



## EFFECTIVENESS OF PREOPERATIVE NURSING ASSESSMENTS IN REDUCING PREOPERATIVE COMPLICATIONS ACROSS SAUDI ARABIA; A SYSETMATIC REVIEW BASED STUDY

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### Abstract

**Background:** Preoperative assessment is effective in identifying the complications before the surgery. The preoperative nurses assess the patient's physiological and psychological issues before surgery. These disturbances include Anxiety, stress, and fear due to a lack of information about the surgery procedure and its outcomes. Psychological issues cause postoperative complications among patients.

**Aim:** The purpose of the systematic review is to examine the effectiveness of preoperative nursing assessments in reducing preoperative complications across Saudi Arabia.

**Method:** A systematic search was conducted across prominent databases, comprising Scopus, Springer, and Sagepub, to identify relevant research articles published between 2018 and 2023. Inclusion and exclusion criteria were applied rigorously to select studies aligned with the research objectives.

**Results:** This systematic review shows noticeable variations in the effectiveness of preoperative nursing assessments in reducing preoperative complications in Saudi Arabia. The analysis also revealed key themes preoperative assessment results in decreased Anxiety; Patient satisfaction Linked with the Preoperative Nursing Assessment; Preoperative Nursing Assessment as Psychoeducation to the Patients; Nurses Training in Preoperative Assessment.

**Conclusion:** Based on a systematic review, it is concluded that preoperative nursing assessment is effective in reducing preoperative complications as it helps reduce Anxiety and increase knowledge about the procedure of surgery, which shows the significant positive impact on the patient's satisfaction. It is also concluded that nurses' training and education in preoperative assessment is necessary to deal with the patient in the OT as the lack of trained nursing staff increases the anxiety level of patients and makes them vulnerable to any complications.

**Keywords.** Effectiveness, Preoperative, Nursing Assessments, Preoperative Complications, Saudi Arabia

## Introduction

Preoperative care is the physical and psychological assistance given to a patient before surgery to ensure their safety. The preoperative phase lasts from when the patient is scheduled for surgery until they are taken to the operating room or surgical suite. The preoperative phase has steps that are followed by the nursing staff. The patient may query the Nurse about the surgery even though the doctor explains the surgical process to the patient. The patient and their support people may have specific surgical learning requirements (Phillips & Perriman, 2018).

It is important to implement a teaching and nursing care strategy. The following are prioritized during this phase: Assessing and addressing physiological and psychological issues that may increase surgical risk; Providing the patient and those closest to them with complete preoperative learning and teaching materials; Teaching and indicating exercises that will help the patient recover more quickly; preparing for discharging and any anticipated lifestyle modifications brought on by the operation (Hegarty & Shah, 2018; Alharbi et al., 2022).

Patients were frequently surrounded by uncertainty while they awaited surgery and worried about how their illness and the procedure could affect their welfare and recovery. Additionally, when the standard of service was thought to be subpar, patients' confidence and trust in healthcare providers (HCPs) was weakened, raising questions about their reliability and skill set (Aronson et al., 2020).

The primary goals of a preoperative nurse, a specialist coordinator of patient care, are to satisfy the patient's and the family's needs and prepare them for the planned treatment and postoperative recovery. Preoperative nursing can benefit patients by providing them safety and quality of care and also satisfies the attendants by adhering to the structure of the seven primary duties and utilizing various supportive tools (Johnstone, 2020; Shahbal et al., 2022).

Although highly varied, risk assessment is crucial in surgery to help with treatment options. Offering surgical teams and patients comprehensive preoperative risk assessments may improve risk comprehension. Implementing the Surgical Risk Preoperative Assessment System, a cutting-edge real-time, universal preoperative technology that provides personalized risk assessment, may improve informed consent and lessen negative consequences (Lambert-Kerzner et al., 2018).

There has been a rise in people who need surgery and have complicated medical requirements. The risks of surgery for these people are increased by elements including obesity, the prevalence of serious comorbidities, and an ageing population. To optimize patient care and postoperative results, preoperative assessment and treatment nurses must be knowledgeable about the most recent research in this field (Liddle, 2018).

A perioperative surgical home, a patient-centered model intended to enhance health and healthcare delivery while lowering costs, is one of many concepts for creating a Preoperative Assessment Test clinic that has been described. Although there are several obstacles to the creation of Preoperative Assessment Test clinics, with rising public awareness of the value of preoperative risk assessments, expanding body of literature, and evidence-based recommendations, these clinics are evolving into a medical necessity for the advancement of perioperative care (Odor et al., 2020).

