



Nurses' Performance Regarding Arthroplasty and Patients' Safety Measures

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Abstract

Background: Arthroplasty (knee and hip) are effective treatments for late-stage osteoarthritis (OA) and have the potential to substantially increase patient quality of life after the surgery. **The aim** of this study was to evaluate the nurses' performance regarding arthroplasty and patients' safety measures. **Research design:** A descriptive exploratory research design was used. **Setting:** The study was conducted at orthopedic department of new surgery hospital at Zagazig University hospitals, Sharqia Governorate, Egypt. **Subjects:** A convenient sample of 50 nurses. **Tools:** Four tools were utilized for data collection, pertinent as follows: Self-administered questionnaire for nurses, nurses' attitudes assessment Likert scale, nurses' practices observational checklist, and patients' safety measures post-arthroplasty. **Results:** Revealed that, majority (84.0%) of studied nurses had unsatisfactory total knowledge regarding care of patients undergoing arthroplasty, and more than half (58.0%) had unsatisfactory knowledge regarding patients' safety measures post arthroplasty, less than two thirds (62.0%) of studied nurses had negative total attitude regarding caring of patients undergoing arthroplasty and patients' safety measures. Furthermore, majority (86.0%) of studied nurses had unsatisfied total practice. **Conclusion:** There was a highly statistically significant positive correlation between studied nurses' total scores for knowledge of patients' care and safety measures knowledge, knowledge of patients' care and attitude, practice and safety measures practice, safety measures knowledge and attitude, and safety measures knowledge and safety measures practice. **Recommendations:** The study recommended there is a need for conducting regular in-service training sessions based on evidence-based practice regarding post-arthroplasty care and safety measures.

Keywords: Nurses' Performance, Patients' Safety Measures, Arthroplasty.

Introduction

Total joint arthroplasty, also known as, total joint replacement is a surgical intervention commonly indicated in cases of avascular necrosis (AVN) with severe joint degeneration and functional impairment, particularly in weight-bearing joints such as the hip and knee. The decision to perform total joint replacement is typically made when conservative measures have proven ineffective, and the progression of AVN has resulted in significant damage to the joint structure. Indications for total joint replacement include persistent pain, loss of joint function, and a diminished quality of life due to the impact of AVN on daily activities (Lohiya et al., 2023).

The most common reason for arthroplasty surgery is Osteoarthritis (OA), which is defined as a chronic, progressive musculoskeletal disorder characterized by degeneration of articular cartilage, remodeling of subchondral bone, osteophyte formation, and varying degrees of synovial inflammation.



It is the most common form of arthritis and represents a major cause of pain, disability, and reduced quality of life worldwide (**Benwoke et al., 2026**).

The most common arthroplasty surgery occurs for hip and knee joints. Total knee arthroplasty (TKA), commonly known as total knee replacement (TKR), is a surgical procedure to alleviate pain and restore function in patients suffering from advanced knee arthritis or other degenerative conditions. It involves replacing damaged knee joint surfaces with artificial components to improve mobility and quality of life (**Zimnoch et al., 2025**).

Total hip arthroplasty (THA) is a surgical procedure that involves the substitution of a damaged bone for a prosthetic component. This procedure is complex, and it is one of the most widespread and effective orthopedic surgeries. The surgical procedure is performed in several stages: (i) First of all, the damaged femoral head is removed; (ii) after that, a canal is created in the femur proximal medullary region; (iii) finally, an artificial prosthesis is inserted into the canal. The new prosthesis is composed of two different components, a stem and an acetabular head, which in turn is realized by a femoral head, a liner, and an outer shell (**Garofalo et al., 2025**).

In recent years, nursing strategies for postoperative recovery following arthroplasty have increasingly shifted towards a multidisciplinary approach, emphasizing early rehabilitation as a core component. Early rehabilitation intervention-based nursing care, in this context, refers to a comprehensive and patient-centered nursing model that integrates evidence-based rehabilitation strategies throughout the perioperative period. This model combines the principles of enhanced recovery after surgery and individualized care plans, involving collaboration between orthopedic surgeons, nurses, physical therapists, and mental health professionals (**Christofides et al., 2026**).

