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EFFECTIVENESS OF COMBINING FAMILY SUPPORT PROGRAMS AND HEALTH EDUCATION IN REDUCING ANXIETY AMONG FAMILIES OF PATIENTS IN THE ICU: A SYSTEMATIC REVIEW

Milah Rohmatul Karmilah*, Iwan Purnawan
Magister Keperawatan, Fakultas Ilmu Kesehatan, Universitas Jenderal Soedirman, Jl. Dr. Soeparno, Karangwangkal, Purwokerto Utara, Banyumas, Jawa Tengah 53123, Indonesia
*milah.karmilah@mhs.unsoed.ac.id

ABSTRACT
Changes in the patient's condition, which can deteriorate or improve rapidly, often increase uncertainty and emotional pressure on the family including anxiety. Among various interventions, family support programs and health education can be implemented to reduce family anxiety. The purpose of this study is to evaluate the effectiveness of family support program and health education on anxiety in families of patients in the ICU. A systematic search was conducted across three databases (PubMed Central, ScienceDirect and Cochrane Library) for studies published up to 2023. Eligible studies met the following criteria (1) peer review studies in English and Indonesian; (2) involving adullt families treated in the ICU; (3) implementing family support programs or education; (4) standard care implemented in the control group; (5) measured variables include patient family anxiety; (6) quantitative experimental research; and (7) publications from 2015 to 2025. The screening process was conducted in two phases: title and abstract screening, followed by full-text assessment, with methodological quality evaluation. The tools used to measure bias risk were JBI and RoB 2. A total of 4,015 articles were identified, and only 8 of them met the criteria. Four articles discussed family support programs with an RCT design, and four articles discussed health education with quasi and pre-experimental designs. All articles showed a significant effect in reducing the anxiety of patients' families in the ICU. Future research is recommended to explore standardized intervention protocols and evaluate long-term outcomes.

Keywords: anxiety; family; family support programs; health education; intensive care unit

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INTRODUCTION

The Intensive Care Unit (ICU) is a part of the hospital that provides specialized services for patients in critical condition who require high-level medical treatment due to life-threatening situations (Keshmiri et al., 2020). Care in the ICU not only affects patients, but also has an impact on their family members. This condition significantly limits family involvement in the treatment process and can trigger various psychological and emotional problems (Asadi & Salmani, 2024). This situation also disrupts family unity and triggers emotional crises and psychological pressure for its members (Farmakopoulou et al., 2024). The fear of losing a patient, uncertainty about the progression of the disease, emotional pressure, financial burdens, role changes, and disruption of routines can trigger various reactions in families, such as shock, anger, despair, anxiety, depression, emotional instability, and doubt (Gunnlaugsdóttir et al., 2024).

Anxiety is a common psychological problem among family members of ICU patients. Studies report that 35%–73% of family members of ICU patients are prone to anxiety, depression, and panic attacks, and consume antidepressants and anxiolytics even after their patients are discharged from the hospital or have died (Forozandeh et al., 2021). Anxiety is a feeling of uneasiness, worry, or fear that is vague or uncomfortable, as if something threatening is about to happen. Anxiety is a

vague feeling of discomfort or worry accompanied by an autonomic response; a feeling of fear caused by anticipation of danger (NANDA, 2018).

Changes in the patient's condition, which can deteriorate or improve rapidly, often increase uncertainty and emotional pressure on the family. In addition, transitional processes such as transfer from the ICU to a general ward can also cause anxiety. Both patients and families often view the transfer as risky because they are concerned about a decrease in the intensity of care, lack of monitoring, and safety in the new environment. Family members of ICU patients often experience anxiety exacerbated by limited access to the ICU, restricted visiting hours, inadequate communication from healthcare providers, perceived security threats, and an overall atmosphere of uncertainty (Alkan & Özmen, 2025).

Family members with limited psychological and emotional support and emotion-focused coping strategies, such as avoidance, experience high levels of anxiety and psychological distress (Harlan et al., 2020). The high prevalence of psychological problems among family members of ICU patients highlights the importance of taking serious steps to manage their problems. However, studies show that although providing care to family members of critically ill patients is one of the responsibilities of nurses, ICU staff generally focus on providing care to patients and often neglect family members who tend to experience anxiety (Checa-Checa et al., 2025).