Inadvertent hypothermia-related complications in postoperative patients might result in needless suffering and lengthen the hospital stay. The cooperation and accountability of the surgical team are correlated with routine nurse interventions. These depend on the nurses' expertise, clinical judgment,

subjective patient health evaluation, and surgical methods. Therefore, preoperative assessment reduces complications during surgery (Felemban, 2020).

Preoperative nurses assess the patients' psychological disturbance and calm them before surgery. According to Laurion and Fetzer, music therapy helps women having laparoscopic surgery feel less discomfort and less sick after the procedure. Preoperative nursing visits that are helpful and educational can help patients understand surgery, anaesthesia, and rehabilitation. Evidence suggests that preoperative care visits have immediate rather than long-term benefits for physical recovery and postoperative problems (Laurion & Fetzer, 2003).

This systematic review aims to assess preoperative nursing assessments' effectiveness in reducing preoperative complications. Nurses examine patients' risk factors and psychological state, help them reduce their Anxiety, and evaluate the risk factors that cause complications during surgery.

## **Method**

The methodology for the literature review is based on the identification of several search strategies as well as the framing of this research as a long-term outcome.

### **Search Strategy**

Data identification, monitoring, maintenance, formulation, and synthesis are the foundation of data search. The initial step of the data search is based on the choice of studies and search engine identification. By using inclusion and exclusion criteria, identification is accomplished. Numerous databases, search engines, and literary libraries are used in the research. The syntax can be used in the search box for literature searches.

### **Inclusion and Exclusion Criteria**

The inclusion and exclusion criteria are the fundamental standards for research that show how certain studies are used and how they are not used in this literature review. The inclusion requirements include using English-language communications, having full-text papers published between 2018 and 2023, and writing about nursing violence.

Additionally, all research that does not address the function of nurses in preoperative assessment, is not written in English literature, is older than the year range of 2018, and uses grey articles for limited edition papers that do not include all the material is excluded from consideration.

### ***Syntax Search***

The search syntax used to retrieve relevant studies for this systematic review on the effectiveness of preoperative nursing assessment in reducing preoperative complications in Saudi Arabia was as follows:

- The effectiveness of preoperative nursing assessment in reducing preoperative complications
- Preoperative nursing care
- Preoperative assessment reduces the preoperative complications
- "Saudi Arabia

### **Data Extraction**

Extracting data requires using a tool with specific inclusion and exclusion criteria. These goals provide complete details on the empirical evidence and specifics about the chosen scholars.

### **Literature Search:**

This systematic literature aims to see the effectiveness of preoperative nursing assessment in reducing preoperative complications. These databases were searched in the search: Scopus, Springer, and Sagepub.

| No | Database | Syntax   | Year              | No of Researches |
|----|----------|----------|-------------------|------------------|
| 1  | Scopus   | Syntax 1 | 2018<br>—<br>2023 | 4389             |
|    |          | Syntax 2 |                   |                  |
|    |          | Syntax 3 |                   |                  |
| 2  | Springer | Syntax 1 | 2018<br>—<br>2023 | 9749             |
|    |          | Syntax 2 |                   |                  |
|    |          | Syntax 3 |                   |                  |
| 3  | Sagepub  | Syntax 1 | 2018<br>—<br>2023 | 3562             |
|    |          | Syntax 2 |                   |                  |
|    |          | Syntax 3 |                   |                  |

Three renowned databases—Scopus, Springer, and Sagepub—were used to find pertinent research publications. The chosen search syntax, Syntax 1, to ensure currency and relevance, concentrated on papers published between 2018 and 2023. According to the findings, Scopus produced the most research articles, totaling 4389. Sagepub added 3562 items to the initial pool, whereas Springer added 9749. Other syntax options (Syntax 2 and Syntax 3) were also considered for the Scopus and Springer searches, highlighting how thorough the search approach was. These data highlight the exhaustiveness of the literature search and establish a strong foundation for the succeeding stages of the systematic review.

### Identification of studies via databases and registers

Finding the numerous literary conundrums forms the basis of quality evaluation. This systematic literature review provides a wealth of information regarding research methodologies and the study of pressure lies. The construct is founded on systematic evidence and the chosen study's caliber, including the evidence from the literature, peer-reviewed journals, total assessment, and quality management.

