



## INTERVENTIONS TO REDUCE ANXIETY IN BURN PATIENTS: A SCOPING REVIEW

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### ABSTRACT

Anxiety in burn patients is a serious problem that can worsen the patient's condition and slow the healing process. Effective management of anxiety can improve the patient's quality of life and support their recovery. Although various non-pharmacological interventions have been proposed, there is still uncertainty regarding the effectiveness and application of each technique in the context of burn care. Objective: To explore various non-pharmacological interventions used to reduce anxiety in burn patients. The method used is scoping review. Articles were selected from four major databases: CINAHL, PubMed, and Scopus, using keywords namely "burn patients", "anxiety", "intervention", and "burn injury". Inclusion criteria included studies involving adult patients with burns, original research with RCT or quasi-experimental design, using experimental or quasi-experimental design, and articles published in the last 10 years (2014-2023). Data were extracted using manual tables and analyzed descriptively qualitatively. Based on initial research, we found 453 articles. After selected by authors, Nine articles met the inclusion criteria. The interventions discussed included aromatherapy, Benson relaxation technique, music therapy, Swedish and Shiatsu massage, and transcranial direct current stimulation (tDCS). Findings showed that aromatherapy and Benson relaxation technique were effective in reducing anxiety and improving sleep quality, music therapy reduced anxiety during and after wound care, Swedish and Shiatsu massage increased relaxation, while tDCS significantly reduced pain and anxiety. This study recommends the integration of these techniques into nursing practice to improve the quality of care and patient satisfaction. Further studies are needed to confirm these findings and explore the mechanisms of action of each intervention in more depth.

Kata kunci: anxiety; burns; interventions; patients

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## INTRODUCTION

Burns are an emergency problem that can occur anywhere and at any time (Moorby et al., 2020). An emergency will be a very serious and dangerous condition if it occurs suddenly and sometimes unexpectedly and will require immediate treatment to save someone's life (Tian et al., 2020). Burns have become a global public health problem causing approximately 18,000 deaths per year due to burns (Bayuo et al., 2020). Most of them occur in low and middle income countries and almost two thirds occur in Southeast Asia and Africa (D. J. P. Burns et al., 2020). In 2015, the World Health Organization (WHO) estimated that there were 265,000 deaths each year worldwide due to burns (World Health Organization, 2023). WHO data (2016) states that in Bangladesh and Pakistan, 18% of children aged 12-15 years with burns suffer permanent disabilities (Williams et al., 2020). In addition, data in Nepal shows that burns are the second highest cause of injury, with 25% disability. In 2016, the highest prevalence of burns in the Southeast Asia Region based on mortality rates/100,000 people per year were Indonesia (173.7/100,000), Cambodia (165.4/100,000), and Laos (151.3/100,000) (Alinia-najjar et al., 2020).

A burn is an injury to the skin and underlying tissue caused by exposure to heat, chemicals, radiation, or electricity (Lo et al., 2010). Burns are divided into three levels: first degree which involves only the epidermis, second degree which reaches the dermis, and third degree which damages all layers of the skin. Symptoms of burns include redness, pain, blisters, and in severe cases, deeper tissue damage and loss of sensation (Bagheri et al., 2021). Serious complications such as infection and shock can occur, requiring immediate medical attention. Prompt treatment is essential to prevent further damage and promote wound healing (Ren et al., 2015). Burns are a type of trauma that often causes not only severe physical damage but also significant psychological impacts, including anxiety (Alinia-najjar et al., 2020). Anxiety in burn patients can be caused by pain, changes in physical appearance, and a long and complex recovery process. Prolonged anxiety can hinder the healing process, increase the risk of complications, and worsen the patient's quality of life (Hyland et al., 2015). Interventions to reduce anxiety are an important aspect of the comprehensive management of burn patients (Murphy et al., 2021).