There are various pharmacological therapies to reduce anxiety. Pharmacological therapies are usually associated with different side effects, which place a heavy burden on the health system. Therefore, non-pharmacological therapies, such as complementary and alternative therapies, are preferred for anxiety management (Ma et al., 2024). A growing body of research shows that health education can be a promising intervention to reduce psychological distress in families of patients experiencing high anxiety in the ICU (Lestari & Oetomo, 2022; Sentana & Pratiwi, 2019). Health education-based interventions focus on conveying information and transferring knowledge related to health messages to individuals or groups (Sentana & Pratiwi, 2019). Providing clear information and education has been proven to alleviate family anxiety symptoms by providing a better understanding of the patient's condition, diagnosis, prognosis, and the treatment process that will be undergone (Lestari & Oetomo, 2022). Additionally, this strategy also aims to increase family support for the ICU care process and strengthen their sense of control over the situation they are facing (Futriani & Muzdalivah, 2025a).

Various other interventions can be applied to reduce anxiety, and one approach that has strong potential is family support intervention. Supportive interventions for family members of patients may include: family education about the disease process, treatment, and rehabilitation; improving family members' ability to cope with the patient's postoperative condition; skills in managing concerns; providing support; comfort; and scheduling brief meetings with the patient. In cultural, social, and religious contexts, family members play a significant role in caring for patients, characterized by close communication between patients and their families. When patients are treated in health facilities, family members actively seek to provide care. However, family support systems in health programs are often poorly structured, and attention to the positive role of families as an important factor in achieving therapeutic goals remains minimal. In addition, increased workload in clinical settings means that support programs for family members are often neglected by nursing staff (F. S. Shoushi et al., 2021).

Although mental interventions have been shown to be effective in various health situations, there is still a lack of research specifically evaluating how health education or structured psychological interventions can affect the families of patients treated in the ICU. The available literature generally focuses only on the natural coping strategies used by families. Experimental evidence regarding interventions designed to directly reduce anxiety and address the emotional burden of families is

still very rare. In fact, supportive interventions and health education programs have great potential to help manage the anxiety and psychological stress experienced by families of critically ill patients. This gap highlights the need for research to test the effectiveness of family support interventions (including structured health education programs) in reducing the anxiety levels of family members of patients in intensive care units. The purpose of this study is to evaluate the effectiveness of family support program and health education on anxiety in families of patients in the ICU.

METHOD

Protocol

This systematic review study refers to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. To ensure transparency and traceability of the literature review process, all stages, including the formulation of research questions, inclusion–exclusion criteria, search strategies, article selection process, quality assessment, and data synthesis, were conducted systematically.

Eligibility Criteria

The inclusion criteria for this study were: (1) peer review studies in English and Indonesian; (2) involving families/caregivers of adult patients (>18 years) treated in the ICU; (3) family support programs or education implemented in the intervention group; (4) standard care implemented in the control group; (5) measured variables include patient family anxiety; (6) quantitative experimental research; and (7) publications from 2015 to 2025. Articles will be excluded if they include: (1) other interventions besides family support programs or education; (2) pilot studies, conference proceedings, case reports, or systematic reviews; and (3) incomplete variable values.

Information Sources & Search Strategy

Systematically, two researchers analyzed and searched the literature using three databases which was conducted on December 4 to 5, 2025, namely Cochrane Library, PubMed, and Science Direct, to retrieve articles published between 2015 and 2025. The search keywords were based on the following Boolean operators as follows: (“family support program” OR “family support” OR “family-centered care” OR “family engagement” OR “family empowerment” OR “relatives support”) AND (“health education” OR “nursing education” OR “educational intervention” OR “health promotion”) AND (“anxiety” OR “family anxiety” OR “situational anxiety” OR “caregiver anxiety” OR “psychological distress” OR “psychological outcome”) AND (“intensive care unit” OR ICU OR “critical care unit” OR “critical care nursing” OR “intensive therapy unit”) AND (intervention OR program* OR effect* OR impact*). The filters applied include peer-reviewed journal articles, full-text articles, English and Indonesian languages, and the past 10 years (2015-2025). 4,015 articles were obtained, but only 8 articles met the review criteria.

