



NURSING EDUCATION INTERVENTIONS ON ANXIETY, KNOWLEDGE, AND SELF-CARE IN CATARACT SURGERY PATIENTS: A PRISMA-BASED SYSTEMATIC REVIEW (2021 AND 2025)

Asep Muhamad Nurhalim¹, Yunie Armiyati², Chanif²

¹Magister Keperawatan, Program Pasca Sarjana, Universitas Muhammadiyah Semarang, Indonesia

²Universitas Muhammadiyah Semarang, Indonesia

¹Asepmuhamadnurhalim@gmail.com, yunie@unimus.ac.id², Chanif@unimus.ac.id³

Abstrak

Keberhasilan operasi katarak tidak hanya bergantung pada teknik bedah, tetapi juga kesiapan fisik dan psikologis pasien. Edukasi keperawatan perioperatif berperan penting dalam menurunkan kecemasan, meningkatkan pengetahuan, dan kemampuan perawatan diri. Tujuan menilai efektivitas intervensi edukasi keperawatan pada pasien bedah oftalmologi terhadap luaran klinis dan psikososial. Metode tinjauan sistematis disusun berdasarkan pedoman *Preferred Reporting Items for Systematic Reviews and Meta-Analyses* (PRISMA). Pencarian dilakukan di *PubMed*, *ScienceDirect*, *ProQuest*, dan *Scopus* tahun 2021–2025 untuk studi kuantitatif (*RCT*, *quasi-eksperimental*, *pre-eksperimental*) yang melibatkan pasien dewasa bedah katarak. Sejumlah 92 artikel tersaring, menyisakan 8 artikel yang memenuhi kriteria inklusi dan dianalisis. Kualitas metodologi setiap studi dinilai dengan *Joanna Briggs Institute Critical Appraisal Checklist*. Hasil intervensi edukasi melalui tatap muka, media cetak, video, audio, dan aplikasi mobile secara konsisten menurunkan kecemasan preoperatif, meningkatkan pengetahuan, mekanisme coping, kemampuan *self-care*, dan kepuasan pasien. Media digital, khususnya video dan aplikasi mobile, terbukti efektif dan praktis. **Kesimpulan** edukasi keperawatan merupakan komponen esensial asuhan perioperatif pasien katarak, meningkatkan kesiapan psikologis, *self-care*, dan pengalaman perawatan.

Kata kunci: Edukasi, Pasien Bedah Oftalmologi, *Systematic Review*

Abstract

The success of cataract surgery depends not only on surgical techniques but also on patients' physical and psychological preparedness. Perioperative nursing education plays a crucial role in reducing anxiety, improving knowledge, and enhancing self-care abilities. Objective to evaluate the effectiveness of nursing education interventions on clinical and psychosocial outcomes in ophthalmic surgery patients. Methods systematic reviews are compiled based on the guidelines of Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). Searches were conducted on PubMed, ScienceDirect, ProQuest, and Scopus (2021–2025) for quantitative studies (RCTs, quasi-experimental, pre-experimental) involving adult cataract surgery patients. A total of 92 articles were screened, leaving 8 articles that met the inclusion criteria and were analyzed. The methodological quality of each study was assessed with the Joanna Briggs Institute Critical Appraisal Checklist. Results nursing education delivered through face-to-face, printed materials, videos, audio, and mobile applications consistently reduced preoperative anxiety, increased patient knowledge, improved coping mechanisms and self-care abilities, and enhanced patient satisfaction. Digital media, especially videos and mobile applications, were found to be effective and practical. Conclusion nursing education is an essential component of perioperative care for cataract patients, improving psychological readiness, self-care, and overall patient experience.

Keywords: Education, Ophthalmic Surgery Patients, Systematic Review

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* Corresponding author :

Address : Universitas Muhammadiyah Semarang

Email : Asepmuhamadnurhalim@gmail.com

Phone : +62 813-9543-3466

INTRODUCTION

Ophthalmic surgery is a branch of medicine focused on the management of eye diseases and disorders through surgical interventions, such as cataract surgery, glaucoma procedures, retinal disorders, and refractive surgeries (Putu & Widya, 2025). These surgical interventions aim to restore visual function, improve patients' quality of life, and prevent permanent blindness. Cataracts remain the leading cause of blindness globally, highlighting the critical role of ophthalmic surgery in cataract management (Pesudovs et al., 2024).

