Volume 13, Issue 2, 2025: 179-198
p-ISSN 2354-7642 e-ISSN 2503-1856
Accredited by Directorate General of Higher Education, Research and Technology, Republic of Indonesia No. 35/E/KPT/2019

Jurnal Ners dan Kebidanan Indonesia
(Indonesian Journal of Ners and Midwifery)
DOI : http://dx.doi.org/10.21927/jnki.2025.13(2).179-198
Available online at: http:ejournal.almaata.ac.id/index.php/JNKI

Stress management to improve academic self-efficacy among undergraduate students : A Scoping Review

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ABSTRACT

Background : *Undergraduate students face various academic challenges that often lead to significant stress. A lack of robust academic self-efficacy contributes to various mental health issues among undergraduate students, emphasizing the need for effective stress management strategies. The absence of protocols and systematic reviews registered in the International Prospective Register of Systematic Reviews (PROSPERO) focusing on stress management for improving undergraduate students' academic self-efficacy highlights the lack of comprehensive research on this topic.*
Objectives : *This study aims to conduct a scoping review on stress management to improve academic self-efficacy among undergraduate students.*
Methods : *This literature review used PICO framework to develop articles questions (P : undergraduate students, I : stress management, C: not applicable, and O: academic self-efficacy). Articles search for literature review was conducted during November and December 2024. This study used ProQuest, ScienceDirect and Pubmed databases. The keywords that used in this scoping review for the ProQuest were "stress management" AND "self-efficacy" AND "college student". For the ScienceDirect, the keywords were "non-pharmacological intervention" AND "self-efficacy" AND "college students". For the PubMed, the keywords used were "intervention" AND "self-efficacy" AND "college student".*
Results : *A total of 6,539 articles were retrieved from ProQuest, ScienceDirect, and PubMed databases. After applying eligibility criteria, 19 articles were included in the review. The findings identified five cognitive, affective, and behavioral-based stress management interventions, three physical activity-based interventions, four information and communication technology-based interventions, and seven curriculum-based interventions.*
Conclusions : *A comprehensive approach to stress management can significantly improve academic self-efficacy among undergraduate students. It is crucial for healthcare professionals, particularly nurses and educators, to integrate stress management techniques to improve academic self-efficacy among undergraduate students.*

KEYWORD: *academic self-efficacy; stress management; undergraduate students.*

Article Info :
Article submitted on February 25, 2025
Article revised on April 29, 2025
Article accepted on May 22, 2025
Article Published on June 30, 2025

INTRODUCTION

Undergraduate students face various challenges and situations that lead to numerous psychological issues (1,2). Undergraduate students are required to adapt to campus life, meet academic commitments, handle the pressure to achieve, and prepare for entering the workforce as they approach the final stages of their studies (35). This creates a burden and acts as a stressor for undergraduate students. The inability to apply effective coping strategies and maintain good self-efficacy leads to various mental health issues, such as depression and suicidal tendencies (3,4,6).

The prevalence of stress worldwide in 2020 exceeded 350 million people, while anxiety disorders in 2017 affected more than 260 million individuals (7,8). Approximately one in three health science undergraduate students experiences anxiety, with a prevalence rate significantly higher than the general population at 33.8%. The highest rates of anxiety globally are observed among health science undergraduate students in the Middle East (42.4%) and Asia (35.2%) (9). In Indonesia, the prevalence of anxiety is 6.1% among individuals aged 15 years and older. This equates to approximately 14 million people experiencing emotional mental disorders characterized by symptoms of anxiety and depression (10). Around 43% of undergraduate students experience symptoms of depression that interfere with their learning process (11). In the Nursing Science Program at FKUB in 2018, 46 respondents (65.7%) experienced moderate academic stress, 7 respondents (10%) experienced mild academic stress, and 17 respondents (24.3%) experienced severe academic stress (12).