Study Selection

Screening was conducted by two researchers independently based on inclusion and exclusion criteria using Mendeley reference manager software. After the search process, all results obtained were compiled and duplicates were removed. The next stage was screening titles and abstracts based on predetermined inclusion and exclusion criteria. Studies that met the initial criteria then entered the full-text eligibility stage, where each article was evaluated in more depth to ensure that the content was relevant to the research objectives. Articles that do not meet the criteria at this stage are noted for the reasons for their exclusion. Studies that pass the full-text eligibility assessment stage are then included in the final synthesis. The entire selection process is presented in a PRISMA flow diagram to ensure transparency and traceability of the study selection process.

Data Extraction

Articles that passed the selection process underwent data extraction, including the names of researchers, year of publication, design, research objectives, sample, interventions applied,

treatment of control groups, instruments, and research results. This process was independently conducted by two researchers as a form of validation to improve accuracy, reduce bias, and ensure consistency of data collected from each study.

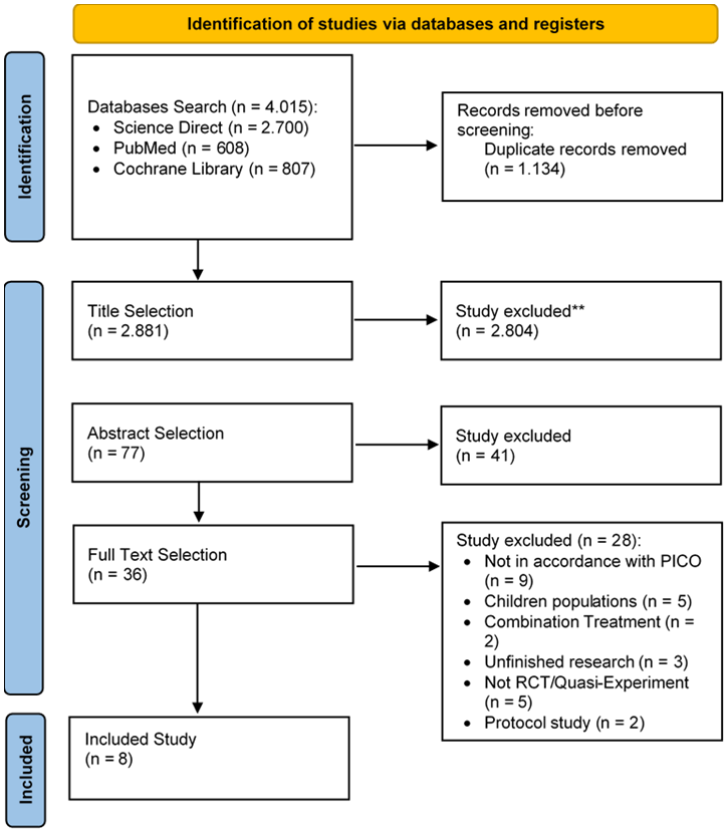
Risk of Bias

Researchers independently evaluated the quality of selected studies using RoB 2: Cochrane risk-of-bias tool for randomized trials and the Joanna Briggs Institute (JBI) Critical Appraisal Checklist for Quasi-Experimental Studies. RoB 2 is divided into five domains: randomization process, deviation from intervention, missing outcome data, outcome measurement, and selection of reported results. Each domain is reported as low risk, high risk, or moderate risk, which are then combined into a total risk of bias (Sterne et al., 2019). The Joanna Briggs Institute (JBI) Critical Appraisal Checklist for Quasi-Experimental Studies is a quality appraisal tool designed to evaluate methodological rigor, internal validity, and risk of bias in quasi-experimental studies, particularly non-randomized studies. This checklist covers important aspects such as clarity of cause and effect, suitability of comparison groups, consistency of measurement, control of confounding factors, completeness of data, and adequacy of statistical analysis.

