2022; Farradinna, 2025; Farradinna et al., 2023). This suggests that psychological factors, although critical, should be understood within a broader contextual framework.

The integration of active learning approaches, such as project-based learning, further supports the development of entrepreneurial readiness by enhancing both practical skills and psychological resilience (Wulandari & Nuriman, 2022). These findings are consistent with broader studies showing that psychological and experiential learning components are essential in preparing students for entrepreneurial challenges (Chiengkul et al., 2023; Yulastri et al., 2023). Factors such as mental imagery and risk perception were also observed to play a role in shaping entrepreneurial decision-making, drawing attention to the cognitive dimension of entrepreneurial readiness (Zaleśkiewicz et al., 2019).

General Discussion

In its entirety, the findings point to a shift toward a more integrated understanding of entrepreneurial readiness, where psychological adaptability, resilience, and coping capacity are central determinants. This supports the argument that entrepreneurship education should extend beyond skill development to include psychological strengthening, particularly in high-pressure fields such as health education (Ambarita & Suwatno, 2024; Komalasari & Anafarhanah, 2022).

This study has several limitations, including the bibliometric analysis's sole reliance on the Scopus database, which may limit the representation of global scholarly trends. Furthermore, the empirical analysis was based on cross-sectional self-reported data, restricting causal inference and generalizability. Another significant limitation includes the very high reliability values, which may also point to potential redundancy among measurement items. Although efforts were made to ensure construct validity, future studies should refine measurement instruments and consider alternative approaches to reduce potential bias. Despite the procedural and statistical remedies applied, this study may still be subject to common method bias, as all data were collected using self-reported measures at a single point in time. The exceptionally high reliability and correlation values observed may suggest potential inflation of relationships among constructs. The findings should therefore be interpreted with caution, and future studies are recommended to use longitudinal designs, multi-source data, or marker variables to minimize common method bias.

Future explorations are admonished to adopt longitudinal designs, include more diverse populations, and incorporate qualitative approaches to gain deeper insights into the psychological processes underlying

entrepreneurial readiness. Further inquiry should also explore the interaction between psychological and contextual factors, including institutional support and policy environments, to develop a more comprehensive understanding of entrepreneurship in the health sector.

Conclusion

In conclusion, this study combined bibliometric and SEM approaches to examine the psychological determinants of entrepreneurial readiness, emphasizing mental health, resilience, and AQ. The bibliometric findings uncovered a growing scholarly focus on the intersection of psychology and entrepreneurship, with resilience and psychological well-being identified as central themes. The SEM results further confirmed that mental health, resilience, and AQ significantly influenced entrepreneurial readiness, with resilience serving a mediating role. This study contributes to the existing body of literature by providing an integrated psychological model of entrepreneurial readiness that combines mental health, resilience, and AQ within a single framework. The findings extend existing theories by establishing the central role of adaptive coping and psychological resilience in shaping entrepreneurial preparedness. Practically, the results suggest that entrepreneurship education programs, particularly in health-related disciplines, should incorporate psychological capacity-building components to enhance students' readiness. As a recommendation, future studies should further refine measurement models and validate the present study's findings across different populations and contexts.

Declaration

Acknowledgments

The authors gratefully acknowledge the financial support provided by the Research and Community Service Institute (LPPM) and the Faculty of Medicine and Health Sciences (FKIK), Universitas Jambi, which made this study possible. Furthermore, the authors extend their appreciation to Universitas Jambi, the Health Polytechnic (Poltekkes), and all affiliated institutions for their institutional and logistical support throughout the duration of the study.

Funding

This research was funded by the the Research and Community Service Institute (LPPM), Universitas Jambi, Indonesia, under Contract No. 310/UN21.11/PT.01.05/SPK/2025

Author Contributions

Conceptualization: [AS]; Methodology: [KM]; Data collection and investigation: [AtI]; Data analysis: [WIDA]; Writing—Original Draft Preparation: [AS, WIDA]; Writing—Review & Editing: [AI]; Supervision: [FR, DN].

Conflict of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Use of Artificial Intelligence

This study utilized artificial intelligence (AI) tools during the manuscript preparation process. Specifically, ChatGPT (OpenAI, USA) was employed to assist with language refinement, including improving grammar, sentence structure, and readability of the manuscript, as well as for outline organization. We confirm that all AI-assisted processes were critically reviewed by the authors to ensure the integrity, accuracy, and reliability of the final content. The final decisions, interpretations, and conclusions presented in this article were made solely by the author.

Ethical Clearance

This study obtained ethical approval from the Health Research Ethics Committee, Faculty of Medicine and Health Sciences, Universitas Jambi (Number: 3354/UN21.8/PT.01.04/2025).

Data Availability

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

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