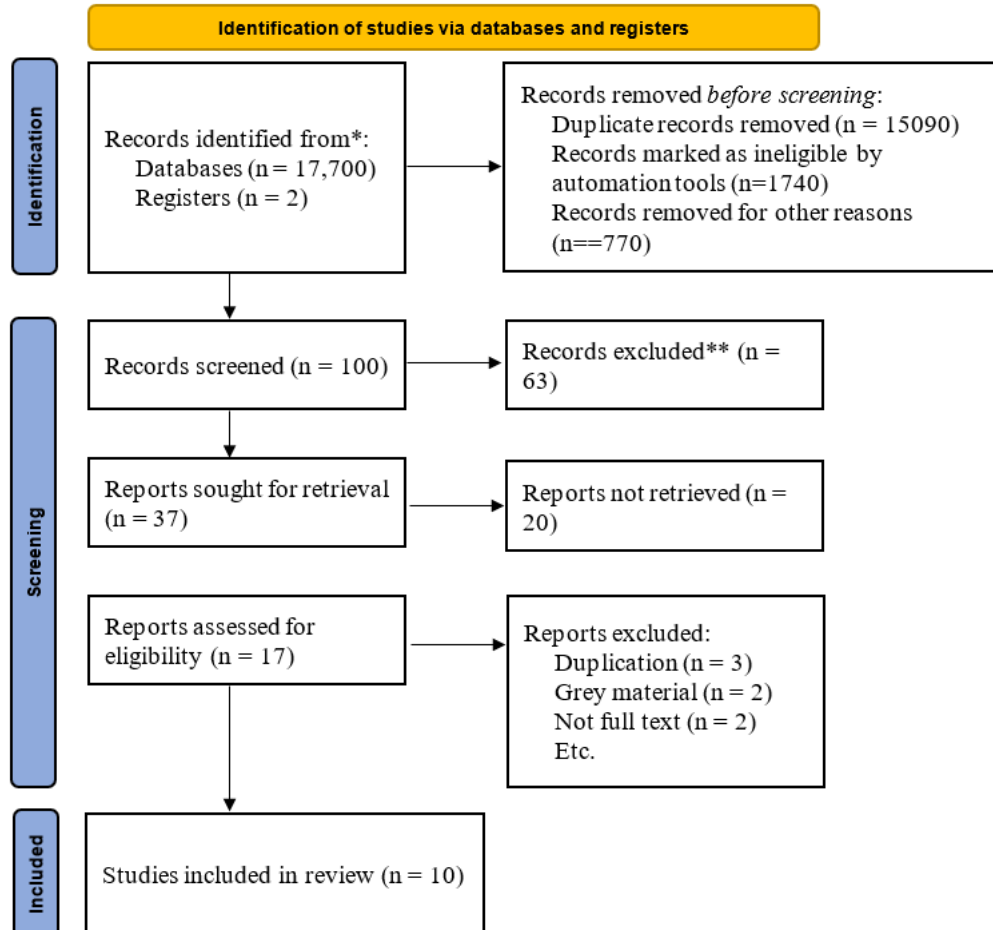


Figure 1 Prisma Diagram

### Quality Assessment

The included studies' methodological quality and bias risk were evaluated using relevant quality assessment tools adapted to various study designs. This process ensured the research was a compact and trustworthy source of knowledge.

**Table Assessment of the literature quality matrix**

| Sr # | Author                       | Are the selection of studies described appropriately | Is the literature covered all relevant studies | Does the method section describe? | Were findings clearly described? | Quality rating |
|------|------------------------------|--|--|-----------------------------------|----------------------------------|----------------|
| 1    | Thangam                      | Yes  | Yes  | Yes                               | Yes                              | Good           |
| 2    | Ommundsen et al              | Yes  | Yes  | Yes                               | Yes                              | Good           |
| 3    | Mulugeta et al               | Yes  | Yes  | Yes                               | Yes                              | Good           |
| 4    | AlFaifi et al                | Yes  | No   | Yes                               | Yes                              | Good           |
| 5    | Al-Somali                    | Yes  | Yes  | Yes                               | Yes                              | Good           |
| 6    | Albolowi et al               | Yes  | Yes  | Yes                               | Yes                              | Good           |
| 7    | Bazezew et al                | Yes  | Yes  | Yes                               | Yes                              | fair           |
| 8    | Tadesse et al                | No   | Yes  | Yes                               | Yes                              | Good           |
| 9    | Anaba et al                  | Yes  | Yes  | Yes                               | Yes                              | Good           |
| 10   | Abd-El-GwadElkalashy & Masry | Yes  | Yes  | Yes                               | No                               | Good           |

The studies included in the systematic review have appropriate descriptions about studies, the method section is described clearly and properly.