There are risk factors that cause undergraduate students to experience stress and various mental health issues. These factors can be categorized as internal and external. Internal factors contributing to undergraduate student stress include a lack of awareness and motivation, poor academic abilities, depressed mood, difficulty in discovering sexual identity, financial concerns, worries about future employment, and decreased life satisfaction (5,13,16). For final-year students, common challenges frequently encountered include difficulties in academic writing, selecting appropriate research topics, organizing ideas coherently, employing accurate and contextually appropriate English language, composing comprehensive literature reviews, and

accurately citing and referencing scholarly sources (17). External factors contributing to undergraduate student stress include competition in learning, a heavy curriculum load, minimal support from family and friends, increased academic pressure, adapting to a new environment, building new social networks, relationship issues, changes in living arrangements, and conflicts with partners, family, or friends (5,13,14). For final-year undergraduate students, common external challenges include difficulties in generating ideas or selecting a thesis topic, challenges in finding references, and obstacles in the guidance process with academic advisors (15,18). These obstacles act as stressors for undergraduate students (18). Such stressors lead to stress and pressure, resulting in feelings of anxiety. Anxiety can escalate into a disorder when it manifests as intense and persistent fear in an individual (19). If not properly addressed, it may lead to depression and an increased risk of suicide (19, 20).

Undergraduate students need effective coping resources to manage the burdens and stressors they encounter, one of which is strong academic self-efficacy (21). Academic self-efficacy refers to a undergraduate student's belief in their abilities or competencies to complete tasks, achieve goals, and overcome academic challenges (22). Self-efficacy is a personal effort to address problems stemming from internal factors (23). It serves as a protective factor against the impact of daily stressors at university (5,24,25). Self-efficacy is crucial for undergraduate students throughout their educational journey (26).

The study by Fatimah et al. (2021) revealed that 23.9% of undergraduate students had low self-efficacy, compared to 14.9% who demonstrated high self-efficacy. Similarly, research by Rosali et al. (2021) found that 29.5% of undergraduate students had low self-efficacy, while only 7% exhibited high self-efficacy. Additionally, Rahman et al. (2022) reported that 30.37% of under-graduate students had low self-efficacy, contrasted with 12.59% showing high self-efficacy.

Given the prevalence of low academic self-efficacy among undergraduate students, stress management is essential to address this issue. While research on stress management to improve undergraduate students' academic self-efficacy exists, no formal protocols or systematic review reports have been registered in the International Prospective Register of Systematic Reviews (PROSPERO). Furthermore, there has been no mapping of stress management strategies specifically aimed at enhancing academic self-efficacy in undergraduate students (26). The researchers argue that low academic self-efficacy among undergraduate students is a significant issue that needs to be addressed urgently. Further research is needed to develop evidence-based approaches that can be effectively implemented for undergraduate students. Based on this background, the researchers

aim to conduct a scoping review on stress management to improve academic self-efficacy among undergraduate students.

MATERIALS AND METHODS

This study employs a scoping review methodology under the title "Stress Management to Improve Academic Self-Efficacy Among Undergraduate Students: A Scoping Review." In selecting relevant articles and assessing research variables, validated instruments and established reference guidelines are utilized to ensure the scientific rigor, credibility, and relevance of the findings. The scoping review follows the guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR) with ISSN number 15393704 (27).

This study is a comprehensive scoping review designed to select articles discussing stress management strategies to improve academic self-efficacy among undergraduate students. This literature review used PICO framework to develop articles questions (P : undergraduate students, I : stress management, C: not applicable, and O: academic self-efficacy). Articles were sourced from three databases: ProQuest, ScienceDirect, and PubMed. The Boolean search strategies used were as follows : For ProQuest: "stress management" AND "self-efficacy" AND "college student", For ScienceDirect: "non-pharmacological intervention" AND "self-efficacy" AND "college students", For PubMed: "intervention" AND "self-efficacy" AND "college student". These strategies were applied to retrieve relevant articles aligned with the research objectives. The search was conducted by the authors from November to December 2024.