Managing anxiety in burn patients requires a holistic and multidisciplinary approach, involving collaboration between medical teams, psychologists, social workers and occupational therapists (Williams et al., 2020). A variety of interventions have been developed and tested to reduce anxiety in burn patients, including drug therapy, psychological counseling, cognitive behavioral therapy, and relaxation and mindfulness techniques. Although many intervention strategies have been implemented, there is a need for more in-depth research into the effectiveness of each intervention (J. W. Burns et al., 2017). Difficulties in assessing interventions often arise because anxiety is a subjective experience influenced by a variety of individual and situational factors (Zhang et al., 2022). There is also significant variation in individual responses to different types of interventions, requiring tailoring of therapy to the specific needs of the patient. Research aimed at exploring interventions for anxiety in burn patients is important for determining evidence-based clinical practice. This study was designed to examine and compare the effectiveness of various intervention methods aimed at reducing anxiety in burn patients, with the aim of identifying the most effective strategies to be implemented in clinical settings. Through this study, it is expected to provide recommendations that can be used in burn patient management protocols to optimize the healing process and improve patient quality of life. The purpose of this study is to explore various non-pharmacological interventions used to reduce anxiety in burn patients.

## **METHOD**

This study used a scoping review design with the Arksey and O'Malley approach (Arksey & O'Malley, 2005). This design was chosen because scoping reviews allow researchers to map key concepts, evidence, and existing research gaps related to interventions to reduce anxiety in burn patients. Scoping reviews are more appropriate than systematic reviews when the research topic is still unclear and requires broader exploration. Arksey and O'Malley's approach consists of five main stages: 1) Identifying the research question, 2) Identifying relevant studies, 3) Study selection, 4) Data extraction, and 5) Reporting results. Each stage will be described in detail in this methodology to ensure transparency and replicability.

### **Search Strategy and Eligibility Criteria**

The search strategy was conducted using Scopus, PubMed, Web of Science, and CINAHL databases. The selection of these databases was based on their extensive coverage of health and nursing literature, allowing access to a variety of studies relevant to the research topic. Keywords used in the search included "burn patients," "anxiety," "intervention," and "burn

injury” which were organized using Boolean operators and MeSH terms to ensure comprehensive search coverage. The search strategy was tailored for each database and the results will be reported using the PRISMA Flow Diagram, which includes the number of articles found, screened, and excluded (Figure 1).