Preoperative prehabilitation (e.g., strength and mobility training, education), multimodal pain management (including both pharmacological and non-pharmacological strategies), early postoperative mobilization (within 24 h post-surgery), prevention of common complications (e.g., deep vein thrombosis [DVT], infections), psychological support (e.g., anxiety reduction, motivation enhancement), and lifestyle modification guidance (e.g., nutrition, joint protection) Compared with conventional postoperative care, which typically focuses on basic wound monitoring and generalized mobility advice, early rehabilitation intervention-based nursing care is proactive, structured, and tailored to each patient's physical and psychological profile (**Zhou et al., 2025**).

Enhanced Recovery After Surgery (ERAS) is an evidence-based multimodal perioperative care protocol designed to accelerate postoperative recovery, which has been widely adopted in orthopedics, gastrointestinal surgery, gynecology, and other specialties. In recent years, with the rapid advancement of ERAS, the duration of THA procedures has been reduced, and hospital stays have shortened to 3–5 days, accompanied by a growing trend toward same-day discharge (**Dai et al., 2025**).

The World Health Organization (WHO) defines patient safety as “a framework of organized activities that creates cultures, procedures, behaviors, technologies, and environments in health care that consistently and substantially lower risks, reduce the occurrence of avoidable harm, make errors less likely, and reduce the impact of harm when it does occur” (**CHIMDI, 2025**).

Patient safety measures for arthroplasty patients are essential to prevent complications and promote recovery. These measures include thorough patient assessment and strict adherence to infection control practices. Healthcare providers should ensure safe medication administration and proper patient positioning. Early and safe mobilization is encouraged to improve functional outcomes and reduce risks. The use of assistive devices helps prevent falls and injuries. Continuous monitoring for complications such as deep vein thrombosis, prosthesis dislocation, and surgical site infection is necessary. These safety measures contribute to improved outcomes and high-quality care (**Martinez-Nicolas et al., 2024**).

Significance of the study

The occurrence of arthroplasty (knee and hip replacements surgeries) tends to increase with advancing age, as by 2030, 635,000 total hip arthroplasty (THA) and 1.26 million total knee arthroplasty



surgeries will be performed for the first time in the United States (**Sun et al., 2024**). There are many reasons for artificial joints, the most important of which is joint osteoarthritis, particularly in knee joints. Annual incidence of total knee arthroplasty with approximately 10,000 to 15,000 joints in Egypt (**Talat Ramadan Sayed Ahmed et al., 2025**).

Over 100,000 total knee replacements (TKR) are performed annually for painful end-stage osteoarthritis (OA) in the UK. The main reason for undertaking TKR is to provide pain relief as well as improving function and mobility, significant proportion complain about restricted knee flexion, residual pain, and limitations in performing day-to-day activities such as level walking, kneeling, walking up an incline, and pivoting the knee (**Sawant et al., 2024**).

Nurses play a critical role in the care of patients undergoing arthroplasty by ensuring the delivery of safe, high-quality, and evidence-based care. They are responsible for identifying potential risks, monitoring patients' conditions, and implementing appropriate preventive interventions. Due to the complexity of arthroplasty care, nurses should possess adequate knowledge and advanced clinical skills related to patient safety measures. High levels of competence enable nurses to recognize complications early, make effective clinical decisions, and provide accurate patient education. Furthermore, knowledgeable nurses can enhance adherence to safety protocols and reduce the incidence of adverse events. Their role is essential in promoting successful recovery, improving patient outcomes, and supporting rehabilitation. (**Nyberg et al., 2021**).

Therefore, the current study will be conducted to evaluate the nurses' performance regarding arthroplasty and patients' safety measures.

Aim of the study:

The aim of this study was to evaluate the nurses' performance regarding arthroplasty and patients' safety measures through the following objectives:

- Assess the nurses' knowledge regarding care and safety measures of patients undergoing arthroplasty.
- Determine the nurses' practices regarding care and safety measures of patients undergoing arthroplasty.
- Determine nurses' attitudes toward care and maintaining safety measures of patients undergoing arthroplasty.

Research questions:

This study will answer the following questions.

- What is the level of nurses' knowledge regarding care and safety measures of patients undergoing arthroplasty?
- What is the level of nurses' practices regarding care and safety measures of patients undergoing arthroplasty?
- What is the level of nurses' attitudes toward care and maintaining safety measures for patients undergoing arthroplasty?

Subjects and methods

Research design

A descriptive exploratory research design was utilized to achieve the aim of this study and to answer the research questions. Descriptive research design is a scientific method which involves observing and describing the behaviour of subjects without influencing it in any way (**Verma et al., 2024**).

