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Efficacy of Non-Pharmacological Interventions for Reducing Preoperative Anxiety

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Abstract

Introduction: The percentages of reported preoperative anxiety prevalence highlight the urgency of addressing this concern comprehensively. By critically assessing the effectiveness of non-pharmacological interventions, this review aimed to contribute valuable insights for healthcare practitioners, guiding evidence-based decision-making and fostering a more patient-centric approach to preoperative anxiety management.

Methods: A systematic literature review assessed the efficacy of non-pharmacological interventions for reducing preoperative anxiety. The review, conducted up to October 2023, employed a comprehensive search strategy across major electronic databases, applying specific terms and Boolean operators to maximize relevant article retrieval. Eligibility criteria included original research articles, systematic reviews, and meta-analyses exploring a diverse range of non-pharmacological interventions, with a two-step screening process and meticulous data extraction using a standardized form to ensure a thorough evaluation of evidence, including studies with potential bias.

Results: The systematic review, encompassing six randomized clinical trials, assessed the efficacy of non-pharmacological interventions for preoperative anxiety across diverse surgical contexts. Findings revealed a 10% to 25% reduction in anxiety incidence, supported by statistically significant risk ratios (0.75 to 0.90) with narrow confidence intervals, emphasizing the potential of tailored interventions but highlighting the need for further research to establish robust guidelines.

Conclusions: The systematic review's findings endorse the potential of non-pharmacological interventions in alleviating preoperative anxiety across various surgical contexts and patient groups, aligning with the evolving emphasis on patient-centered care; however, the observed reductions underscore the necessity for rigorous research to establish evidence-based guidelines given the variability in study designs and populations.

Keywords: Surgery, Anxiety, Non-Pharmacological Interventions, Patient-Centered Care.

Introduction

Preoperative anxiety is a prevalent and multifaceted concern among surgical patients, impacting not only their psychological well-being but also influencing surgical outcomes and postoperative recovery [1]. Studies have reported varying prevalence rates of preoperative anxiety, ranging from 11% to 80%, highlighting the diverse nature of this concern across different patient populations and surgical procedures. As anxiety significantly influences patient experience, there is a growing interest in identifying effective interventions to mitigate preoperative distress, with a focus on both pharmacological and non-pharmacological approaches [2].

While pharmacological approaches have traditionally been common, the potential side effects and varying patient responses have prompted an increased exploration of non-pharmacological interventions [2]. Non-pharmacological interventions encompass a broad spectrum of techniques, including psychological, educational, and behavioral strategies, as well as complementary and alternative therapies. The precise comparative effectiveness of these interventions is pivotal for tailoring patient care and optimizing surgical outcomes. A comprehensive evaluation of the existing evidence on non-pharmacological interventions for reducing preoperative anxiety, shedding light on their efficacy and potential benefits [3].

To conduct this review, a systematic search was carried out across prominent electronic databases, including PubMed, Embase, and the Cochrane Library. The prevalence of preoperative anxiety varies significantly across surgical procedures, with reported rates ranging from 11% to 80% in different patient populations [4, 5]. These percentages underscore the significance of addressing preoperative anxiety as a widespread and diverse concern in surgical settings. Moreover, a systematic analysis of existing literature allows for a detailed comparison of the effectiveness of non-pharmacological interventions in reducing preoperative anxiety, not only among themselves but

also in relation to conventional pharmacological approaches, which have demonstrated varying efficacy [6, 7]. While pharmaceutical interventions have shown effectiveness in managing preoperative anxiety, their potential side effects and varying patient responses underscore the need for alternative strategies [8, 9]. The percentages of reported preoperative anxiety prevalence highlight the urgency of addressing this concern comprehensively. By critically assessing the effectiveness of non-pharmacological interventions, this review aimed to contribute valuable insights for healthcare practitioners, guiding evidence-based decision-making and fostering a more patient-centric approach to preoperative anxiety management.

Methods

A systematic literature review was conducted to assess the efficacy of non-pharmacological interventions for reducing preoperative anxiety. The search strategy aimed to identify relevant studies published up to October 2023. The search terms included Medical Subject Headings (MeSH) and keywords related to preoperative anxiety and non-pharmacological interventions. The specific terms encompassed "preoperative anxiety," "surgery," "non-pharmacological interventions," and variations of these terms. Boolean operators (AND, OR) were employed to refine the search and maximize the retrieval of relevant articles.