Beyond the technical aspects of surgery, the success of ophthalmic procedures is significantly influenced by patients' physical and psychological preparedness. Eye surgery patients often experience preoperative anxiety, triggered by concerns about surgical outcomes, potential complications, and the risk of vision loss. High levels of anxiety can negatively affect patient cooperation during procedures, physiological stability, and postoperative recovery (Jakubovits et al., 2024). Nursing education constitutes an essential component of perioperative care, helping patients understand the surgical process and alleviating preoperative anxiety (Jakubovits et al., 2014).

Nursing education plays a crucial role not only in the preoperative phase but also in postoperative care. Non-adherence to eye drop regimens, incorrect wound care, and insufficient understanding of activity restrictions can increase the risk of complications such as infection, inflammation, elevated intraocular pressure, or intraocular lens dislocation (Shoss & Tsai, 2020). Systematic education regarding medication use, sleeping positions, allowable activities, and signs of postoperative complications is therefore integral to ophthalmic nursing practice (Nawaf et al., 2024).

Several studies indicate ongoing challenges in implementing nursing education for ophthalmic surgery patients. Some patients exhibit low adherence to postoperative medication and care instructions, largely due to limited understanding and suboptimal educational methods (Wadbudhe et al., 2022). These issues have been addressed through various nursing education interventions, including face-to-face education, printed materials, audiovisual tools, educational videos, and direct demonstrations, aimed at enhancing patient knowledge, adherence, and surgical preparedness (Putu & Widya, 2025).

Evidence suggests that nursing education interventions can improve patient knowledge, reduce preoperative anxiety, and increase adherence to postoperative care and medication, ultimately contributing to improved clinical outcomes and quality of life (Lie Liana Fuadiati, 2025). However, existing studies show

considerable variation regarding the types of educational interventions, delivery methods, duration, and measured outcomes. To date, no systematic review has synthesized the scientific evidence specifically on the effectiveness of nursing education interventions for ophthalmic surgery patients using a transparent and rigorous methodology (Nabighadim & Mirghafourvand, 2025).

In evidence-based nursing practice, it is essential for nurses to implement interventions supported by strong and current scientific evidence. Accordingly, a systematic review based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines is needed to identify, evaluate, and synthesize research on nursing education interventions for ophthalmic surgery patients. Currently, there is no PRISMA-based systematic review comparing various educational methods—face-to-face, video, audio, or digital applications—on psychosocial outcomes and self-care among ophthalmic surgery patients. Therefore, such a review is warranted.

This systematic review aims to identify the types of nursing education interventions applied in ophthalmic surgery patients and evaluate their effectiveness on clinical and psychosocial outcomes, including improvements in patient knowledge, medication adherence, and pre- and postoperative anxiety. The findings are expected to provide a scientific basis for developing more effective and applicable nursing education interventions in clinical practice.

METODE

Design

The methodological quality of the included studies was assessed within a systematic review conducted according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. This review aimed to identify, evaluate, and synthesize scientific evidence on nursing education interventions for ophthalmic surgery patients, with a particular focus on cataract surgery.

Literature Search Strategy

A systematic search was conducted across several electronic databases, including PubMed, ScienceDirect, ProQuest, and Scopus. The literature search employed a combination of keywords in English and Indonesian, aligned with Medical Subject Headings (MeSH), such as; “nursing education” OR “nurse-led education” OR “patient education” AND “ophthalmic surgery” OR “eye surgery” OR “cataract surgery” AND “anxiety” OR “self-care” OR “knowledge” OR “compliance”. The search was restricted to articles published within the last five years (2021–

2025) to ensure the relevance and recency of evidence.

Inclusion Criteria and Study Quality Assessment

Articles were included if they involved adult patients undergoing ophthalmic surgery, specifically cataract surgery, implemented nursing or patient education interventions conducted or facilitated by healthcare professionals, especially nurses, in preoperative, perioperative, or postoperative phases, included a comparator, such as standard care or conventional education, and/or utilized pretest–posttest designs, reported at least one relevant outcome, such as anxiety level, patient knowledge, adherence or self-care ability, coping mechanisms, patient satisfaction, postoperative pain, or quality of life, were quantitative primary research with study designs including randomized controlled trials (RCTs), quasi-experimental, pre-experimental, or clinical trials and were available as full-text articles

published in English or Indonesian between 2021 and 2025.

