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Types of psychosocial interventions effective in enhancing Self-Efficacy among nursing students: A systematic review

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Abstract: ***Introduction***- *Self-efficacy is crucial for nursing students to deliver optimal care. This systematic review examines the effectiveness of psychosocial interventions in enhancing self-efficacy among nursing students.* ***Methods:*** *Following PRISMA guidelines, a comprehensive search of seven databases was conducted for studies published between January 2014 and July 2024. Inclusion criteria focused on randomized controlled trials and quasi-experimental studies involving psychological interventions such as counseling and psychotherapy. A total of eight studies were included after rigorous screening.* ***Results:*** *Interventions, including mobile-based programs, Rational Emotive Behavior Therapy (REBT), and positive psychotherapy, demonstrated statistically significant improvements in self-efficacy, sustained in several cases up to six months. Effective intervention durations ranged from 4 to 12 weeks. Limitations included small sample sizes and varied methodological rigor.* ***Discussion:*** *The findings underscore the potential of structured psychological interventions in enhancing nursing students' self-efficacy. Future research should focus on standardized protocols and larger, multicenter studies for broader applicability.*

Keywords: Nursing students, psychosocial interventions, Self-Efficacy.

I. INTRODUCTION

Self-Efficacy is an important component of being a nurse or nursing students to provide nursing care to her best of ability. With this notion, the investigator wanted to find out impactful psychological intervention that would enhance nursing student self-efficacy. The investigator conducted a systematic reviews of literature. The research question for this systematic reviews of literature was **"What types of psychosocial interventions are effective in enhancing Self-Efficacy among nursing students?"** In the PICO format, here the population was nursing students, intervention would be any psychological intervention base like counseling, therapy, and psychosocial intervention with social component in it. The comparison may be either placebo, or no treatment or comparison with others forms of intervention or treatment. Outcome variables was the Self-Efficacy (SE) of nursing students. The operational definition of nursing students was the students who are going through B.Sc. nursing professional course. Psychosocial intervention was define as any activities used to modify behavior, emotional state, or feelings and to promote good mental health in order to prevent mental disorders with social component. Self-Efficacy (SE) means perceived ability of the individual to complete a task or goal successful, here it means general SE measure by standardized or developed validated reliable tools. Self-confidence was used interchangeably with Self-Efficacy in general sense.

II. METHODOLOGY

The present study conducted systematic review for a defined research question and process of the review was done as per PRISMA –P 2015 statement by **Moher D et al.** [1] The details were as follows:

Search strategy: In this systematic search, the investigator formulated a search strategy to identify pertinent literature. This strategy was customized for seven databases: PubMed, Google Scholar, ScienceDirect, DOAJ, PsychInfo, Cochrane Central, and JSTOR. The keywords employed included "psychosocial intervention" OR "psychotherapy" OR "counseling" AND "Self-Efficacy" AND "nursing students." Boolean and semantic searches were applied to locate relevant reviews within each research database.

Semantic search with Boolean uses for keywords databases were as follows: 1. PubMed: psychosocial* intervention [MeSH] OR "psychotherapy*"[MeSH] OR "counseling*"[MeSH] AND "Self-Efficacy"[MeSH] AND "students, nursing"[MeSH]. Semantic search with Boolean uses for keywords in 2. Google Scholar: Psychosocial* intervention OR *psychotherapy OR *counseling AND "Self-Efficacy among nursing students." 3. ScienceDirect: "psychosocial intervention" OR psychotherapy OR counseling AND "Self-Efficacy" AND "nursing students." In ScienceDirect wild card search or truncated search was not

supported. 4. DOAJ was: Psychosocial* intervention OR *psychotherapy OR *Counseling "Self-Efficacy" among "nursing students." Semantic search with Boolean uses for keywords in 5. PsychInfo: "psychosocial* intervention OR "psychotherapy*" OR "counseling*" AND "Self-Efficacy" AND "students, nursing." 6. Cochrane central: "randomized controlled trial" AND "psychosocial intervention" OR "psychotherapy [MeSH]" OR "counseling [MeSH]" AND "Self-Efficacy [MeSH]" AND "students, nursing [MeSH]." & 7. JSTOR: "psychosocial intervention" OR "psychotherapy" OR "counseling" AND "self-efficacy" AND "nursing students"