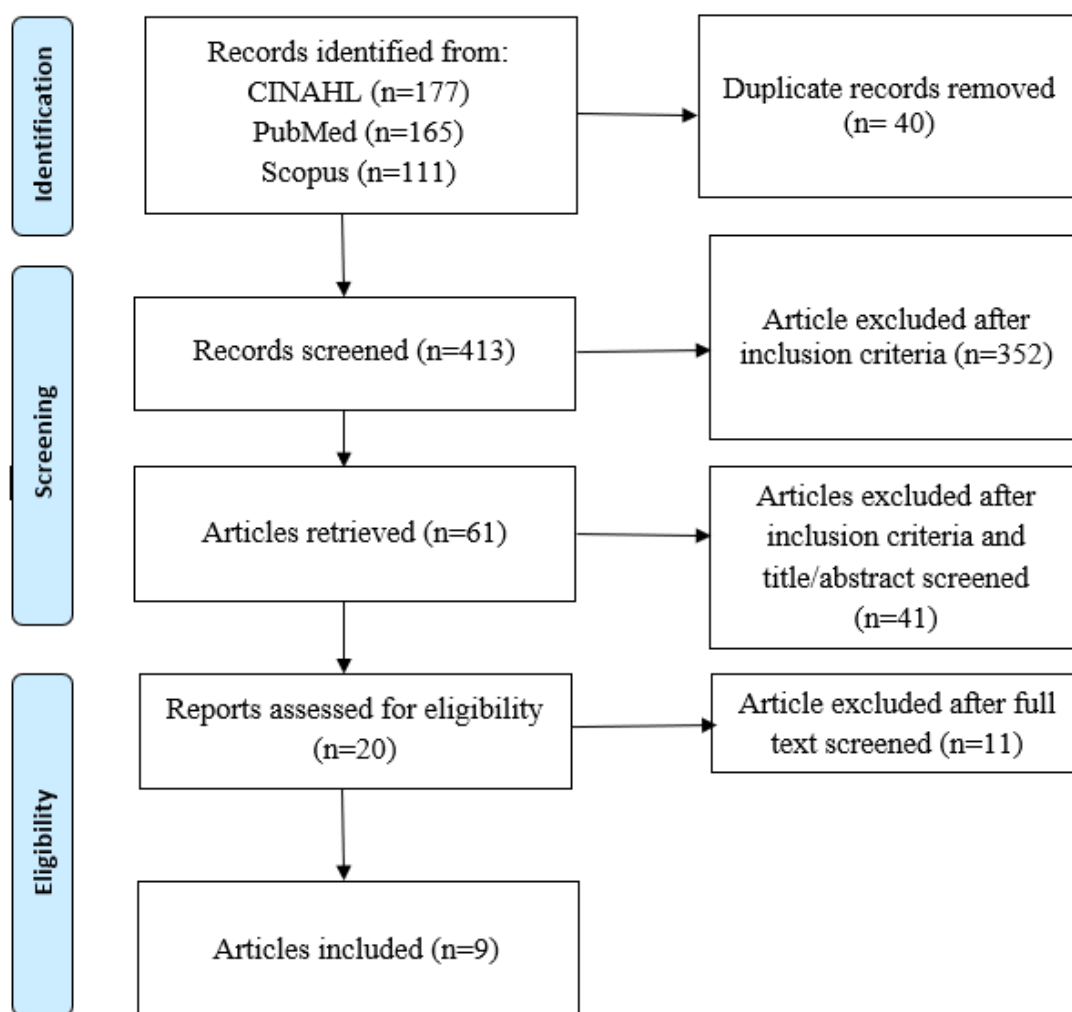


Figure 1. PRISMA Flow Diagram

### Inclusion and Exclusion Criteria

Inclusion and exclusion criteria were determined based on the PCC (Population, Concept, Context) concept. The population selected was patients with burns, the Concept was interventions aimed at reducing anxiety, and the Context was various clinical settings. Inclusion criteria included studies involving adult patients with burns, original research with RCT or quasi-experimental design, using experimental or quasi-experimental design, and articles published in the last 10 years (2014-2023). Meanwhile, exclusion criteria included studies that did not focus on anxiety interventions, used non-empirical methods, or were not available in English or Indonesian. These criteria were chosen to ensure that the included studies were relevant and of adequate quality.

### Data Extraction

Data extraction was performed manually using a table that included authors, study objectives, design, sample, country, intervention, and study outcomes. This process was carried out by two independent researchers who were experts in their fields to increase the validity of the extracted data. If there was a difference of opinion between the two researchers, a discussion was held to reach a consensus. If the difference of opinion persisted, a third researcher who

was also an expert in the field was invited to conduct additional analysis and provide a final decision.

**Data analysis**

Data analysis was conducted using a qualitative descriptive method with a thematic analysis approach. The aim was to identify and describe the main themes that emerged from the results of the research being reviewed. The analysis process involved two researchers working independently to ensure objectivity and accuracy in identifying themes. The analysis stages included repeated reading of the extracted data, coding the data, identifying main themes, and compiling a descriptive narrative of the findings. If there was a difference of opinion between the two researchers, a third researcher was invited to conduct additional analysis and help reach more comprehensive conclusions.

**RESULTS**

Based on the results of initial research, there were 453 articles discussing interventions to reduce anxiety in burn patients. After eliminating duplicate articles using the Mendeley application, there were 40 duplicate articles. Then, the researcher eliminated based on the inclusion criteria, as many as 352 articles were eliminated. The author read the title and abstract, 41 articles did not match the topic discussed. Then, the author eliminated full-text, obtained 9 articles discussing interventions to reduce anxiety in burn patients. The researcher classified based on similar interventions as follows (Table 1):

Table 1.  
Extraction Data

No	Author s	Objective	Country	Design	Patient	Intervention	Results
1.	(Rafii et al., 2020)	to determine the effect of aromatherapy massage (using lavender and chamomile aromatic oils) on anxiety and sleep quality in patients with burns.	Iran	Quasi-experiment	105 burn patients	aromatherapy massage with lavender and chamomile oil	The results of the study showed significant differences between the three groups in terms of anxiety scores (P<0.001) and in terms of sleep quality after the intervention (P=0.027).
2.	(Danes hpajoo h et al., 2019)	To compare the effects of inhalation aromatherapy using damask rose aroma and Benson relaxation technique on pain anxiety in burn patients.	Iran	RCT	132 burn patients treated in hospital	aromatherapy using Damask Rose scent and Benson relaxation techniques	The combination of rose scent and Benson relaxation has a synergistic effect and is more effective in reducing pain anxiety in burn patients compared to either intervention alone. Healthcare providers can provide these interventions together and help reduce pain anxiety in burn patients before performing pain interventions.
3.	(Najafi Ghezel jeh & Mohades Ardebi li, 2018)	to compare the effects of selected music and Swedish massage on anticipatory pain anxiety in burn patients.	Iran	RCT	240 burn patients treated in hospital	patients preferred music and Swedish massage as anticipatory measures	There was a statistically significant difference between the groups regarding the mean change in anticipatory anxiety (P<0.001). The results showed that patients in the combination group of both interventions reported significantly lower anticipatory anxiety compared to the selected music