### Data Synthesis

Findings from the selected studies were synthesized using a narrative approach. We identified common themes, trends, and variations in the effectiveness of preoperative nursing assessment in reducing preoperative complications.

### Research Matrix

| Author, Year   | Aim of study  | Methodology                        | Sample  | Setting   | Result   |
|--|---|------------------------------------|---|-----------|--|
| Thangam, M. M. N., & Al, M. (2022).  | To assess the level of stress and coping abilities of a clients who are planned to undergo for surgery  | Descriptive Cross-sectional survey | The sample sizes of 250 clients. P                          | In Tabuk. | This study reveals that the clients who are in the preoperative period faces considerable stress and develops coping strategies accordingly. Providing adequate information and facilitating the coping strategies would beneficial in reducing the preoperative stress. |
| Ommundsen, N., Wyller, T. B., Nesbakken, A., Bakka, A. O., Jordhøy, M. S., Skovlund, E., & Rostoft, S. (2018). | A preoperative geriatric assessment (GA) can identify frail older patients at risk for developing postoperative complications. In this randomized controlled trial we wanted to investigate whether tailored interventions based on a preoperative GA could reduce the frequency of | Randomized controlled trial        | 122 patients with a mean age of 78.6 years were randomized. | KSA       | A preoperative GA and tailored interventions did not reduce the rate of Grade II–V complications, reoperations, readmission or mortality in frail older patients electively operated on for CRC.   |

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|   |  |  |   |   |  |
|---|--|--|---|---|--|
|   | postoperative complications in frail patients operated on for CRC.   |  |   |   |  |
| Mulugeta, H., Ayana, M., Sintayehu, M., Dessie, G., & Zewdu, T. (2018).   | To assess preoperative Anxiety and associated factors among adult surgical patients in Debre Markos and Felege Hiwot Referral Hospitals, Northwest Ethiopia.           | Cross-sectional study  | 353 patients  | In Debre Markos and Felege Hiwot Referral Hospitals, Northwest Ethiopia. Method | The prevalence of preoperative Anxiety was high. The level of preoperative Anxiety significantly associated with sex, preoperative information provision, and previous surgical experience. Preoperative psychosocial assessment should be incorporated into a routine nursing practice and every patient should be provided with preoperative information before surgery. |
| AlFaifi, J. J., Alrehaili, R. A., Alshammari, S. D., Alqurashi, J. H. M., Alasmari, H. M. A., & Alhallafi, A. F. S. (2023). | This study aimed to determine the levels of surgical patients' education regarding surgical interventions among patients in Saudi Arabia.                              | Survey study   | A total of 1360 participants were involved in this study  | Among patients in Saudi Arabia  | This study highlights the crucial role of surgeons in preoperative patient education as well as the significance of surgical team participation in this process. In order to increase patient knowledge, facilitate treatment decisions, and assure informed consent.  |
| Al-Somali, N. H. (2020)   | To optimize and better utilize the capacity of Saudi hospitals and healthcare centers, and enhance the quality of Saudi preventive and therapeutic healthcare services | Evidence Based Intervention                                      | The hospital serves more than 19,171 inpatients along with over 238,404 outpatients per year  | Hospitals in Riyadh, Saudi Arabia.  | To implement a nurse-led preoperative clinic to help reduce surgical cancellations in the Saudi healthcare institute, starting in one tertiary care hospital where the cancellation incidence is high. Surgical cancellations are undesirable for both patients and healthcare providers as they waste of both human and economic resources.                               |
| Albolowi, N., Mustafa, O., Almohammadi, M., Al-Hindi, M. Y., & Jastaniah, W. (2020).  | To explore the outcomes of a preoperative risk-based transfusion assignment protocol in sickle cell disease patients   | Retrospective study  | Thalassemia patients younger than 16 years of age who underwent surgery between January 2008 and July 2019. A total of 284 patients | In Saudi Arabia   | Preoperative risk-based transfusion assignment is feasible. Despite a high baseline haemoglobin level in the no transfusion group, none of the patients developed postoperative complications. It is possible that the high baseline haemoglobin F phenotype was protective and indicates the need to study the risk/benefit of interventions used in this phenotype.      |
| Bazewew, A. M., Nuru, N., Demssie, T. G., & Ayele, D. G. (2023).  | This study aimed to assess the knowledge, practice, and associated factors of preoperative patient teaching among nurses   | A cross-sectional study triangulated with a qualitative approach | A total of 406 participants were involved in this study with a 95.8% response rate.   | Northwest Amhara Comprehensive Specialized Referral Hospitals,                  | Nurses' knowledge and practice regarding preoperative patient teaching were found to be inadequate. So, it is better to strengthen training, adequate staffing, equip  |