The screening process was conducted by selecting journal articles relevant to the study's objectives, eligibility, and alignment. The selection of journal articles was based on predefined inclusion and exclusion criteria. The inclusion criteria for this study were research published within the last five years (2019–2024), studies focusing on stress management to improve academic self-efficacy among undergraduate students, and articles that were freely accessible and provided full-text access. The exclusion criteria encompassed articles with irrelevant titles and abstracts, publication dates beyond the past five years, incomplete texts, non-English language publications, and restricted access to full-text content.

The screening process was carried out systematically by the first author to ensure consistency and accuracy in article selection. To manage references efficiently and identify duplicate records, Mendeley was used as a reference management tool. The screening procedure was conducted in two stages. In the first stage, titles and abstracts of all retrieved articles were reviewed to determine their relevance based on the predefined inclusion and exclusion criteria. Articles that did not meet the criteria, such as those with unrelated topics, publication years outside

the specified range, lack of full-text availability, or language limitations, were excluded at this stage.

In the second stage, the full texts of the remaining articles were carefully examined to assess their eligibility. This step involved a comprehensive review of the study objectives, methodologies, and findings to ensure their relevance to the research focus. Articles that did not specifically address stress management strategies aimed at improving academic self-efficacy among undergraduate students were excluded. As a result of this screening process, a total of 19 articles met the final inclusion criteria and were selected for the study. The selection results are illustrated in a diagram based on the PRISMA selection process, as shown in **Figure 1**.