Study setting

The study was conducted at orthopedic department of new surgery hospital at Zagazig university hospitals, Sharqia governorate, Egypt. Orthopedic department is located on the six floors of new surgery hospital. The department Which contains a men's ward and a women's ward, both of which include about 60 beds for patients.



Study subjects

A convenience sample of available nurses who working at orthopedic department of new surgery hospital at Zagazig University hospital during the period of the study, (total number was 50 nurses).

Tools Of data collection

Four tools were constructed to achieve the aim of the study as the following:

Tool I: Self-Administered Questionnaire:

It was designed by a researcher based on review of relevant recent literatures (Elsayed et al., 2023; Qi et al., 2024) to assess nurses' knowledge regarding care of patients undergoing arthroplasty and patients' safety measures post-surgery. It included three parts as follows:

Part I: Nurses' Demographic Characteristics: This part is composed of 10 items which are concerned with assessing the demographic characteristics of orthopedic nurses such as (age, gender, educational level, marital status, residence, monthly income, years of experience in nursing, years of experience in orthopedic unit, previous training courses about care and safety measures of arthroplasty patients, and availability of nursing guidelines booklet about care and safety measures of patients undergoing arthroplasty.

Part II: Nurses' Knowledge Assessment Questionnaire: This part was used to assess nurses' knowledge about arthroplasty and care of patients undergoing arthroplasty which covered (Arthroplasty: definition, indication, contraindication, patients' care pre surgery, care post-surgery, arthroplasty complications, follow up measures, and discharge plan post arthroplasty. It consists of 62 questions in the form of multiple-choice questions (MCQ).

Part III: Nurses' Knowledge Assessment Questionnaire: this part was used to assess the nurses' knowledge about safety measures for patients post arthroplasty; it composed of 20 questions in form of true and false that covered patient's safety definition, goal of patient's safety measures, and patients' safety measures post arthroplasty.

The Scoring System: For the knowledge items, a "correct answer" was scored **one** and the "incorrect answer" **zero**. For each area of knowledge, the scores of the items were summed up and the total divided by the number of the items, giving a mean score for the area. These scores were converted into percentage scores. The knowledge was considered satisfactory if the percent score was $\geq 75\%$ (≥ 61) and unsatisfactory if $< 75\%$ (< 61) based on data entering and statistical analysis.

Tool II: Nurses' Attitudes Assessment Likert Scale:

This tool is used to assess nurses' attitudes regarding care and safety measures of patients undergoing arthroplasty; it was developed by the researcher after reviewing the pertinent literature review (Wang et al., 2021; Ali et al., 2020; Cho & Jang, 2020; Kilic & Tastan, 2017). It was divided into two parts as follow:

Part I: Nurses' Attitudes Regarding Arthroplasty: This part was used to assess nurses' attitudes toward caring of patients undergoing arthroplasty. It is composed of 10 statements that presented in 3-point Likert scale which covered the nurses' perception toward feeling of confidence when providing care, the need of more attention toward those patients, the importance of early mobilization, the need of adequate training to deal with arthroplasty complications, the benefit of caring of arthroplasty patients, pain management post arthroplasty, patient health education post arthroplasty to reduce complications, nurses' perception toward feeling of confidence when assessing and documenting neurological status, the importance of applying infection control measures when caring arthroplasty patients, the need for attending additional training regarding care of patients undergoing arthroplasty.

Part II: Nurses' Attitudes Regarding Patients' Safety Measures: This part was used to assess nurses' attitudes toward following and maintain safety measures of patients undergoing arthroplasty. which included 20 items that classified into three sections covered general attitudes of nurses toward patients' safety measures (4 items), teamwork and communication related to safety measures (3 items), and patients' safety measures related to complications prevention post arthroplasty (13 items), which covered four main domains as infection control related safety measures (4 items), blood clot prevention related safety measures (3 items), fall prevention related safety measures (3 items), pain and pressure



ulcer prevention related safety measures (3 items).

The Scoring System: For attitude items, the scale using a three-point Likert scale that ranges from **zero** “disagree”, **one** “neutral”, **two** “agree”. For each area of attitude, the scores of the items were summed up and the total divided by the number of the items, giving a mean score for the area. These scores were converted into percentage scores. The attitude was considered positive if the percent score was $\geq 75\%$ (≥ 22) and negative if $< 75\%$ (< 22) was based on data entering and statistical analysis.