Articles were excluded if they did not involve ophthalmic surgery patients or did not include a nursing or health education component, focused solely on pharmacological or medical interventions without an educational element, did not report relevant outcomes, or were literature reviews, systematic reviews, editorials, opinion pieces, or case reports and were not available in full text, duplicates, or published outside the specified timeframe.

The methodological quality of each study was evaluated using the Joanna Briggs Institute (JBI) Critical Appraisal Checklist.

Study Selection Process

The study selection process followed PRISMA guidelines to ensure transparency in identification, screening, eligibility assessment, and inclusion of articles, as illustrated in Figure 1.

PRISMA Flow Diagram for Study Selection

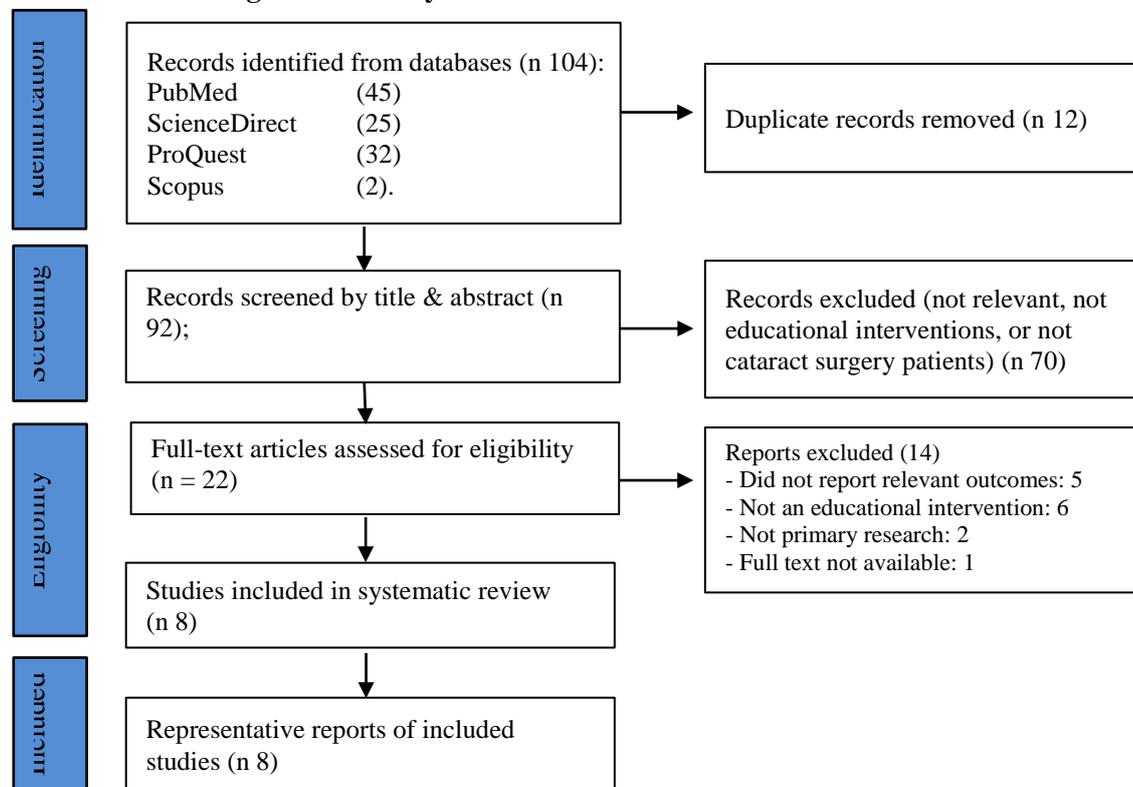


Figure 1. Literature Search Process Using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Guidelines

RESULTS AND DISCUSSION

The synthesis of the eight selected articles was analyzed using the PICOT framework, with the following criteria: Population (P): Adult patients undergoing ophthalmic surgery, specifically cataract surgery. Intervention (I): Nursing education interventions delivered during the preoperative, perioperative, and/or postoperative phases, including face-to-face education, printed materials, educational videos, or digital applications. Comparison (C): Standard

care, conventional education, or pre-intervention conditions (pretest). Outcome (O): Anxiety levels, patient knowledge, self-care ability, coping mechanisms, patient satisfaction, postoperative pain, and quality of life. Time (T): Measurement periods before and after the intervention, from preoperative to postoperative phases.