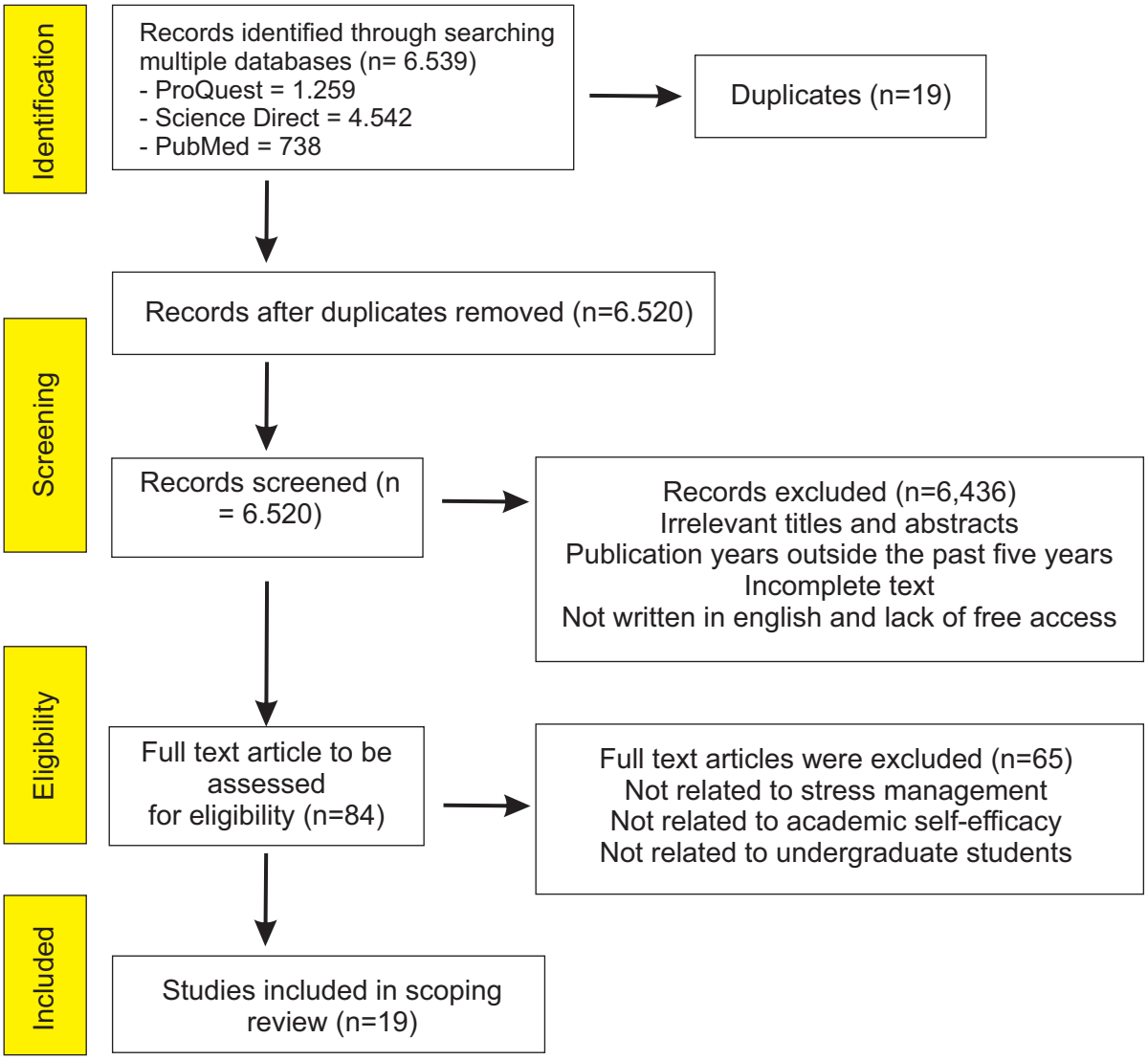

Figure 1. Study selection diagram with the ScR prism

RESULTS AND DISCUSSION

RESULTS

The review identified 19 articles related to stress management to improve academic self-efficacy among undergraduate students. These articles are categorized into six groups, namely cognitive behavioral therapy (CBT), self-regulation and motivation, social support and peer mentoring, technology-based interventions (web-based psychological programs), psychoeducation, physical activity. A summary of these 19 articles is presented in **Table 1** and illustrated in **Figure 2**.

Table 1. Summary of selected studies (n=19)

Author's name and year of publication	Research title	Research design	Interventions	Research result
Budiman et al., 2020 (28)	Cognitive Behavioral Therapy to Improve Self-Efficacy and Reduce Academic Procrastination	This study used randomized pretest – posttest control group design. 16 undergraduated students were selected by using purposive sampling technique with criteria of having low self-efficacy and high procrastination behavior.	Cognitive Behavioral Therapy (CBT)	Group Cognitive Behavioral Therapy (CBT) using self-talk techniques effectively improves undergraduate students' self-efficacy in completing academic tasks and reduces procrastination
Senocak & Demirkiran, 2023 (29)	Effects of problem-solving skills development training on resilience, perceived stress, and self-efficacy in nursing students: A randomised controlled trial	This study was designed as a single-blind, randomised controlled trial. The study sample was selected from 143 undergraduated students registered for the 'Surgical Nursing' course,	Problem-solving skills development training	Problem-solving skills training boosts nursing students' confidence in their ability to tackle academic tasks efficiently.
Severian et al., 2021 (30)	Impact of psychoeducational intervention on nursing students' perceived self-efficacy	A multicentric and quasi-experimental research study of the time series type, developed with 82 undergraduate Nursing students at two public institutions of higher education.	Psychoeducational interventions.	Psychoeducational interventions increase self-efficacy among nursing students, enabling them to handle academic and clinical demands more confidently.
Kassabry, 2023 (31)	The effect of simulation-based advanced cardiac	The study design is quasi-experimental employing a pre-test	High-Fidelity Simulation (HFS) training.	This simulation training improves knowledge,