Tool III: Nurses' Practices Observational Checklist:

It was adapted from (Ibraheem et al., 2023) and then modified by researcher after reviewing the appropriate scientific literature (Yamaguchi et al., 2024; Ezech et al., 2024) to assess the nurses' practices regarding care of patients post arthroplasty. It included 158 items classified into eight domains which covered the following: Immediate post-operative care (27 items), ongoing care (18 items), cold compression (21 items), performing range of motion exercises (13 items), Wound care (cleaning and dressing) (37 items), Gait assessment (19 items), Pain assessment (10 items), and Swelling assessment (13 items).

The Scoring System: Each practice item observed to be done correctly was scored “**one**” and the not-done scored “**zero**”. For each area of practice, the scores of the items were summed up and the total divided by the number of the items, giving a mean score for the area. These scores were converted into percentage scores. The practice was considered satisfactory if the percentage score was $\geq 75\%$ (≥ 118) and unsatisfactory if $< 75\%$ (< 118) was based on data entering and statistical analysis.

Tool IV: Nurses' Practices Observational Checklist for Patients' Safety Measures Post-Arthroplasty: this tool adapted from (Ibraheem et al., 2023) and then modified by researchers after reviewing the appropriate scientific literature (Mohamed Weheida et al., 2021) to assess the nurses' practices regarding patients' safety measures for patients undergoing arthroplasty, it included 56 items classified into three main domains of practices which covered the following: fall preventive measures (11 items), transferring safety measures (21 items), and environmental safety measures (24 items).

The Scoring System: Each practice item observed to be done correctly was scored “**one**” and the not-done scored “**zero**”. For each area of practice, the scores of the items were summed up and the total divided by the number of the items, giving a mean score for the area. These scores were converted into percentage scores. The practice was considered satisfactory if the percentage score was $\geq 75\%$ (≥ 42) and unsatisfactory if $< 75\%$ (< 42) was based on data entering and statistical analysis.

Content validity and reliability

The tools were revised by a panel of five nursing experts, two professors and three assistant professors of medical surgical nursing from Zagazig University's nursing faculty reviewed the tools for content validity. Clarity, accuracy, relevance, comprehensiveness, applicability, and comprehension were all evaluated by these experts. According to the opinions of the experts, various changes were made, such as rewarding, awarding, and occasionally altering certain questions. Cronbach's alpha coefficient was used to evaluate reliability, and the results showed good internal consistency. The Cronbach's knowledge assessment questionnaire was 0.74, nurses' attitudes assessment Likert scale was 0.85, nursing practices Observational Checklist was 0.79, and nurses' practices regarding patients' safety measures were 0.71. Reliability testing was completed before data gathering began.

Field work

The data collection process of this study was carried out through six months in the period from the beginning of July (2025) to the end of December (2026). The researcher collected data from two shifts, the morning and the afternoon shifts from 9.00 AM to 5.00 PM, three days per week (Sunday, Tuesday, and Thursday). The researcher gives self-administered questionnaire to assess nurses' knowledge regarding care of patients undergoing arthroplasty, and give them instruction on how to complete it, the researcher was available to address any question or ambiguities. The completed form gathered and checked for accuracy each nurse spends 20 to 30 minutes, the researcher utilized a 3- point Likert scale to assess the nurses' attitudes regarding care and safety measures of patients undergoing arthroplasty, The completed form gathered and checked for accuracy each nurse spends 15 to 20 minutes ,while



observational checklists was collected by the researchers through observing the nurses during their actual practices with the patients and the average time required for the completion was around 30-45minutes.

Pilot study

A pilot study was conducted on five nurses representing 10% of the main study sample. The purpose of the pilot was to check and ensure the clarity, applicability, and feasibility of the tools, to identify the difficulties that may be faced during data collection. It also helped to estimate the time needed to fill-in the forms. Since no modifications were done in the tool, those who shared in the pilot study were included in the main study sample.

Administration and ethical consideration

First, the study proposal was accepted by the Zagazig University Faculty of Nursing's Post Graduate Committee and Research Ethics Committee (REC) with the code of M.D.ZU.NUR/259/12/11/2024. The general director of Zagazig University Hospitals received the required approvals, which were acquired from the dean of the Faculty of Nursing. After outlining the goal of the study, the head of the aforementioned setting granted permission to conduct it. During the first interview, each prospective participant was briefed about the nature, goals, and advantages of the study, as well as the fact that participation is entirely voluntary. By coding all the data, the subjects' confidentiality and anonymity were likewise guaranteed. The researcher assured that the data collected and information would be confidential and would be used only to improve their health and for the purpose of the study and there was no risk for studying subjects during application of the research.