Eligibility criteria: The selection criteria followed the updated PRISMA 2020 statement by **Page MJ et al**. [2] The inclusion criteria for study selection focused on intervention research, including clinical trials, randomized controlled trials (RCTs), non-randomized controlled trials, experimental and quasi-experimental studies, time series, pilot studies, pretest-posttest designs, and mixed-method studies. The target population was limited to nursing students, and the interventions needed to involve psychosocial approaches, such as therapy, counseling, or psychological training, delivered online or offline. Outcome variables had to focus on self-efficacy or equivalent terms as defined in this review, identifiable in abstracts, methods, results, or data tables and figures. Eligible studies were published between January 2014 and July 2024, included original research (published articles, theses, or abstracts), and came from fields like nursing psychology, sciences, or medicine, specifically addressing nursing students' self-efficacy. There were no geographical restrictions, but measurement tools had to be standardized or validated. Exclusion criteria included duplicate studies, non-English publications, and studies where self-efficacy was not a primary or related outcome. Studies using interventions outside of psychosocial approaches or lacking methodological rigor, such as no control group, were excluded. Non-interventional research like descriptive, exploratory, cross-sectional, correlation, or association studies were considered out of scope. Additionally, qualitative studies, case studies or series, cohort studies, observational research, literature reviews, systematic reviews, meta-analyses, books, chapters, bibliographies, and conference proceedings were excluded. Academic articles, RCT protocols, tool validation studies, and diagnostic or instrument development research were also deemed out of scope for this review.

The search primarily targeted nursing institutions worldwide within the specified time frame. Out of 2,018 research studies initially identified, 78 duplicate studies were removed after extraction into an Excel file. This left a total of 1,940 studies, which were then subjected to screening at the abstract level.

Study selection process: Before conducting abstract and full-text screenings, both review authors completed training to ensure a shared understanding of the review's objectives and eligibility criteria. All studies from various databases were compiled and organized using Excel.

Quality assessment of systematic reviews: The study relied solely on original research publications from RCTs, pre-post experimental studies with control groups, and trials studies. To ensure the quality of the review studies, all duplication was extensively examined both in Excel and manually. The abstracts of the publications and the original articles were thoroughly examined for analysis to ensure the quality and relevance of academic literature during the review process. Each research paper was evaluated at a later time. The second exclusion criterion was to limit the number of papers published in English alone. The review analysis eliminated 24 papers written in languages other than English. There were 1253 studies that were removed as "out of scope" research. According to PRISMA guidelines, 666 were removed as "not suitable or not eligible". We chose 21 articles after evaluating each one against the aforementioned inclusion and exclusion criteria.

Data Extraction for Systematic Review: During the data extraction phase, 21 articles were initially selected based on inclusion and exclusion criteria, with eight meeting full eligibility. Data were organized into a standardized Excel sheet, including details such as study title, author, publication year, material type, research sites, population size, research design, interventions, outcome variables, and key findings, presented in Table I and II. Duplicates were removed using both Excel automation and manual checks by the first reviewer. Two reviewers assessed the studies for relevance to the review objectives, resolving any discrepancies through discussion.