	life support training on nursing students self-efficacy, attitudes, and anxiety in Palestine: a quasi-experimental study	and post-test approach during April and May 2023. A convenient sample of 60 undergraduate nursing students in a 4-year class from a nursing college at the Arab American University/ Palestine (AAUP) participated in this study		decision-making, self-efficacy, and confidence in preparing for clinical practice.
Dai, 2024 (32)	A study on mindful agency's influence on college students' engagement with online teaching: The mediating roles of e-learning self-efficacy and self-regulation	A total of 379 college students from 22 classes in 3 universities in Nanjing, who received online teaching, were selected as the participants in this study	Mindful intervention.	Mindful intervention improves self-awareness, emotional regulation, and focus during learning. College students gain confidence in managing academic tasks, directly enhancing their self-efficacy in online learning environments.
Li et al., 2024 (33)	Influence of moderate-to-high intensity physical activity on depression levels: a study based on a health survey of Chinese university students.	The study utilized data from the 2023 Chinese College Health Tracking Survey and employed multiple linear regression and structural equation modeling techniques to investigate the impacts of MVPA on depression levels and its underlying mediating mechanisms among college students. The primary cohort comprised 49,717 enrolled college students from 106 universities in China.	Moderate-to-high intensity physical activity (MVPA)	Moderate-to-high intensity physical activity (MVPA) reduces depression symptoms by improving self-efficacy and physical health, increasing university students' confidence in addressing academic challenges
Qin et al., 2024 (34)	Effect of physical exercise on negative emotions in Chinese university students :	This study utilized a cross sectional research design. Employing a stratified random sampling methodology, 5341 university students were	Physical exercise.	Physical exercise alleviates negative emotions by boosting self-efficacy, which reduces depression and helps university students

	The mediating effect of self-efficacy	selected from three universities.		manage academic and social pressures more effectively..
Tyne et al., 2024 (35)	Effects of outdoor recreational physical challenges on general self-efficacy: A randomized controlled trial	A parallel-armed randomized controlled trial was performed to assess the effects of engaging in physically challenging activities on general self-efficacy. A power analysis (G*Power, Dusseldorf, Germany) revealed that a minimum sample of 90 participants (45 per group) would be required to detect a medium between-groups effect size for the primary outcome	Outdoor recreational physical challenges	Outdoor recreational physical challenges improve self-efficacy, instilling confidence in participants to face various life challenges, particularly academic ones.
Ribeiro et al., 2024 (36)	Impact of an intervention through Facebook to strengthen Self-esteem in nursing students	Quasi-experimental, time-series, pre- and post-test study, conducted in two Higher Education Institutions (HEI), one public and one private, from São José do Rio Preto, São Paulo, Brazil, offering Nursing Degree. The pre-test sample consisted of 264 students,	The "Self-Esteem Booster" intervention via Facebook.	The "Self-Esteem Booster" intervention via Facebook effectively increases nursing students' self-esteem and self-efficacy, strengthening their ability to handle academic challenges.
Zhang, 2024 (37)	Effects of game-based learning on academic outcomes: A study of technology acceptance and self-regulation in college students	A sample of 872 undergraduated students from Southern China participated in this study. Structural Equation Modeling (SEM) was employed to analyze the theoretical relationships among the variables	Game-based learning	Game-based technology acceptance models improve self-efficacy, academic performance, and learning experiences.
Jia & Tu, 2024 (38)	Towards a NewConceptual Model of AI-Improved Learning for College Students:	This study developed a model. Primary data was collected through a questionnaire administered to 637 undergraduated students.	Artificial Intelligence (AI technology)	AI tools improve critical thinking and general self-efficacy, increasing college students' confidence in learning and completing academic tasks.