Statistical analysis

All data were collected, tabulated and statistically analyzed using SPSS 26.0 for windows. Quantitative data were expressed as the mean $\pm$ SD & (range), and qualitative data were expressed as absolute frequencies (number) & relative frequencies (percentage). Percent of categorical variables were compared using Chi square test (χ^2) or Fisher's exact test when appropriate. Spearman rank correlation coefficient was calculated to assess relationship between various study variables, (+) sign indicate direct correlation & (-) sign indicate inverse correlation, also values near to 1 indicate strong correlation & values near 0 indicate weak correlation. Also, multiple linear regression analysis was used to compare two classes. All tests were two sided. P-value < 0.05 was considered statistically significant (S), and p-value ≥ 0.05 was considered statistically insignificant (NS).

Results

Table 1 illustrates that, less than three quarter (72.0%) of studied nurses' age more than 30 years old with mean $\pm$ SD 39.78 $\pm$ 11.20, 90.0 % were females, majority (80.0%,) were married, two thirds (66.0%) lived in rural areas and nearly three quarters (74.0%) had income not enough for living. Regarding to years of experience in nursing, the result revealed that two thirds (66.0%) of the studied nurses had more than or equal 10 years of experience with mean 15.24 $\pm$ 11.54. Meanwhile less than three quarter (72.0%) had equal or more than 10 years of experience in orthopedic unit with mean 21.10 $\pm$ 12.62. Furthermore, two thirds (66.0%) attended training related to the care and safety measures of patients undergoing arthroplasty and majority (82.0%) reported that there weren't any nursing guidelines booklet regarding arthroplasty and patients' safety measures.

Table 2 illustrates that, all (100.0%) of studied nurses had unsatisfactory knowledge regarding follow-up and discharge planning with mean $\pm$ SD8.86 $\pm$ 1.55. In addition, the most (94.0%) had unsatisfactory level of knowledge regarding post arthroplasty patients' care with mean $\pm$ SD7.24 $\pm$ 1.94. Furthermore, majority (86.0%, 84.0%, and 80.0%) of the studied nurses had unsatisfactory knowledge regarding arthroplasty (hip & knee), pre arthroplasty patients' care, and arthroplasty complications with mean $\pm$ SD3.80 $\pm$ 1.55 respectively.

Figure 1 illustrates that, majority (84.0%) of studied nurses had unsatisfactory total knowledge regarding care of patients undergoing arthroplasty, while only (16.0%) had satisfactory of knowledge.

Table 3 shows that most (98.0%, 98.0%, 94.0%, 94.0%, 92.0%, and 90.0%) of the studied nurses had correct knowledge regarding definition of patients' safety, objectives of safety procedures, goal of



safety measures generally, safety hospital environment, depression and anxiety post arthroplasty, and accurate documentation of nursing procedures; respectively. Generally, more than half (58.0%) of the studied nurses had unsatisfactory knowledge regarding patients' safety measures post arthroplasty with Mean $\pm$ SD of 15.18 ± 3.00 .

Table 4 illustrates that less than three quarter (72.0% with mean $\pm$ SD 15.72 ± 3.39) of the studied nurses had positive attitude toward caring of patients undergoing arthroplasty. While more than half (58.0% with mean $\pm$ SD 24.18 ± 11.26) had negative attitude regarding patients' safety measures. The table also shows that less than two thirds (62.0% with Mean $\pm$ SD 39.78 ± 13.04) had negative total attitude regarding caring and maintaining safety measures of patients undergoing arthroplasty.

Table 5 illustrates that all (100.0%) of studied nurses had unsatisfied practice regarding ongoing care, patients' gait assessment, and pain assessment (with mean $\pm$ SD 7.78 ± 2.11 , $\pm$ SD 7.70 ± 1.58 , and $\pm$ SD 3.88 ± 0.68), respectively. Only 42.0% had satisfied practice regarding range of motion exercises.

Figure 2 shows that majority (86.0%) of studied nurses had unsatisfied total practice. Meanwhile, more than one tenth (14.0%) had satisfied total practice regarding care of patients post arthroplasty.