|  |   |   |   |   |   |
|--|---|---|---|---|---|
|  | working at surgical units in Northwest Amhara Comprehensive Specialized Referral Hospitals, Northwest Ethiopia, 2022. Method  |   |   | Northwest Ethiopia  | wards with standardized guidelines and teaching materials, motivate and create a safe working environment. Most nurses explore factors of preoperative patients' teaching as institutional, Nurse's related, and patient-related factors.   |
| Tadesse, B., Kumar, P., Girma, N., Anteneh, S., Yimam, W., & Girma, M. (2023). | This study aimed to assess preoperative patient education practices and associated factors among nurses working in East Amhara comprehensive specialized hospitals, Ethiopia, 2022. | Cross-sectional study                               | 416 nurses.   | East Amhara comprehensive specialized hospitals, Ethiopia,          | Preoperative patient education practices among nurses were poor. Work experience, knowledge, training, and adequate time were found to be significant. Organize preoperative patient education programs for nurses that share experiences and provide ongoing training.   |
| Anaba, P., Anaba, E. A., & Abuosi, A. A. (2020).                               | The aim of this study was to assess patient satisfaction with perioperative nursing care in Korle-Bu Teaching Hospital, the largest tertiary hospital in Ghana.                     | A cross-sectional study                             | 100 participants divided into two groups  | In KSA  | It was also found that eight in ten respondents were satisfied with the perioperative nursing care. Overall patient satisfaction with perioperative nursing care was significantly associated with information provision, nurse-patient relationship, fear and concern and discomfort and need. At the multivariate level, overall patient satisfaction was significantly influenced by Nurse-patient relationship. |
| Abd El GwadElkalashy, R., & Masry, S. (2018).                                  | To investigate the influences of nursing visits against the preoperative Anxiety and postoperative complications in patients undergoing laparoscopic cholecystectomy (LC).          | Single centre, placebo-controlled randomized trial, | A sample of one hundred (n = 100) in-patients in the surgical department were interviewed | Korle-Bu Teaching Hospital, the largest tertiary hospital in Ghana. | The preoperative nursing visit decreases Anxiety and the complications after operation in patients receiving LC.  |

## Result

The research systematically reviewed the effectiveness of preoperative Nursing Assessment in reducing preoperative complications; the result is described in sub-theme as:

### *Preoperative assessment results in a decrease in Anxiety*

Preoperative nursing assessment reduces the Anxiety of patients who have undergone any surgery. There is apprehension about the outcome of surgery and the procedure of it. Preoperative nurses explain the procedure and outcomes of surgery, which reduces their Anxiety. Nurses also implement the relaxing exercise as a preoperative technique to make them relax.

### *Patient's satisfaction Link with the Preoperative Nursing Assessment*

A sub-theme of satisfaction linked to preoperative nursing assessment is identified. In addition, it was shown that responders were happy with the perioperative nursing care. The supply of information, the

nurse-patient interaction, the management of fear and concern, and the patient's level of discomfort and need significantly influenced how satisfied patients were with their overall perioperative nursing care. The nurse-patient interaction substantially impacted total patient satisfaction at the multivariate level.

### ***Preoperative Nursing Assessment as Psychoeducation to the Patients***

Before any surgery or blood transfusion, patients need to be psychoeducated about the process. The little information or knowledge about the process overwhelms them, interfering with the process and making patients fearful during treatment. Research quoted that hypertension and fear are common among patients with little information.

### ***Nurses Training in Preoperative assessment***

Nurses did not practice good preoperative patient education. Significant factors included having the right amount of time, expertise, training, and work experience. Programs for nurses that exchange experiences and offer continuous training should be organized for preoperative patient education.