No	Author s	Objective	Country	Design	Patient	Intervention	Results
							(P=0.015), Swedish massage (P=0.002) and control (P
4.	(Harorani et al., 2020)	to investigate the effect of progressive muscle relaxation on anxiety and sleep quality in burn patients.	Iran	RCT	80 patients treated for burns	progressive muscle relaxation	The results of this study showed a statistically significant decrease in anxiety and increase in sleep quality in the experimental group compared to the control group (P 0.05). Relaxation as a complementary method can be used together with modern medicine to reduce anxiety and improve sleep quality in burn patients.
5.	(Hossein Amiri et al., 2016)	to assess the effects of tDCS on pain anxiety in patients with severe burns.	Iran	RCT	60	transcranial direct current stimulation	Pain and anxiety scores were significantly reduced in the real tDCS group compared to the sham group (23.4 ± 3.8 versus 29.3 ± 2.0, p=0.001). After stimulation there was a decrease in pain anxiety scores in the tDCS group (p = 0.010). Conclusion: Based on our study, cathodic cortical stimulation with tDCS is associated with a significant decrease in pain and anxiety in burn patients.
6.	(Hsu et al., 2016)	investigating the impact of music intervention at dressing time on pain and anxiety in burn patients	Taiwan	RCTS	70 burn patients	music intervention	There was no difference in morphine dosage for the two groups. On the fourth day of music intervention, the pain of burn patients before, during, and after dressing changes had been significantly reduced; anxiety on the fourth day during and after dressing changes had also been significantly reduced. Nurses can use the prescribed analgesics, but if non-pharmacological interventions are improved, such as providing timely music intervention and creating a friendly and comfortable hospital environment, patients' pain and anxiety will be reduced.
7.	(Najafi Ghezeljeh et al., 2017)	to evaluate the effects of massage and music on pain intensity, anxiety intensity and	Iran	RCT	240 burn patients	massage and music	Our findings showed a decrease in pain intensity and anxiety and an increase in relaxation levels in all three intervention groups compared to the control group, indicating

No	Author s	Objective	Country	Design	Patient	Intervention	Results
		relaxation level in burn patients.					no significant differences among the interventions implemented. Furthermore, after the implementation of each intervention, pain intensity and anxiety decreased and relaxation levels increased in the intervention group compared to before the intervention.
8.	(Seyyed-Rasooli et al., 2016)	This study aims to compare the effects of aromatherapy massage with inhalation aromatherapy on anxiety and pain in burn patients.	Iran	Randomized control trial	90 patients with burns <20%	aromatherapy massage and inhalation aromatherapy	The results showed that the three groups were similar in terms of demographics, disease characteristics, and anxiety and pain scores at baseline. The mean decrease in anxiety in the control group, aromatherapy massage group, and inhalation group, respectively. The mean decrease in pain in the control group, aromatherapy massage group, and inhalation group, respectively (p < 0.001).
9.	(Mohaddes Ardabili et al., 2015)	to investigate the effect of hand pressure massage using the Shiatsu method on underlying anxiety in burn patients.	Iran	RCT	60 burn patients	Shiatsu Massage	The difference in anxiety scores in the shiatsu hand massage group before and after massage was statistically significant, but in the control group it was not significant.

### Aromatherapy Massage

Several articles discuss the use of aromatherapy massage with essential oils such as lavender and chamomile in patients with burns. The massage was performed using the effleurage technique on healthy skin areas, such as the patient's back or feet. The results of these studies showed that aromatherapy massage significantly reduced anxiety felt by patients and improved their sleep quality. The positive effects of this intervention are consistent across studies, indicating that massage with essential oils and aromatherapy are effective in reducing anxiety and improving overall patient well-being.