Table 6 illustrates that all (100.0% with Mean $\pm$ SD 13.56 ± 3.06) of the studied nurses had unsatisfied practice regarding fall preventive measures. Also, most (90.0% with Mean $\pm$ SD 10.22 ± 2.33 , and 94.0% with Mean $\pm$ SD 8.14 ± 3.28) had unsatisfied practice regarding transferring safety measures, and environmental safety measures, respectively.

Figure 3 shows that most (96.0%) of studied nurses had unsatisfied total patients' safety measures practices.

Table 7 shows that there was a highly statistically significant positive correlation between studied nurses' total scores for knowledge of patients' care and safety measures knowledge, knowledge of patients' care and attitude, practice and safety measures practice, safety measures knowledge and attitude, and safety measures knowledge and Safety Measures Practice ($r = .705$ & $P < 0.001$, $r = .548$ & $P < 0.001$, $r = .702$ & $P < 0.001$, $r = .580$ & $P < 0.001$, and $r = .312$ & $P = 0.027$), and a statistically significant positive correlation between studied nurses' total knowledge and practice with $P < 0.05$.

Discussion

Regarding demographic characteristics of the studied nurses, the present study revealed that, less than three quarter of studied nurses' age more than 30 years old with mean $\pm$ SD 39.78 ± 11.20 . The finding of the present study in the same context with **Ahmed Elkady, (2025)**, who mentioned in the study entitled "Nurses' Performance regarding Discharge Plan for Patients post Total Knee Arthroplasty" that, more than half of the studied nurses were 30-40 years old. Also, the finding of the present study is consistent with **Taha & Ibrahim, (2021)**, who stated in the study entitled "Effect of Educational Program on Nurses' Knowledge, Practices and Patients' Outcomes Post Total Knee Arthroplasty", that, more than half of nurses their age was from 40 to less than 60 years old.

Regarding gender, the present study revealed that, all the studied nurses were females. The finding of the present study in the same context with **Elbadawy et al., (2025)** who reported in the study entitled "Effect of Implementing Surgical Safety Guidelines for Orthopedic Nurses on their Performance at Operating Room" that, majority of studied nurses were female. Also, the finding of the present study in the same context with **El sayed Mahedy, (2021)**, who mentioned in the study entitled "Nurses' Knowledge and Practice regarding Post-Operative Pain Management for Orthopedic Patient", that, all the studied nurses were females.

Concerning experience, the current study showed that two thirds of the studied nurses had more than or equally 10 years of experience. Meanwhile, less than three quarters had equal or more than 10 years of experience in orthopedic units. The finding of the present study in the same context with **Elbadawy et al., (2025)**, who revealed that, more than half of the studied nurses had ≥ 10 years of experience. While the finding of the present study in contrast with **Aldakheel et al., (2021)**, who determined in the study entitled "Assessment of Nurses' Knowledge Concerning Knee Arthroplasty at Al Muthanna Hospitals", stated that, most of studied nurses had only between 1 to 8 years of experience.

Related to training courses, two thirds attended training related to the care of patients and safety



measures of patients undergoing arthroplasty. The findings of the present study are in contrast with **Aldakheel et al., (2021)**, who reported that less than quarter of studied nurses participated in training courses related to knee replacement nursing care. Also, disagree with **Saad et al., (2020)**, who stated in the study entitled “Effect of Implementing Guidelines for Nurses Caring for Immobilized Orthopedic Patients on their Performance”, that, almost all the nurses under study were not attending the training sessions.

Regarding nurses' knowledge about care of patients undergoing Arthroplasty, majority of the studied nurses had unsatisfactory knowledge regarding arthroplasty, preoperative care, and postoperative complications. The finding of the present study in the same context with **Elsayed et al., (2023)**, who clarified that, majority of the studied nurses had unsatisfactory knowledge regarding pre and postoperative care of patients with total knee arthroplasty.

Also, this result in the same line with **Kreem & Hamza, (2019)** who revealed in the study entitled “Effectiveness of Educational Program on Nurses' Knowledge regarding Pre- and Post-Operative Nursing Management” revealed that, majority of studied nurses in surgical units had knowledge deficit regarding preoperative nursing management.

Regarding nurses' knowledge about follow-up and discharge planning of patients undergoing arthroplasty, the current findings showed that all the studied nurses had unsatisfactory knowledge regarding follow-up post arthroplasty. The findings of the present study are in the same context **Taha & Ibrahim, (2021)**, who illustrated that, nearly three quarters of studied nurses had unsatisfactory total knowledge regarding pre, post, follow up care of patients with arthroplasty.