Data Synthesis

Data synthesis was performed using a narrative synthesis approach because the characteristics of the data between studies did not allow for meta-analysis. The synthesis process followed the recommended steps, starting with organizing study findings based on variables and research focus. Each study was analyzed to identify patterns, themes, and trends in the results. Next, consistency and heterogeneity between studies were examined by comparing similarities, differences, and factors influencing outcome variation. These findings were then compared across studies to understand the relationships between concepts, strength of evidence, and research context. The final results were presented in a comprehensive narrative describing the integration of findings from all studies that met the inclusion criteria.

RESULT



Picture 1. Article Selection Process

Study Selection

Screening of three databases with selected search terms identified 4,015 articles. There were 1,134 duplicate articles, 2,804 articles with titles that did not match the research objectives, 41 articles that did not pass the abstract selection, and 28 articles that did not pass the full text selection, with details of 9 articles that did not match the PICO, 5 articles with a pediatric population, 2 articles that were combination studies, 3 articles that were unfinished studies, 5 articles were not experimental research, and 3 articles were study protocols. The remaining eight articles that passed the criteria and quality assessment underwent data extraction with the following details (picture 1).

Study Characteristics

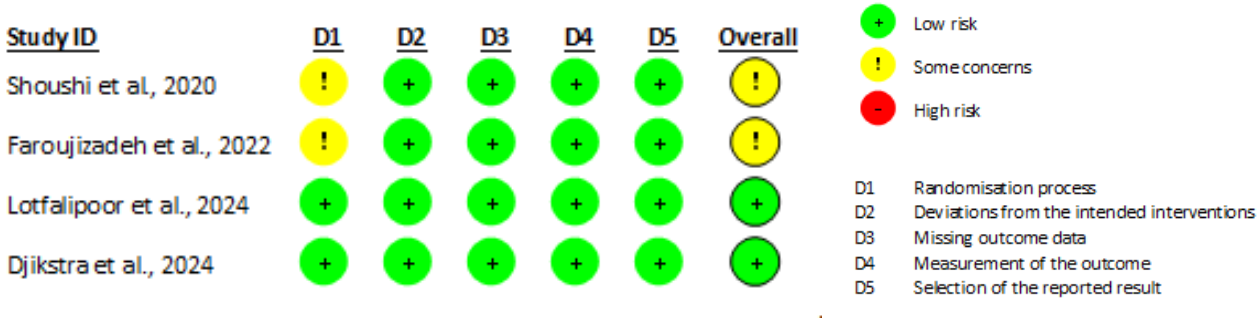
Table 1.
Study characteristics

Author, Country	Design	Purpose	Sample	Intervention	Control	Instrument	Results
Shoushi et al., (2020), Iran	Randomized Clinical Trial	Examine the impact of family support program on depression, anxiety, stress, and satisfaction on the family members of open-heart surgery patients.	Family member Inv: 45 Con: 45	Psycho-education support for 14 days, 30-45 minutes per session.	Routine care	Depression, Anxiety, and Stress scale (DASS-21)	The total score of anxiety statistically significantly decreased in the intervention group compared to the control group (P<0.001).
Faroujizadeh et al., (2022), Iran	Randomized Clinical Trial	To determine the effect of the supportive educational program on depression, anxiety and stress and satisfaction of the families of patients admitted to the coronary care unit.	Family member Inv: 35 Con: 35	Supportive Educational Program for 3 sessions, 40-45 minutes per session.	Routine care	Depression, Anxiety, and Stress scale (DASS-21)	The total score of anxiety after the intervention was reduced compared to before the intervention in the intervention and control group (P<0.001).
Lotfalipoor et al., (2024), Iran	Randomized Clinical Trial	To determine the effect of family-centered care on anxiety levels among family members of patients undergoing cardiac surgery.	Family member Inv: 71 Con: 73	Family-centered care for 3 sessions, 30 minutes per session.	Routine care	State-Trait Anxiety Inventory (STAI)	The changes in the state anxiety score before and after the intervention were significant between the two groups, and the changes were higher in the intervention group (P=0.043)
Dijkstra et al., (2024), Netherlands	Cluster Randomized controlled trial	Determine the effect of a standardized program for family participation in the ICU on symptoms of anxiety, depression, posttraumatic stress and satisfaction among relatives.	Patients Relatives Inv: 73 Con: 233	Family Participation Program for 1 month	Routine care	Hospital Anxiety and Depression Scale (HADS)	There was a greater reduction in anxiety scores in the intervention group compared to the control group (p=0.015)