	The Roles of Artificial Intelligence Capabilities, General Self-Efficacy, Learning Motivation, and Critical Thinking Awareness			
Leidl et al., 2024 (39)	Integrating Branching Spherical Video Learning into Mental Health Nursing Clinical Education: Feasibility, Efficacy, and Student Impact	A mixed methods approach, combining a quasi- experimental design and a descriptive qualitative design, guided data collection and analysis. Participants were randomly assigned to intervention and control groups, with the intervention group experiencing the learning scenario during their clinical course. A total of 23 nursing students participated in the study.	Branching Spherical Video Learning	Branching Spherical Video Learning (BSVL) reduces anxiety while enhancing confidence, practical skills, academic understanding, and motivation..
Kung et al., 2023 (40)	Effectiveness of clinical mentorship program for students of long-term aged care: A mixed-methods study	A mixed-methods study with a quasi-experimental research design and qualitative interviews. Fourteen mentors and 48 students participated. The student control group received regular edu cation; the experimental group received mentorship guidance.	Clinical mentorship program.	Mentorship programs assist in improving self-efficacy and professional commitment, particularly in geriatric care, boosting students' confidence, knowledge, and skills.
Duan et al., 2024 (41)	The Effect of Teacher Support on the Sustainable Online Academic Self-Efficacy of College Students: The Mediating Effect	A cross-sectional study design. It analyzes the relationships among teacher support, academic Procrastination, and self-efficacy in an online learning environment using structural equation	Teacher Support	Teacher support positively impacts academic self-efficacy in online learning, encouraging higher confidence in completing tasks and reducing procrastination.

	of College Students: The Mediating Effect of Academic Procrastination	modeling based on survey data collected from 827 college students in China.		
Brennan, 2022 (42)	The impact of self-efficacy based prebriefing on nursing student clinical competency and self-efficacy in simulation: An experimental study	This study used an experimental design to examine the use of the SEPM for its effects on nursing student self-efficacy and clinical com petency compared to a control group. A total of 66 fourth (n =22) and fifth semester (n =44) students participated in the study	The Self-Efficacy Prebriefing Model (SEPM)	The Self-Efficacy Prebriefing Model (SEPM) improves nursing students' self-efficacy and clinical competence, proving highly effective in improving learning outcomes during simulations.
Innab et al., 2024 (43)	The impact of comprehensive licensure review on nursing students' clinical competence, self-efficacy, and work readiness	A quasi- experimental (pre and post-test), single-group design was employed. The study was conducted in a public university in Saudi Arabia and included a total of 293 senior nursing students in their last year of the bachelor program.	Comprehensive licensure review	Comprehensive review courses and adaptive quizzing assignments improve nursing students' perceptions of clinical competence and self-efficacy, leading to increased confidence in handling clinical situations.
Roque et al., 2024 (44)	Internationalizati on at home program significantly increases the self-efficacy of nursing students: A pre-post study	A quasi-experimental, analytic, and longitudinal study was conducted. Seventy undergraduated students participated in the program and 57 completed the pre-post questionnaire.	Internationalization at home program	Internationalization at Home (IaH) programs significantly boost nursing students' self-efficacy, making them more confident in handling academic and nursing-related challenges.
Wong & Luk, 2020 (45)	A Randomized Control Study on the Effectiveness of Holistic Health Practice Program on a Group of Baccalaureate Nursing Students	A randomized control study was used. Nursing students in both the experimental and control groups filled in an online pre-test questionnaire. 56 undergraduated nursing students were willing to participate in the study. They were randomly assigned with 27	Holistic health practice programs	Holistic health practice programs improve self-esteem and self-efficacy, increasing students' confidence in learning and applying knowledge

		participants in experimental group and 29 participants in control group.		
Platt et al., 2024 (46)	Preparing for practice, the effects of repeated immersive simulation on the knowledge and self-efficacy of undergraduate nursing students: A mixed methods study	The study adopted a longitudinal explanatory sequential, quantitative-qualitative, mixed methods approach. The first stage was a quantitative pre-post quasi-experimental design that compared the knowledge and self-efficacy scores of nursing students undertaking the iSim-TDP or iRS-Sim. The second stage used focus groups to explore the quantitative data.	Immersive simulations	Immersive simulations improve clinical knowledge and self-efficacy, enabling nursing students to tackle academic and clinical challenges more effectively.