Table 1 presents the systematic review of the eight included studies, with a methodological assessment of each study conducted using the Joanna Briggs Institute Critical Appraisal Checklist.

Table 1. Characteristics and Findings of Studies Meeting the Systematic Review Criteria

No	Title, Author(s)	Objective	Method	Result	Methodological Quality
1	User friendliness and perioperative guidance benefits of a cataract surgery education app: randomized controlled trial. (Gerbutavicius et al., 2024).	To evaluate user friendliness, acceptance, patient characteristics benefiting most, and the effect of a cataract education app on patient satisfaction	a. Design: Randomized Controlled Trial (RCT) b. Sample: 297 cataract surgery patients c. Variables: Independent – use of cataract education app; Dependent – patient satisfaction, information understanding, user friendliness, app acceptance d. Instrument: Patient satisfaction questionnaire, app evaluation questionnaire, demographic data e. Intervention: Perioperative education using “Patient Journey” mobile app before and after surgery f. Analysis: Chi-square test, Kruskal-Wallis test	Patient care satisfaction remained high and was not lower than conventional education	a. Yes score: 11/13b. Quality: High
2	The effect of pre-phacoemulsification education on cataract patients’ anxieties in Rumah Sakit Islam Banjarmasin. (Adawiah & Olviani, 2021).	To determine the effect of pre-phacoemulsification education on anxiety levels in cataract patients	a. Design: Pre-experimental, One Group Pretest–Posttest b. Sample: 20 preoperative phacoemulsification patients c. Variables: Independent – pre-phacoemulsification education; Dependent – anxiety level d. Instrument: State and Trait Anxiety Inventory (STAI) by Spielberger e. Intervention: Preoperative nursing education on phacoemulsification f. Analysis: Wilcoxon Signed Rank Test	Pre-phacoemulsification education significantly reduced patient anxiety	a. Yes score: 6/9b. Quality: Moderate
3	Perioperative health education improves coping mechanisms in preoperative cataract patients (Kurniyawan et al., 2023).	To analyze the effect of perioperative health education on coping mechanisms in preoperative cataract patients	a. Design: Quasi-experimental, Pretest–Posttest with control group b. Sample: 30 cataract patients c. Independent variable: Perioperative health education d. Dependent variable e. Coping mechanismse. Instrument: Coping mechanism questionnaire f. Intervention: Perioperative education via lecture + leaflet (~30 min before surgery) g. Analysis: Dependent t-test, Independent t-test	Perioperative education effectively improved adaptive coping mechanisms	a. Yes score: 8/9b. Quality: High
4	Effects of therapeutic advice and patient education on anxiety and satisfaction in patients undergoing cataract surgery: a randomized controlled trial. (Anwaar et al., 2022).	To evaluate the effect of therapeutic advice and patient education on anxiety and patient satisfaction during cataract surgery	a. Design: RCT b. Sample: 46 patients c. Variables: Independent – therapeutic advice & patient education; Dependent – anxiety, calmness, Low Vision Quality of Life (LVQoL), patient satisfaction d. Instrument: STAI, LVQoL Questionnaire, Well-being Scale, Calmness Scale e. Intervention: Audio education + relaxation + positive suggestion f. Analysis: Independent t-test	Significantly reduced anxiety and improved satisfaction and quality of life	a. Yes score: 8/9b. Quality: High
5	Effect of phacoemulsification education on anxiety levels in preoperative cataract patients at LEC Eye Hospital. (Hasan et al., 2024).	To determine the effect of phacoemulsification education on anxiety in preoperative cataract patients	a. Design: Pre-experimental, One Group Pretest–Posttest b. Sample: 630 patients c. Variables: Independent – phacoemulsification education; Dependent – preoperative anxiety level d. Instrument: Anxiety questionnaire (pretest & posttest) e. Intervention: Preoperative education on surgery preparation, procedure, postoperative care, risks, and complications f. Analysis: Paired Sample T-Test	Education significantly reduced preoperative anxiety	a. Yes score: 12/13b. Quality: High
6	Nursing	To assess the	a. Design: RCT	Video	a. Yes score:

	interventions to reduce anxiety before cataract surgery: a comparative study (Anguas et al., 2024).	effectiveness of video-based nursing education in reducing preoperative anxiety and postoperative pain	b. Sample: 147 patients c. Variables: Independent – video-based preoperative education; Dependent – anxiety, postoperative pain, patient satisfaction, postoperative complications d. Instrument: Amsterdam Preoperative Anxiety & Information Scale, VAS-A, vital signs observation sheet, satisfaction scale (0–10) e. Intervention: Informative video explaining care process, surgery, recovery f. Analysis: Chi-square / Fisher’s exact test	education effectively reduced preoperative anxiety and improved patient surgical experience	11/13b. Quality: High
7	Effect of a mobile application–based preoperative preparation program on anxiety and self-care ability among cataract surgery patients. (Mangdee1 et al., 2025).	To evaluate the effect of a mobile app-based preoperative program on anxiety and self-care ability	a. Design: Quasi-experimental, Two-group Pretest–Posttest b. Sample: 60 patients c. Variables: Independent – mobile app preoperative program (LINE); Dependent – anxiety & self-care ability d. Instrument: STAI Form Y-1, Self-care questionnaire e. Intervention: Mobile app preoperative program for 2 weeks f. Analysis: Paired t-test & Chi-square	Reduced anxiety and improved self-care ability with moderate to large clinical effect; recommended for clinical practice	a. Yes score: 8/9b. Quality: High
8	Educational demonstration of eye exercises video affected knowledge, anxiety, self-resilience of cataract patients (Lie Liana Fuadiati, 2025).	To assess the effect of video-based educational demonstration of eye exercises on knowledge, anxiety, and self-resilience	a. Design: Quasi-experimental, Pre-Post Test, One Group b. Sample: 42 cataract patients c. Variables: Independent – video-based eye exercise demonstration; Dependent – knowledge, anxiety, self-resilience d. Instrument: Knowledge, Anxiety, Self-Resilience questionnaires e. Intervention: Educational video demonstrating eye exercises f. Analysis: Wilcoxon test	Video-based demonstration effectively improved knowledge, reduced anxiety, and increased self-resilience	a. Yes score: 7/9b. Quality: Moderate-High

Discussion

This systematic review aimed to identify the types of nursing education interventions for ophthalmic surgery patients, particularly those undergoing cataract surgery, and to evaluate their effectiveness on various clinical and psychosocial outcomes. Based on the synthesis of eight analyzed articles, nursing education interventions consistently demonstrated positive effects on reducing preoperative anxiety, improving patient knowledge, enhancing coping mechanisms, increasing self-care ability, and improving patient satisfaction with care.

The effectiveness of nursing education interventions in reducing preoperative anxiety was consistently demonstrated across multiple studies. Preoperative education significantly reduced anxiety in cataract patients through direct lecture approaches (Kurniyawan et al., 2023), audio education combined with positive suggestions, and video-based education. Mobile app-based education also showed a significant effect in lowering patient anxiety prior to surgery (Lie Liana Fuadiati, 2025).

In addition to reducing anxiety, nursing education interventions were shown to improve patients’ self-care ability. Other studies reported

that a preoperative preparation program via the LINE mobile application significantly enhanced patients’ self-care ability. Similarly, the use of the “Patient Journey” app increased patients’ understanding of the perioperative care process and improved satisfaction with care (Mangdee1 et al., 2025).

Video-based media emerged as one of the most consistently effective education methods (Anguas et al., 2024). Video education not only reduced anxiety but also increased patient knowledge and self-resilience. Comparative studies further support that video-based education is an effective, cost-efficient, and feasible tool for nursing education in clinical practice (Anguas et al., 2024).