The systematic search was carried out across major electronic databases, including PubMed, Embase, and the Cochrane Library. The search was limited to articles published in English, and no restrictions were placed on publication dates to ensure a comprehensive exploration of the available literature. The initial exploration spanned to the last search conducted on November 2023. Eligibility criteria were established to include original research articles, systematic reviews, and meta-analyses that investigated the

efficacy of non-pharmacological interventions in reducing preoperative anxiety. Studies focusing on a diverse range of non-pharmacological interventions, such as psychological, educational, and behavioral strategies, as well as complementary and alternative therapies, were considered. Exclusion criteria involved non-research articles, case reports, and studies lacking sufficient detail on the outcomes of non-pharmacological interventions for preoperative anxiety. The study selection process involved a two-step screening by two independent reviewers. In the initial screening, titles and abstracts of identified articles were reviewed to assess their relevance to the review's objectives. Subsequently, full-text articles of potentially eligible studies were obtained and assessed against the inclusion and exclusion criteria. Any discrepancies in article selection between the reviewers were resolved through discussion and consensus.

Data extraction was performed using a standardized form that included relevant information such as study design, participant characteristics, types of non-pharmacological interventions, and key outcomes related to preoperative anxiety. Two independent reviewers extracted data from the included studies, and any disparities were resolved through consensus. The extracted data were cross-verified to enhance accuracy and completeness. This thorough data extraction process was crucial for gauging the strength of evidence and informing the synthesis of findings. Studies with a high risk of bias were not excluded but were considered in the synthesis, with their limitations duly acknowledged.

Results and discussion

A total sample of 384 attendants in PHC centers The systematic review identified six randomized clinical trials (RCTs) that met the inclusion criteria, providing valuable insights into the efficacy of non-pharmacological interventions for reducing preoperative anxiety [10-15]. The included trials exhibited a range of sample sizes, with participant numbers spanning from 84 to 312 across the studies [12, 14]. The diversity in sample sizes reflects the variability in the scale and scope of the investigations conducted. In terms of the type of surgery investigated,

the included trials covered a spectrum of surgical procedures, including orthopedic, gastrointestinal, and gynecological surgeries [13, 15]. This diversity in surgical contexts contributes to the applicability of the review's findings across different specialties and patient populations. The mean age of participants across the included trials ranged from 40 to 60 years, providing a glimpse into the applicability of non-pharmacological interventions across various age groups. This demographic diversity is crucial for understanding the potential effectiveness of interventions in different patient cohorts [12-15].

Non-pharmacological interventions employed in the included trials encompassed a variety of approaches, including psychological, educational, and behavioral strategies. These interventions aimed to address preoperative anxiety through tailored approaches that considered the unique needs and preferences of the study populations [16]. Effectiveness of the interventions was assessed through risk ratios, comparing the incidence of preoperative anxiety between the intervention and control groups. The risk ratios varied across the trials, with some interventions demonstrating a significant reduction in preoperative anxiety incidence. Notably, the risk ratio ranged from 0.75 to 0.90, indicating a 10% to 25% reduction in preoperative anxiety in the intervention groups compared to the control groups [17, 18].

The associated confidence intervals (CIs) provided additional context to the risk ratios. For instance, interventions demonstrating statistically significant effects had narrow CIs, reinforcing the precision of the observed effects. Conclusions drawn from these findings suggest that certain non-pharmacological interventions hold promise in effectively reducing preoperative anxiety, highlighting the importance of tailored strategies in perioperative care [19]. However, it is crucial to acknowledge the heterogeneity in study designs and populations, emphasizing the need for further research to establish robust evidence-based guidelines for implementing non-pharmacological interventions in diverse surgical settings [20, 21]. The findings of this systematic review contribute to the ongoing discourse on mitigating preoperative anxiety through non-pharmacological interventions. The variability in sample sizes, surgical contexts, and

participant demographics across the six included randomized clinical trials (RCTs) underscores the broad applicability of such interventions [22]. The range of surgical specialties covered, including orthopedic, gastrointestinal, and gynecological surgeries, suggests that non-pharmacological strategies may offer benefits across diverse surgical settings. These results align with the emerging recognition in the medical literature of the importance of tailored approaches to address preoperative anxiety across various medical disciplines [23].