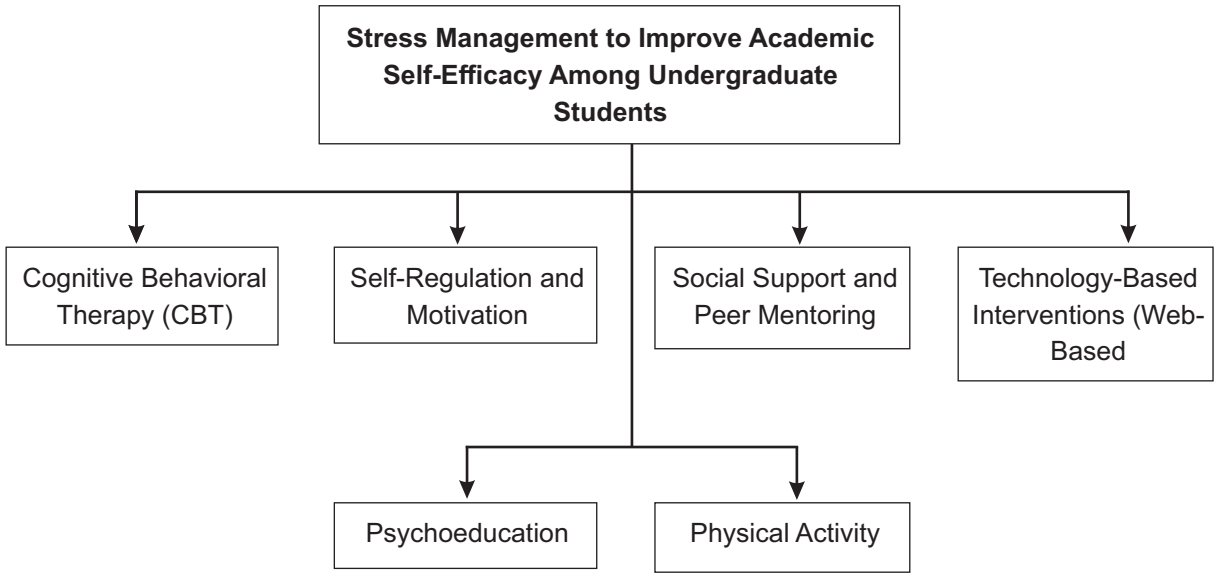

Figure 2. Summary of selected studies (n=19)

DISCUSSION

Cognitive Behavioral Therapy (CBT) with Self-Talk: The Most Effective Intervention

Indonesian undergraduate students face various academic challenges that can significantly impact their well-being, including academic procrastination and low self-efficacy. One of the primary factors contributing to these issues is the educational system, which requires students to be independent in managing their time and academic responsibilities. However, many

students struggle to develop effective learning strategies, leading to habitual academic procrastination. Another contributing factor is the social and academic pressure students experience, such as expectations from lecturers, family, and their surrounding environment, which can affect their psychological well-being. To address these challenges, various interventions have been implemented, one of which is Cognitive Behavioral Therapy (CBT)(28).

As shown in **Table 1** and **Figure 2**, CBT incorporating self-talk techniques is the most effective intervention for enhancing self-efficacy and reducing academic procrastination, as it directly alters students' thought patterns that underlie their academic behavior. Undergraduate students undergoing CBT demonstrated a significant increase in self-efficacy and a reduction in academic procrastination after five intervention sessions (28). CBT operates through cognitive restructuring, wherein students are trained to identify and replace negative thoughts with more rational and constructive ones(47).

The self-talk technique in CBT helps students enhance their intrinsic motivation, leading to improved academic discipline and a decrease in procrastination tendencies(28). Compared to other interventions, CBT is more effective as it addresses the root causes of academic procrastination using a scientifically validated psychological approach(47).

Self-Regulation and Motivation: Effective but Dependent on Internal Drive

As shown in **Table 1** and **Figure 2**, self-regulation focuses on improving students' discipline and time management skills to mitigate academic procrastination (28). Although this intervention can help students develop better study habits, its effectiveness relies heavily on individual intrinsic motivation (28).

Compared to CBT, which teaches cognitive strategies to reshape thought patterns, self-regulation is more passive as it provides guidance without significantly altering how students perceive and approach academic challenges (28). Therefore, while beneficial, this intervention is less effective for students who lack initial motivation(28).