Futriani & Muzdalivah (2025), Indonesia	Pre-Experimental	This study aims to assess the effect of health education on reducing anxiety levels among families in the ICU.	49 Family members	Health education on patient health development for one 30-minute session.	-	Hamilton Anxiety Rating Scale (HARS)	There is an effect of Health Education on Disease Progression on the anxiety levels of families of patients in the ICU (p<0.001).
Sentana & Pratiwi (2019), Indonesia	Pre-Experimental	To determine the effect of providing health education about the development of patient's disease to the level of family anxiety.	17 Family members	Health education on patient health development for one 40-minute session.	-	Hamilton Anxiety Rating Scale (HARS)	There is an effect of the provision of health education about the development of patient's disease to the level of family anxiety in the ICU room (p=0.000).
Beda et al. (2024), Indonesia	Pre-Experimental	The aim of this research is to determine the effect of health education on family anxiety in implementing invasive procedures for critical patients in ICU.	25 Family members	Health education on patient health development for one 30-minute session.	-	Depression, Anxiety, and Stress scale (DASS-21)	There is an influence of education on family anxiety in carrying out invasive procedures for critical patients (p=0.004).
Lestari & Oetomo (2022), Indonesia	Quasi-Experiment	This study aims to analyze the effect of providing information and education on the anxiety of families of brain tumor patients treated in the ICU	Family members Inv: 25 Con: 25	Health education on patient health development for one 30-minute session.	Routine care	Hamilton Anxiety Rating Scale (HARS)	Providing clear information and education can reduce family anxiety by giving them a better understanding of the patient's condition (p<0.001).

Table 1 shows that of the 8 articles, 4 were from Indonesia, 3 from Iran, and 1 from the Netherlands. Four articles used a randomized controlled trial design, 3 articles used a one-group pretest-posttest design, and 1 used a quasi-experimental design. The number of respondents was 751 people, with 4 articles implementing family support programs and health education interventions. The most widely used instruments were HARS and DASS-21, with 3 articles each. All articles found that family support programs and health education had a significant effect in reducing the anxiety of patients' families in the ICU, thus showing great potential for research on the combination of the two.

Critical Appraisal Results

Risk of bias assessment in studies with randomized controlled trial designs was performed using RoB 2: Cochrane risk-of-bias tool. This assessment was performed by two researchers independently and the results were compared after completion. Any differences of opinion were resolved through discussion. Figure 2 shows the results of the assessment using RoB 2. Based on the assessment results, it was found that there were two studies with low risk of bias and two studies with some concern criteria, especially in the randomization process domain where the article did not explain the blinding process during randomization.



Picture 2. Critical Appraisal Using RoB-2

In pre-experimental research, risk assessment is conducted using the Joanna Briggs Institute (JBI) Critical Appraisal Checklist (Picture 3. One study by Lestari & Oetomo (2022) has met the important criteria for high-quality quasi-experimental studies. However, there are three studies that do not have a control group because their design uses a pre-experimental with one group pretest posttest (N. S. Beda et al., 2024; Futriani & Muzdalivah, 2025b; Sentana & Pratiwi, 2019).