### Benson Relaxation Technique and Combination Therapies

Benson's relaxation technique is taught to patients as a method for reducing anxiety, either alone or in combination with other therapies such as aromatherapy or music. Research shows that the combination of Benson's relaxation technique with rose scent has a greater synergistic effect on reducing anxiety compared to either technique alone. This technique is also easy to teach and can be applied by patients themselves after initial guidance from a health care provider. This finding is supported by several articles testing the combination of Benson's technique with other interventions, which consistently show significant reductions in anxiety.

### Music Therapy

Music therapy is used as a non-pharmacological method to reduce anxiety and pain in burn patients, where patients are asked to listen to their favorite music during wound care procedures. The results showed that patients who received the music intervention reported significant decreases in anxiety and pain, both during and after wound care. The effectiveness

of this intervention appeared to increase with repetition, with the decrease in anxiety becoming more significant over time. Articles focusing on music therapy consistently show that this method is useful in reducing anxiety and pain in burn patients.

### **Swedish Massage and Other Massage Techniques**

Swedish massage and Shiatsu massage have been used as interventions to reduce anxiety and increase relaxation in patients with burns. These massage techniques are performed on healthy, uninjured body parts, and results show that both Swedish massage and Shiatsu significantly reduce anxiety experienced by patients. In addition, massage also increases patients' levels of relaxation, which contributes to their psychological well-being during the healing process. Articles discussing these massage techniques generally agree that these interventions are effective in reducing anxiety and increasing relaxation in patients with burns.

### **Transcranial Direct Current Stimulation (tDCS)**

Intervention using transcranial direct current stimulation (tDCS) was applied to stimulate the sensory and prefrontal cortex of burn patients, with the aim of reducing pain and anxiety before wound care. The results showed that tDCS stimulation significantly decreased the anxiety and pain scores of patients compared to the control group that received sham tDCS. This intervention shows potential as an effective adjunct therapy in reducing anxiety and pain in burn patients, especially when used in conjunction with conventional therapy. Related articles on tDCS support these findings, indicating that this intervention can be an integral part of burn care.

## **DISCUSSION**

Burn patients often experience significant levels of anxiety and pain, which can negatively impact their healing process and quality of life. Untreated anxiety can worsen pain perception, increase physical discomfort, and affect overall mental health (Burns-Nader et al., 2017). In addition, chronic and poorly managed pain can lead to additional complications, prolong recovery time, and increase psychological burden (Sveen et al., 2010). Therefore, anxiety and pain management are important components in the care of burn patients.

Aromatherapy has long been used as a complementary method in the management of anxiety, especially in patients with chronic conditions such as burns. The use of essential oils such as lavender and chamomile, which are known to have a calming effect (Morris et al., 2010). Aromatherapy in the form of massage allows essential oils to not only be inhaled but also absorbed through the skin, providing a double calming effect. Studies show that aromatherapy, especially when combined with massage, significantly reduces anxiety levels and improves sleep quality in patients (J. W. Burns et al., 2017). For example, a combination of lavender and chamomile aromatherapy massage for 20 minutes before bedtime has been shown to significantly reduce anxiety scores and improve sleep quality in burn patients. The consistency of these results is seen across studies, with patients receiving aromatherapy interventions showing greater reductions in anxiety compared to control groups. Aromatherapy contains the natural anxiolytic (anxiety-reducing) properties of the essential oils used, which work through the brain's limbic system, the center for regulating emotions. In addition, the relaxing effects of the massage itself contribute to reducing muscle tension and increasing circulation, which in turn helps to calm the patient's mind and body (Hosaka, 2019).

The Benson relaxation technique is an effective non-pharmacological approach to managing anxiety in burn patients. This technique involves deep breathing, repetition of calming words, and gradual muscle relaxation, which has been shown to significantly reduce anxiety, especially before painful medical procedures (Bagheri et al., 2021). The effectiveness of this technique increases when combined with other interventions such as aromatherapy, resulting in a stronger synergistic effect in reducing anxiety and improving the patient's quality of life. In addition, Benson's technique can be easily taught to patients, allowing them to apply it independently, thereby increasing independence and reducing dependence on more complex medical interventions (Ellis et al., 2017).