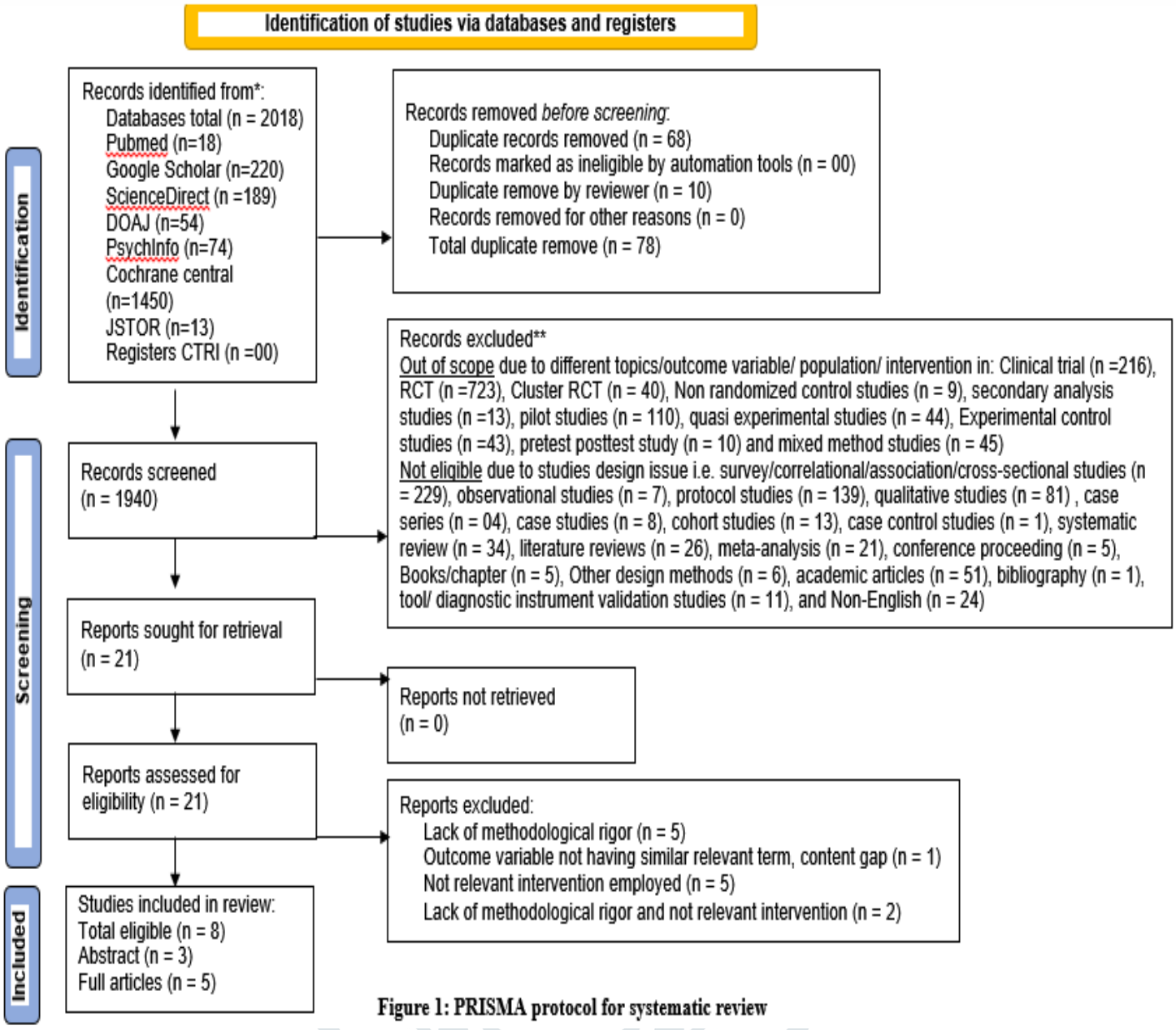

Figure 1: PRISMA protocol for systematic review

III. RESULT

The result of the review were mentioned in Table I and II below:

Table I. Description of the eligible articles for systematic review for 8 studies.

Study ID No.	Study title	Authors with reference number	Publication yr. and article types	Research sites	Population (sample size)	Types of study designs	Tool employed to assessed Self-Efficacy
1.	Effects of Rational Emotive Behavior Therapy on coping strategies and self-efficacy	Myung Ah Kim, Jiyoung Kim, Eun Jung Kim [4]	2014 (Full article)	Nursing college in Gyeonggi area, South Korea	Senior nursing students 34 participants (Experimental group, n = 18, Control group n = 16)	Quasi-experimental control groups (random assigned)	Korean version-Self-Efficacy, 24 items scale standardized by Sherer et al.(1982) (r = 0.86)
2.	Positive psychotherapy for depression and self-efficacy	Yu-Fang Guo et al. [5]	2016 (Full article)	Universities in Changsha, China	Undergraduate nursing students with mild to moderate depression 76 participants	Randomized Controlled Trial (RCT)	Chinese version GSE 10 items (Schwarzer, R., & Jerusalem, M) Chronbach Alpha was 0.84.