Face-to-face nursing education also played an important role, particularly in enhancing coping mechanisms and psychological preparedness. Perioperative education through lectures and leaflets significantly improved adaptive coping mechanisms in preoperative cataract patients (Kurniyawan et al., 2023). These findings align with previous studies demonstrating that structured preoperative education improves emotional responses and patient satisfaction (Anwaar et al., 2022).

Overall, various forms of education—including face-to-face, leaflets, audio, video, and digital applications—showed consistent clinical benefits for patient readiness and care outcomes. The findings of this review indicate that nursing education interventions are an integral component of perioperative care for ophthalmic surgery patients. These results directly address the objectives of this systematic review: identifying types of nursing education interventions and evaluating their effectiveness on clinical and psychosocial outcomes.

Despite the consistent benefits of nursing education interventions in reducing anxiety and improving psychosocial outcomes among cataract surgery patients, critical analysis revealed several methodological and conceptual issues. Most included studies were dominated by quasi-experimental and pre-experimental designs, which have limitations in controlling confounding factors and potential selection bias. This may affect the strength of causal inferences between the intervention and measured outcomes.

This systematic review also identified substantial heterogeneity in the form of educational interventions, duration, and instruments used to measure anxiety and self-care. Such variability complicates drawing conclusions regarding which educational method is universally most effective. Some studies only measured short-term effects (immediate pretest–posttest) without evaluating medium- or long-term outcomes, particularly regarding adherence to treatment and prevention of postoperative complications.

Most studies focused on psychological and cognitive outcomes, while the impact of nursing education on objective clinical outcomes, such as complication rates, rehospitalization, or speed of visual recovery, remains relatively underreported. This highlights opportunities for future research to integrate clinical and health-economic indicators to strengthen the practical value of nursing education interventions in ophthalmic surgical care.

The findings of this review align with a prior scoping review, which reported that health education for cataract surgery patients generally improves patient knowledge and adherence (Ridwanti et al., 2025). However, that review did not specifically distinguish the role of nurses as primary educators nor evaluate the impact on coping mechanisms and self-care in depth.

Compared to systematic reviews focusing on pharmacological versus non-pharmacological interventions (e.g., back massage, hand massage, foot massage, music, educational videos, patient education, aromatherapy, and relaxation techniques) to reduce preoperative anxiety in cataract patients (Nabghadim et al., 2025), this review emphasizes that nurse-led educational interventions offer a more holistic benefit without

the risk of medication side effects. Nursing education not only reduces anxiety but also enhances patient readiness, understanding of procedures, and active involvement in self-care. This review provides specific contributions to the ophthalmic surgical context, which has been relatively limited in PRISMA-based systematic review literature.

Implications for Healthcare Services and Nursing Education

Based on available evidence, nurses are recommended to systematically integrate structured education into perioperative care, especially during the preoperative phase and discharge preparation. The use of video and digital applications can be considered as complementary strategies to conventional education, as they are effective, practical, and easily replicable. From a health policy perspective, integrating technology-based nursing education has the potential to improve service efficiency, reduce repetitive education time, and increase patient satisfaction, particularly in high-volume cataract surgery facilities. Strengthening the nurse's role as an educator aligns with the patient-centered care paradigm and ongoing quality improvement efforts.

These findings emphasize the importance of enhancing therapeutic education competencies in nursing curricula, particularly in medical-surgical and perioperative nursing courses. Nursing students should be equipped with educational communication skills, media development capabilities, and the ability to utilize digital technologies in patient education. Nursing education should also emphasize evidence-based practice, where nurses not only provide education based on routine practice but can select the most effective educational methods based on scientific evidence. Continuous professional development for clinical nurses is also essential to enable adaptation of educational innovations, such as video education and mobile applications, according to patient characteristics and care context.

Limitations of the Systematic Review

This review has several limitations. Most included studies employed quasi-experimental and pre-experimental designs, resulting in lower causal inference strength compared to randomized controlled trials (RCTs). Another limitation is the considerable heterogeneity in the type of interventions, duration, and measurement instruments, which restricts the feasibility of conducting a quantitative meta-analysis.

CONCLUSION

Nursing education interventions are effective in reducing anxiety, enhancing patient knowledge and self-care, and improving patient

experience in ophthalmic surgery, particularly cataract procedures. Nursing education is not merely a complement to medical procedures but represents an essential component of evidence-based perioperative practice.

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