	Research has clarity between 'cause' and 'effect'	Participants have similar characteristics	Study participants received the same exposure or treatment	There is a control group	Measurements are taken before and after the intervention	Completion of follow-up, if none then analyzed	Realibility of participant outcome measurement methods	Outcomes measured in a reliable way	Appropiate statistical analysis used
Futriani & Muzdalivah (2025)	+	+	+	–	+	+	+	+	+
Sentana & Pratiwi (2019)	+	+	+	–	+	+	+	+	+
Beda et al., (2024)	+	+	+	–	+	+	+	+	+
Lestari & Oetomo (2022)	+	+	+	+	+	+	+	+	+

Notes:
+ = Yes ? = Unclear
– = No x = Unavaible

Picture 3. Critical Appraisal Using JBI

DISCUSSION

Family-Centered Interventions and Psychological Outcomes in ICU Families

The literature shows that both health education and family-based interventions for ICU patients aim primarily to reduce psychological distress through increased knowledge, clarity of roles, emotional support, and active family involvement in the care process. However, findings from various studies show diversity in the forms of interventions provided and the magnitude of psychological effects achieved. In pure family interventions, study results by Dijkstra et al. (2024) supporting the principle of Family Centered Care (FCC) to improve the family experience and also consistent that communication or provision of information alone is not enough to reduce anxiety, depression, or PTSD, even though the approach taken focuses on active family participation. Differences in results compared to previous studies may be influenced by the timing of measurement, as symptoms were assessed three months after discharge from the ICU, a period consistent with the onset of Post-Intensive Care Syndrome-Family (PICS-F), unlike other studies that measured acute anxiety. Additionally, the low baseline symptom levels during the control period resulted in minimal changes between periods.

Lotfalipoor et al. (2024) found that state anxiety and trait anxiety in the families of cardiac surgery patients were at moderate to high levels, consistent with the findings of several other studies. Surgical procedures and care in the ICU often trigger anxiety and can influence family decision-making. Family-centered education and care approaches in various countries have been shown to help reduce anxiety, but this study did not find a similar effect. These conflicting findings are likely influenced by individual and environmental factors that act as confounding variables. After controlling for these variables, the analysis results showed that the families' inherent anxiety appeared to decrease under the influence of family-centered care.

Study by Mashhadi et al. (2021) shows that information support significantly reduces depression in the families of patients in the cardiology intensive care unit, with the intervention group experiencing a decline from the first to the third day of hospitalization, while the control group showed no significant change. These results are consistent with various studies confirming that structured education and information, especially those tailored to the needs of families, can improve understanding, reduce emotional stress, and help families adapt during critical care. Evidence from other studies also consistently shows that information support programs, whether through face-to-face meetings or educational materials, result in greater reductions in depression compared to standard care.

Comprehensive Family Support Programs and Psychological Well-Being

Shoushi et al. (2021) also reported that family support programs effectively reduced depression, anxiety, and stress and increased the satisfaction of families of open-heart surgery patients, with the intervention group experiencing greater improvement than the control group from before the procedure until after the patient was discharged. These findings are consistent with various studies showing that education, emotional support, and structured information help families understand the patient's condition, reduce psychological stress, and improve their experience during critical care. Although the form of support differed between studies, the results were consistent in that clear communication, family involvement, and follow-up after treatment played an important role in maintaining the emotional health of the patient's family. Not only that, comprehensive family interventions that included education, targeted communication, and nursing assistance, as described in the protocol by Naef et al., (2022), shows that multi-component support programs tend to be more effective than single interventions.

Effect of Health Education on Anxiety Reduction Among ICU Families

Health education interventions are another component that has consistently shown positive effects in reducing anxiety among ICU patients' families. Study by Sentana & Pratiwi (2019) shows that

patients' families' anxiety decreased significantly after they received health education about the patient's condition in the intensive care unit. Education covering understanding of sleep patterns, vital signs, and patient comfort helped families obtain information they had not previously received, thereby reducing negative perceptions and making them feel calmer. These findings are consistent with research emphasizing that information is a primary need for families of critically ill patients and plays a major role in reducing anxiety.

Similar results were found by Beda et al., (2024) Education has been proven effective in reducing the anxiety of patients' families in intensive care units, as clear information improves their understanding and coping skills. Research shows that explanations about medical conditions and procedures help families feel calmer and reduce uncertainty. Although not all families show the same reduction in anxiety, these differences are generally influenced by their individual coping skills.