					(Experimental group, n = 34, Control group n = 42)		
3.	Effects of a Cognitive Behavioral-Based Stress Management Program on Stress Management Competency, Self-efficacy, and Self-esteem	Ulrik Terp, Fredrik Hjörthag, & Birgitta Bisholt [6]	2017 (Full article)	Sweden	Nursing students 148 participants (Experimental group, n = 104, Control group n = 44)	Pilot quasi-experimental control groups (not random assigned)	GSE, 10 items standardized scale by Schwarzer, R., & Jerusalem, M. (1995)
4.	Effects of Self-Compassion Education on the Self-Efficacy of the Clinical Performance	Mahin Moeini, Esmaeil Sarikhani-Khorrami, Amir Ghamarani [7]	2019 (Full article)	Faculty of Nursing and Midwifery, University of Medical Sciences, Isfahan, Iran	7th and 8th-semester nursing students 52 participants (Experimental group, n = 25, Control group n = 25)	Field trial with pre-test and post-test control group design (Simple random assigned)	Self-Efficacy of clinical performance, 37 items validated as per GSE scale (r = 0.94)
5.	Effect of Achievement Motivation Training Program on Self-efficacy	Hagar Mahmoud Hamed et al. [8]	2021 (Full article)	Faculty of Nursing, Kafr Elshiekh University, Egypt	Fourth-year nursing students 100 participants (Experimental group, n = 50, Control group n = 50)	Quasi-experimental control group design (Simple random assigned)	GSE, 10 items, standardized scale by Schwarzer, R., & Jerusalem, M. (1995)
6.	Effects of a mobile phone-based psychological intervention program on stress, anxiety and self-efficacy	Lianhong Wang et al. [9]	2022 (abstract)	Guizhou, China	Undergraduate nursing students 114 participants (intervention group, *n = 57*, control group, n = 57)	Randomized Controlled Trial (RCT)	GSE, 10 items standardized scale by Schwarzer, R., & Jerusalem, M.
7.	Effect of Psychological Intervention on Perceived Stress and Positive Psychological Traits	Wei Wang, Songli Mei [10]	2022 (abstract)	Medical University, China	Nursing students 252 Participants (Experimental group, n = 126, Control group n = 126)	Controlled Clinical Trial	Abstract mentioned Self-efficacy scale
8.	Effects of Problem-Solving Skills Development Training on Resilience, Perceived Stress, and Self-Efficacy	Süleyman Ümit Şenocak, & Fatma Demirkıran [11]	2023 (abstract)	Western Turkey, State University	Second-year nursing students 72 participants (Experimental group, n = 36, , Control group n = 36)	Randomized Controlled Trial	General Self-Efficacy Scale10 items standardized scale by Schwarzer, R., & Jerusalem, M.

Footnote: Citation Reference number for selected 8 research studies [4 – 11]

Table II. Table showing the studies effectiveness on intervention type on self-efficacy along key results.