Social Support and Peer Mentoring: Effective for Well-Being but Not Always for Procrastination

As shown in **Table 1** and **Figure 2**, social support interventions, such as peer mentoring and group counseling, have been empirically demonstrated to significantly enhance academic performance, motivation, retention rates, emotional well-being, and psychological health among university students. These approaches function by fostering supportive social networks that mitigate feelings of isolation, strengthen interpersonal skills, and facilitate effective coping with academic stressors (48,49). However, compared to CBT, this intervention does not directly modify students' thought

patterns regarding academic procrastination (28). Although students receive emotional support, they may still struggle with time management and avoidance behaviors if not supplemented with strong cognitive strategies like those found in CBT(28,50).

Technology-Based Interventions (Web-Based Psychological Programs): Flexible but Less Personalized

As shown in **Table 1** and **Figure 2**, technology-based interventions provide a flexible solution for students who lack access to face-to-face therapy. Digital mental health interventions and mobile applications have been shown to effectively reduce symptoms of stress, anxiety, and depression among university students. These interventions also contribute to enhancing students' psychological well-being and academic self-efficacy (51,52).

However, compared to CBT, which involves direct interaction and personalized therapy, technology-based programs often face challenges in user engagement(28). The lack of intrinsic motivation to consistently use the application, non-intuitive or difficult application design, lack of personalization in content and features, concerns related to privacy and data security, inadequate recognition of mental health issues, and the absence of features that encourage sustained app usage, present significant challenges and barriers to the effective implementation of this intervention (53,54). Consequently, their effectiveness is lower than face-to-face therapeutic interventions like CBT(28).

Psychoeducation: Provides Awareness but Does Not Always Change Behavior

As shown in **Table 1** and **Figure 2,** psychoeducational interventions focus on providing information and strategies for managing academic stress and anxiety. These programs have been shown to increase students' awareness of factors contributing to academic stress(30).

However, compared to CBT, which offers practical strategies for altering thought patterns, psychoeducation is more informational and does not always result in tangible behavioral change. Therefore, while beneficial as a complementary approach, this intervention is less effective in addressing academic procrastination unless combined with other interventions(30).

Physical Activity: Effective for Mood Enhancement but Does Not Directly Address Academic Issues

As shown in **Table 1** and **Figure 2**, physical activity has been proven to enhance mental well-being and reduce academic stress through increased endorphin production. Studies indicate that students who engage in regular physical exercise exhibit higher self-efficacy and lower academic anxiety levels(33,35,55).

However, compared to CBT, which directly targets academic procrastination, physical activity is more general and does not

necessarily help students develop better academic skills. Therefore, while effective as a supplementary intervention for psychological well-being, physical activity cannot replace therapy-based interventions like CBT (28).

CONCLUSION AND RECOMMENDATION

This scoping review focuses on stress management to improve academic self-efficacy among undergraduate students. Comprehensive stress management can improve academic self-efficacy among undergraduate students. Among the various interventions compared, Cognitive Behavioral Therapy (CBT) with self-talk is the most effective in enhancing self-efficacy and reducing academic procrastination. This approach directly targets changes in thought patterns and behaviors, leading to more sustainable improvements. For optimal results, a combination of CBT, self-regulation and motivation, social support including peer mentoring and group counseling, technology-based interventions, psychoeducation, and physical activity is recommended to improve the academic self-efficacy of university students in Indonesia.

Future research needs to design and test evidence-based stress management programs specifically aimed at enhancing academic self-efficacy among undergraduate students as well as to understand the factors that may influence the success of stress management programs. In addition, professional mental health workers and lecturers, to integrate stress management techniques to improve academic self-efficacy among undergraduate students. Professional mental health workers and lecturers are encouraged to design stress management interventions that introduce innovative approaches, serving as evidence-based practices for healthcare professionals, health undergraduated students, and the broader community. Therefore, it is important to integrate stress management techniques into higher education curricula to support the well-being and academic success of undergraduate students.

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