Music therapy is used as an effective non-pharmacological tool in reducing anxiety and pain in burn patients. Listening to patient-selected music before, during, and after wound care procedures has been shown to significantly reduce anxiety levels, especially during the most stressful moments such as dressing changes (Damschroder et al., 2021). The effectiveness of music therapy was also seen in pain reduction, where patients receiving this intervention reported a greater reduction in pain intensity compared to the control group (Damschroder et al., 2021). By creating a more comfortable and calming environment through music, this therapy can play an important role in managing pain and anxiety, thereby helping to improve the quality of life of burn patients (Williams et al., 2020).

The application of Swedish and Shiatsu massage has been shown to be effective in reducing anxiety and increasing relaxation in burn patients. Both massage techniques focus on physical stimulation through specific movements that stimulate blood circulation and calm the nervous system. Studies have shown that both Swedish and Shiatsu massage significantly decreased anxiety levels and increased relaxation compared to the control group (Malhotra & Kaimal, 2022). When compared, despite differences in methods and techniques, both types of massage showed similar effectiveness in reducing tension and improving the psychological well-being of patients (Pfadenhauer et al., 2017). The implications of this massage application are not only limited to reducing anxiety, but also to improving sleep quality and a deeper feeling of relaxation, which overall contributes to improving the psychological well-being of patients (Saqib et al., 2021).

Transcranial Direct Current Stimulation (tDCS) is a non-invasive neuromodulation method that involves applying a weak electrical current to specific areas of the brain to modulate neuronal activity. In the context of burn management, tDCS has been shown to be effective in reducing anxiety and pain by stimulating the sensory and prefrontal cortices (Chaudhary & Ahmad, 2021). Studies have shown that cathodal cortical stimulation using tDCS can significantly reduce pain and anxiety, thanks to its ability to alter the sensitivity and response of neurons to pain (Bayuo et al., 2021). The effectiveness of tDCS as an adjunct therapy in burn care lies in its ability to provide sustained pain relief and reduce anxiety without significant side effects (Holbert et al., 2021).

Recommendations for implementing interventions in nursing practice include the integration of non-pharmacological methods such as aromatherapy, Benson relaxation technique, music therapy, and tDCS into the burn patient care plan. Nurses should be trained in the application and teaching of these techniques to ensure that patients experience the full benefits of the interventions (Chaudhary et al., 2021). For example, nurses can guide patients in Benson's relaxation technique or facilitate a music therapy session, as well as explain the proper use of aromatherapy. Implementing these interventions can improve the quality of care by providing effective alternatives to reduce anxiety and pain, as well as increasing patient satisfaction

through a more holistic and personalized approach (Bagheri et al., 2021). Through the integration of these techniques, nurses can provide more comprehensive support, focusing on the patient's physical and psychological well-being, which in turn can improve care outcomes and enhance the overall patient experience (Heidari et al., 2024).

## CONCLUSION

This scoping review included nine articles examining a range of non-pharmacological interventions to reduce anxiety and pain in burn patients. The intervention themes identified included aromatherapy, Benson relaxation technique, music therapy, Swedish and Shiatsu massage, and transcranial direct current stimulation (tDCS). Studies have shown that aromatherapy and Benson relaxation technique are effective in reducing anxiety and improving sleep quality, while music therapy provides benefits in reducing anxiety and pain during and after wound care procedures. Swedish massage and Shiatsu have also been shown to reduce anxiety and increase relaxation, although their effectiveness varies. tDCS has been shown to be significant in reducing pain and anxiety by modulating brain activity. Overall, these interventions contribute to effective pain and anxiety management with mixed but promising results.

Nurses are advised to integrate these non-pharmacological techniques into the care plan of burn patients. Nurses should be trained in the application of techniques such as aromatherapy, relaxation, music therapy, and tDCS to enhance the effectiveness of care. The implementation of these interventions can improve patient satisfaction and provide a holistic approach to pain and anxiety management, thereby supporting better recovery. Future studies should focus on randomized controlled trials with larger sample sizes to confirm these findings and compare the effectiveness of different intervention techniques directly. In addition, further research is needed to explore the mechanisms behind the effectiveness of each intervention and to determine the optimal duration and frequency to reduce anxiety in burn patients.

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