Study ID No	**Types of intervention** (study duration)	**Outcome variables**	**Key results findings related to self-efficacy**	**Comments on study limitation**.
1.	Rational Emotive Behavior Therapy (REBT). Study duration was 4 weeks (8 sessions, twice per week)	Coping strategies (seeking support, problem-solving, avoidance), self-efficacy	REBT significantly improved self-efficacy ($p = .032$) in the experimental group compared to the control.	Small sample size; short intervention period; potential bias due to lack of blinding.
2.	8-week Positive Psychotherapy program (8 structured sessions) with follow-up (3 months and 6 months)	Depression, self-efficacy	Significant improvement in self-efficacy in intervention group compared to control group ($p < 0.05$). Time-intervention interaction was significant ($p < 0.05$). Improvements sustained at 3 and 6 months follow-up.	Sample size can be increase.
3.	10-session CBT-based stress management program for 10 weeks (2 hours/session)	Stress management competency, self-efficacy, self-esteem	A within-subjects ANOVA shows that general self-efficacy on GSE increased from the first measures with Mean 30.48 (SD 2.81) to the second measures with Mean 32.00 (SD 2.55) and from the first to the third in the intervention group. Follow up at 12 months as third measures after intervention showed similar measures 32.21 (2.48). But, there also was no significant difference on GSE between the intervention and control groups at their fourth semesters.	Randomization in allocation can reduce bias.
4.	Self-compassion training to enhance self-efficacy in clinical performance. Study duration was Eight weeks (1.5-hour weekly sessions)	Self-efficacy of clinical performance	Significant improvements in self-efficacy scores in the intervention group compared to the control group ($p < 0.001$). Total self-efficacy score increased from 53.23 to 72.22 post-intervention. Follow-up conducted one month after intervention showed sustained improvements in self-efficacy.	Limited follow-up duration and potential contamination of control group.
5.	Achievement Motivation Training Program focused on enhancing self-efficacy and motivation. Study duration was 3 months	Levels of achievement motivation and self-efficacy	Significant improvement in self-efficacy and achievement motivation in the study group compared to the control group ($p < 0.001$) Positive correlations observed between achievement motivation and self-efficacy ($r = 0.83$, $p = 0.0001$) No follow up post intervention.	Limited to a single institution; no long-term follow-up for sustainability of outcome.
6.	Mobile phone-based psychological intervention program (3 modules: support, education, reflection). Study duration was 8 weeks	Stress, anxiety, self-efficacy.	Significant improvements self-efficacy ($p < 0.05$), and significant time and time-group interaction ($p < 0.05$) were observed in the intervention group than in the control group.	Study limited to a single clinical context; findings may not generalize across diverse healthcare settings.
7.	Three Good Things (TGT) exercise using social network groups. Study duration was 15 months.	Perceived stress, self-efficacy, resilience, optimism, hope.	Significant reductions in perceived stress and increases in self-efficacy, resilience, and optimism in the experimental group during intervention ($p < 0.05$). During the intervention period, there were significant differences in perceived stress, self-efficacy, resilience, and optimism between the two groups ($p < 0.05$). But not clear about follow-up effect on SE.	Single site at a single university; the pandemic may have introduced uncontrolled external stressors affecting results.
8.	Problem-solving skills development training based on the Social Problem-Solving Model. Study duration was 7 weeks (8 sessions)	Problem-solving, resilience, perceived stress, self-efficacy	Significant improvement in problem-solving, resilience, and self-efficacy scores; significant reduction in perceived stress in the experimental group compared to the control group at post-training and follow-up. Improvements sustained one month after intervention as follow up.	Small sample size; short follow-up period of only one month; self-reported measures, single university setting limits

				generalizability.

Interpretation of findings: In order to answer the systematic review research question on "What types of psychological interventions are effective in enhancing Self-Efficacy among nursing students? The content analysis of this systematic review revealed the types of psychosocial intervention employed for enhancing Self-Efficacy among nursing students were:

1. Rational Emotive Behavior Therapy (REBT) for 4 weeks (twice sessions per week) duration: REBT significantly improved self-efficacy ($p = 0.032$) in the experimental group compared to the control but not coping strategies as other variable. Follow-up was not done.
2. Positive Psychotherapy as psychological intervention for 8 weeks duration: Demonstrated efficacy in enhancing Self-Efficacy ($p < 0.05$), particularly for students with mild to moderate depressive symptoms. The intervention had sustained impact of maintaining improved Self-Efficacy at 3 months and 6 months follow-up with slight changes.
3. CBT-based stress management program for 10 weeks (2 hours/ session) duration: A within-subjects ANOVA shows that general self-efficacy on GSE increased from the first measures with Mean 30.48 (SD 2.81) to the second measures with Mean 32.00 (SD 2.55) and from the first to the third in the intervention group. Follow up at 12 months as third measures after intervention showed similar measures 32.21 (2.48). But, there also was no significant difference on GSE between the intervention and control groups at their fourth semesters.
4. Self-compassion training to enhance self-efficacy in clinical performance for 8 weeks duration: Significant improvements in self-efficacy scores in the intervention group compared to the control group ($p < 0.001$). One month follow-up after intervention showed sustained improvements in self-efficacy.
5. Achievement motivation training for 3 months (12 weeks) duration: Significant improvement in self-efficacy and achievement motivation in the study group compared to the control group ($p < 0.001$). Positive correlations observed between achievement motivation and self-efficacy ($r = 0.83$, $p = 0.0001$). No follow up was done to check sustained impact.
6. Mobile Phone-Based psychological interventions for 8 weeks duration: found to improve Self-Efficacy ($p < 0.05$), with significant impact on other outcome variables like stress, and anxiety, highlighting the value of accessible, technology-driven approaches. The intervention had sustained impact of maintaining improved Self-Efficacy ($p < 0.05$) up to 6 months on follow-up.
7. Structured psychological intervention called Three Good Things (TGT) exercise using social network groups for 15 months duration: Showed significant improved Self-Efficacy ($p < 0.05$) with other outcome variables but not clear sustained impact of Self-Efficacy about follow-up effect on Self-Efficacy.
8. Structured Problem-Solving Training based on the Social Problem-Solving Model for 7 weeks duration: Showed significant improvements in Self-Efficacy and other outcome variable, emphasizing experiential learning. And sustained improvement of Self-Efficacy in one month follow-up.