## **Discussion**

A preoperative teaching intervention is carried out before surgery to improve patient outcomes. Preoperative education must be given in a sufficient and timely manner; otherwise, anxiety levels may rise, complications may arise, hospital stays may lengthen, and readmissions may increase. An important global health problem is surgical morbidity. The number of surgical procedures carried out annually is around 200 million. After surgery and anesthesia, more than 19 deaths were reported in Ethiopia within a day, and fewer than 27 deaths were recorded within three days (Tarekegn, Asfaw & Mossie, 2020).

Perioperative nurses can assess, diagnose, plan, intervene, and evaluate the outcomes of interventions. A perioperative nurse must assess patients' physical, mental, and spiritual reactions before surgery to prepare them for it (Mukantwari, Omondi & Ryamukuru, 2021).

However, many patients desire to find out further before the procedure (preoperative teaching). Therefore, surgical education is commonly given in the postoperative room, as the patient is unconscious and recovering from anesthesia. Preoperative patient education is a crucial aspect of nursing care that aims to assist patients in clarifying information regarding their procedure and what happens afterwards, depending on the patient's need, level of knowledge, and condition (Ali & Abdallah, 2020).

It has been challenging for nurses working in perioperative settings to create formal preoperative teaching programs. Despite their significant role as educators in patient care, little is known about nurses' present practices in educating surgical patients. Preoperative teaching is widely considered important, but its implementation is low, especially in developing countries. This is largely attributed to ignorance, inadequate staff nurse knowledge of preoperative teaching, a shortage of nurses in hospitals, a lack of time, and work overload (Musa & Ali, 2018).

In terms of the factors determining the degree of knowledge about preoperative patient education, this study indicated that male nurses had better knowledge than female nurses. The cause may be that women often handle more household tasks than men, including cooking, cleaning, and caring for children (Chaghari et al., 2018).

Furthermore, a study done in Hong Cong supports this. Additionally, it was shown that nurses who had taken part in surgical or perioperative training courses were more satisfied with preoperative instruction. This may be due to their increased desire and satisfaction to use their newly acquired



knowledge to instruct and provide more preoperative information to patients due to attending the appropriate surgical training courses, which can be attributed to their growing understanding of the operation details and the specific perioperative care (Majid, 2020).

Another conclusion is that nurses who stated there were no staff shortages in the operating hospital were more likely to be knowledgeable than nurses who claimed there were. Although it was unable to locate evidence to back up this conclusion, it's possible that there weren't enough nurses in the working environment to provide nurses enough time to read. Additionally, nurses who stated that they had enough staff had greater practice than those who stated that they did not. This is because the amount of work nurses have to do directly affects the standard of patient care (Hameed & Mohammed, 2018).

A preoperative nursing visit is one of the best and safest ways to provide patients with information and psychological support. This appointment provides an opportunity to gather information to help surgeons better manage patients during surgery and instruct patients on working with their healthcare providers. An informed patient experiences less dread and Anxiety during surgery. According to Blay and Donoghue, the preadmission intervention of education can significantly increase patient awareness of self-care and complication management while also assisting in reducing levels of discomfort during surgery (Zarei et al., 2018).

### **Challenges and Gaps**

The systematic review has a gap in the literature as there is a lack of research about the effectiveness of preoperative nursing assessment in reducing preoperative complications. The literature describes the psychological disturbance before any surgery. These disturbances include Anxiety, stress, and fear because of a lack of knowledge about the procedure and outcomes of the surgery. Some research shows the importance of training nurses about preoperative assessment and teaching them techniques to overcome complications during surgery.

### **Limitation**

As only published papers were considered, this systematic review is constrained by the possibility of publication bias. This can lead to removing unpublished or grey material which might have offered insightful information about emergency planning and response capability in Saudi Arabia's primary healthcare facilities.

### **Suggestions**

To minimize this restriction, future research can include utilizing unpublished data and reports from governmental and non-governmental organizations and consulting subject-matter experts. Training the nurses in preoperative assessments is also suggested to reduce the preoperative complications that interfere with the surgical procedure.

### **Recommendations**

It is recommended that future researchers explore the level of experience of nursing staff in preoperative assessment. Also, identify the level of satisfaction linked with the preoperative assessment. Also, consider the gap of research to explore a more authentic link with preoperative assessment and reduce postoperative complications.

### **Conclusion**

Based on the systematic review, it is concluded that preoperative nursing assessment is effective in reducing preoperative complications as it helps reduce Anxiety and increase knowledge about the procedure of surgery, which shows a significant positive impact on the patient's satisfaction. It is also concluded that nurses' training and education in preoperative assessment is necessary to deal with the

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