Study by Futriani & Muzdalivah (2025) shows that understanding the characteristics of ICU patients' families is important for tailoring health education, as the majority of respondents are young adults to middle-aged and have a secondary education, requiring simple information. Family support also involves relatives and friends, so education needs to reach a wider social circle. The critical situation of patients causes stress and anxiety because families have to deal with unexpected conditions and participate in decision-making. Health education has been proven effective in reducing anxiety, as evidenced by a decrease in severe anxiety, the disappearance of panic anxiety, and an increase in families who feel calmer after receiving clear information about the patient's condition.

Educational Interventions and Sense of Control Among Families

Other important findings are shown by Lestari & Oetomo (2022) which used a two-group design and found that providing clear information and education about the condition of brain tumor patients and the treatment process in the ICU effectively reduced family anxiety. With a better understanding, families felt more in control and prepared to deal with stressful situations. These findings are in line with previous studies which state that education can reduce uncertainty and increase families' confidence in accompanying patients. Meanwhile, the control group did not experience significant changes, indicating that without educational support, anxiety tends to persist.

Synthesis of Family Interventions and Health Education Effects

Overall, the literature synthesis reveals two key points. First, interventions that rely solely on family participation without informational support are not sufficiently effective in reducing anxiety in the long term, as seen in studies with insignificant results. Second, both family interventions and health education will have a stronger impact if they include clear information, opportunities to ask questions, structured communication, and emotional support. This means that the most significant reduction in anxiety occurs when interventions not only give families access to participate, but also provide a comprehensive understanding of the patient's condition, treatment procedures, and possible clinical developments.

Comparison with previous systematic reviews

Several pieces of literature evidence show that family interventions and family-centered communication approaches in the ICU context have been systematically evaluated and show mixed results. A systematic review of family-centered care interventions in ICU patients reported that most RCT studies found at least one positive outcome related to the family, including improvements in satisfaction, psychological aspects, and care experiences, despite considerable variation in the form of intervention (e.g., communication, emotional support, active family involvement) and not all results being consistent across studies (Duong et al., 2024).

Implications for Integrated ICU Family Support Programs

Other studies also confirm that the form of communication support and psychological stress reduction for families varies depending on the type of intervention, the method of delivery, and contextual factors such as the family's ability to receive information and their coping mechanisms. A meta-analysis of family communication interventions in the ICU shows that this approach is effective in improving the quality of communication and long-term psychological well-being of families, although the effects differ according to the type of communication media used (e.g., printed materials vs. digital tools) (Li et al., 2025). However, evidence also shows that the effect of family education on anxiety is not always statistically significant in all studies. A meta-analysis of family education shows a downward trend in anxiety but does not reach strong significance, reflecting the diversity of the effects of educational interventions in the literature (Shafipour et al., 2017).

Therefore, combining health education interventions and family interventions is a scientifically and practically appropriate approach to reducing the anxiety of patients' families in the ICU. The ideal program is a multi-component intervention that includes repeated education, interprofessional communication, emotional support, and active family participation in patient care. This combination not only reduces uncertainty, but also provides a sense of control and increases families' confidence in dealing with the critical condition of their family members in the ICU.

Limitations and Directions for Future Research

Although this systematic review shows that health education interventions and family support programs have a significant impact on reducing the anxiety of ICU patients' families, the studies analyzed have several limitations. Some studies still used quasi-experimental and pre-experimental designs without strong control groups, limiting the ability to draw more convincing causal conclusions. Differences in the form of intervention, duration, session frequency, and anxiety measurement tools also affected the consistency of findings across studies. In addition, many studies only evaluated short-term effects without assessing the sustainability of long-term impacts. Therefore, further research is needed to test the effectiveness of combined interventions, namely the integration of family support programs with structured health education, using more rigorous experimental designs such as RCTs, more standardized intervention frequencies, and long-term monitoring to evaluate the stability of anxiety reduction in ICU patients' families.

CONCLUSION

This systematic review highlights that family support programs and health education interventions are effective in reducing anxiety among families of patients in the ICU. Practical implementation should prioritize structured communication, psychoeducation, and accessible family-centered support to enhance emotional coping. Future research is recommended to explore standardized intervention protocols and evaluate long-term outcomes. Overall, this review contributes to strengthening evidence for family-centered care and emphasizes its importance in improving psychological well-being and healthcare quality.

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