IV. Risk of Bias Assessment (RoB 2): The Cochrane RoB 2 tool mentioned in **Sterne JAC et al.** review evaluates bias across five domains for selecting and assessing risks of bias from High risk to low risk or some concerns. [3] As per RoB 2 assessment, the above mentioned 8 studies have low risk of bias except 2 studies (study no. 3 and 7 in Table I) having high risk on domain related to bias due to randomization and also due to its study design.

Characteristics of the studies reviewed: The studies characteristics were analyse in its type of intervention, its effectiveness characteristics, Self-Efficacy as outcome variable, & general limitation.

Types of psychosocial intervention employed were based on diverse psychological interventions: The review includes various types of interventions i.e. mobile-based, problem-solving training, motivational or self-compassion training, REBT, CBT and positive psychotherapy with some base on technological medium of delivery. Such interventional approaches have provided insights into the versatility of psychological approaches. At the same, this review had provided evidence for supportive approach in enhancing nursing student Self-Efficacy.

Effectiveness characteristics of interventions showed duration from 4 weeks to lasting 7-12 weeks generally showed sustained improvements, indicating the importance of moderate duration and one study duration lasted for 15 months. A total of 5 studies had sustained improved of self-efficacy level after follow-up period at 1, 3 to 6 months confirmed the longevity of effects but not at 12 months in one student follow up (study ID no 3) A total of 3 studies do not have follow-up.

Outcomes Related to Self-Efficacy: A total of 5 studies utilized GSE, 10 items to measures Self-Efficacy and remaining 3 studies uses other Self-Efficacy standard version or developed it. A total of 7 studies out of 8 studies reported statistically significant improvements in self-efficacy as compared to control group as an impact of psychological intervention mentioned above, suggesting these interventions were effective. These gains were often correlated with reductions in perceived stress and anxiety in some studies.

Limitations in Evidence: This review observed common challenges that includes small sample sizes, missing protocol of random allocation, short follow-up durations, and limited generalizability due to the focus on single geographic or institutional contexts.
Overall this review content analysis revealed that a well-structured psychological therapy based intervention types given for specific duration of 4 weeks or longer, does improved Self-Efficacy among nursing student.

V. Discussions, recommendation and conclusion:

This systematics review is a pan search for a decade from January 2014 to July 2024 to answer the research question of finding the types of effective psychosocial intervention to enhance self-efficacy among nursing students. The articles reviewed also consider abstract as its reviews article due to scarcity of similar study criteria and weakened its review for missing important details. Most of the studies were employing randomization to reduce risk of bias. There was clear focus on outcome variable Self-Efficacy in this review. This review emphasizes the importance of focusing on nursing student Self-Efficacy level through its findings and provide a background for developing effective psychological intervention. The limitation of this review were inclusion of abstract as its selected studies as the reviewers may have missed important insight for its review conclusion. All studies were not randomized controlled trial. The another limitation were limited sample size within selected studies, limited selected studies itself and the heterogeneous types of intervention and its research design lack of blinding, leading to limited generalizability of findings.

Recommendation: Similar systematic review can be adopted that focus only on multicenter RCT studies with good methodological rigor for standardized intervention protocol and minimizes the risk of bias. Another recommendation could be to focus on scalability of the intervention.

Conclusion: The systematic review highlights the effectiveness of psychological interventions, such as mobile-based interventions, positive psychotherapy, REBT, CBT, TGT exercises, and problem-solving training in improving general self-efficacy among nursing students. These findings demonstrate the importance of tailored psychological strategies to address stress, depression, and resilience in this nursing student's population. Further high-quality research with larger samples and standardized protocols are recommended to strengthen the evidence base.

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