Examining the mean age of participants in the included trials revealed a diverse patient population, with ages ranging from 40 to 60 years. This demographic heterogeneity is crucial for understanding the potential effectiveness of non-pharmacological interventions in different age groups [24]. The observed reductions in preoperative anxiety incidence, ranging from 10% to 25% across trials, suggest that these interventions may have a meaningful impact on patient well-being. Comparisons with existing medical literature on non-pharmacological interventions for preoperative anxiety indicate a consistent trend toward favorable outcomes, reinforcing the notion that such interventions merit serious consideration in perioperative care [21].

Notably, the various non-pharmacological interventions employed in the included trials encompassed psychological, educational, and behavioral strategies, showcasing the versatility of approaches in addressing preoperative anxiety. The individualized nature of these interventions, considering patient preferences and needs, aligns with the broader trend in healthcare toward patient-centered care models. Comparisons with existing literature reveal a growing emphasis on personalized approaches to preoperative anxiety management, reflecting a shift from one-size-fits-all methodologies to more tailored and patient-centric interventions [25]. The risk ratios calculated across the trials, ranging from 0.75 to 0.90, provide quantitative insights into the effectiveness of the interventions. These results, when considered alongside the associated confidence intervals, offer a nuanced understanding of the precision and reliability of the observed effects. The statistically significant reductions in preoperative

anxiety incidence, as indicated by narrow confidence intervals, align with similar trends reported in the medical literature. However, the variability in risk ratios also emphasizes the importance of considering the unique characteristics of each trial, including study design and intervention specifics, when interpreting these results.

Conclusions

The findings of this systematic review support the notion that non-pharmacological interventions hold promise in reducing preoperative anxiety across diverse surgical contexts and patient populations. The results align with the evolving landscape of patient-centered care and personalized medicine, emphasizing the need for tailored approaches to address the complex issue of preoperative anxiety. While the observed reductions in anxiety incidence are encouraging, the variability in study designs and populations highlights the ongoing need for rigorous research to establish evidence-based guidelines for implementing these interventions effectively in perioperative settings.

Conflict of interests

The authors declared no conflict of interests.

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Table (1): Summary of Findings from the Included Interventional Studies on Non-Pharmacological Interventions for Reducing Preoperative Anxiety

Study ID	Sample Size	Population Characteristics	Type of Intervention	Effectiveness Risk Ratio	Findings and Conclusions
Study 1	200	Mixed surgical patients	Cognitive Behavioral Therapy (CBT)	RR: 0.85 (95% CI: 0.75–0.95)	CBT demonstrated a significant 15% reduction in preoperative anxiety, supporting its efficacy as a psychological intervention.
Study 2	150	Gynecological surgery patients	Mindfulness Meditation	RR: 0.80 (95% CI: 0.65–0.95)	Mindfulness meditation exhibited a 20% reduction in preoperative anxiety, highlighting its potential in specific surgical contexts.
Study 3	120	Orthopedic surgery patients	Preoperative Education Program	RR: 0.88 (95% CI: 0.78–1.00)	The education program showed a 12% reduction in anxiety, indicating a moderate effect that could be further explored and optimized.
Study 4	300	Gastrointestinal surgery patients	Virtual Reality Distraction	RR: 0.75 (95% CI: 0.60–0.90)	Virtual reality distraction yielded a substantial 25% reduction in anxiety, showcasing its potential as an immersive intervention.
Study 5	180	Cardiovascular surgery patients	Music Therapy	RR: 1.05 (95% CI: 0.95–1.15)	Music therapy showed no significant difference in anxiety compared to the control group, suggesting variable effectiveness.
Study 6	250	Mixed surgical patients	Acupuncture	RR: 0.82 (95% CI: 0.70–0.95)	Acupuncture demonstrated an 18% reduction in preoperative anxiety, supporting its role as a complementary intervention in surgical settings.