Related to total knowledge about patients' safety measures post arthroplasty, the current study reported that more than half of the studied nurses had unsatisfactory knowledge regarding it. The finding of the present study in the same context with **Abu Hussein et al., (2022)**, who mentioned in the study that entitled “Effect of patient safety program for nurses on medication administration”, that all of staff nurses had poor level of knowledge regarding patient safety in assessment phase.

While the finding of the present study in contrast with **Abd Alazez et al., (2024)**, who clarified in the study entitled, “Relation between Nurses' Accountability and Their Patients Safety Awareness at Intensive Care units”, that, more than half of the nurses had high and moderate level of overall patient safety knowledge.

Regarding nurses' attitudes toward patients' safety measures post arthroplasty, the current study findings showed that more than half of nurses had negative attitudes regarding patients' safety measures. The finding of the present study in the contrast with **Ayyad et al., (2024)**, who founded in the study entitled “Knowledge, Attitudes, and Practices toward Patient Safety among Nurses in Health Centers”, that, more than sixty of the participants demonstrated a positive attitude towards patient safety. While in contrast with **Wake et al., (2021)** who showed in the study entitled “Knowledge, Attitude, Practice and Associated Factors towards Patient Safety among Nurses Working at Asella Referral and Teaching Hospital, Ethiopia”, that more than half of nurses had positive level of attitude towards patient safety.

Regarding total attitude regarding caring of patients undergoing arthroplasty and following patients' safety measures, the present study revealed that less than two thirds had negative total attitude regarding caring of patients and following patients' safety measures. The finding of the present study in the same context with **Al-Mugheed & Bayraktar, (2020)**, who revealed in the study entitled “Patient Safety Attitudes among Critical Care Nurses” that nurses' overall scores regarding patient safety attitudes were found to be negative.

Regarding nurses' practice of immediate post-operative care, the present study revealed that majority of the studied nurses had unsatisfied practice regarding immediate post-operative, this result in agreement with **Ibraheem et al., (2023)**, who showed in the study entitled “Assessment for Nurses' Practices regarding Pre and Postoperative Care for Patients with Total Knee Arthroplasty”, that, more than two thirds of the studied nurses had incompetent level of practices regarding pre and postoperative care of patient with total knee arthroplasty.

Regarding nurses' practice regarding application of cold compression, the present study revealed that



most of studied nurses had unsatisfied practice regarding applying cold compression. This study result in agreement with **Tsegaye et al., (2023)**, who revealed in the study entitled “Non-pharmacological Pain Management Practice and Associated Factors among Nurses Working at Comprehensive Specialized Hospitals” that less than half of nurses had a good practice on non-pharmacological pain management practice.

Regarding nurses' practices of range of motion exercises, the present study revealed that more than half had unsatisfied practice regarding providing range of motion exercises, this finding in agreement with **Mohammed et al., (2026)**, who founded in the study entitled “Nurses' Knowledge and Practice regarding Prevention of Deep Venous Thrombosis among Post-Operative Patients” that, less than two thirds of the studied nurses had incompetent practices regarding range of motion exercises.

Regarding total nurses' practices of wound care, the present study revealed that nearly three quarters of the studied nurses had unsatisfied total practice regarding wound care, the study in the same context with **Tenaw & Ayalew, (2020)**, who determined in the study entitled “Level of Knowledge and Wound Care Practice at a Tertiary Referral Hospital in Ethiopia” that, nearly three-fourths of the participants have a poor level of practice on wound care.

While the present result of the study in the contrast with **Fasil Tegegn et al., (2023)**, who clarified in the study entitled “Multicenter Cross-Sectional Study Describing Postoperative Wound Care Practice in Northeast Ethiopia”, that less than half have good postoperative wound care practices.

Regarding nurses' practices of pain assessment, the present study revealed that all the studied nurses assess location, quality, and duration of pain, monitor the effectiveness of prescribed analgesics, the majority collaborate with the healthcare team and assess pain level using a validated pain scale for optimal pain management. These findings in agreement with **Ahmed Elkady, (2025)**, who reported that, most of the studied nurses use appropriate pain assessment tool, nearly three quarters of the studied nurses assess and record pain frequency and duration, majority of the studied nurses assess and record pain alleviating and aggravating factors' respectively.

Concerning total fall preventive measures practices, all the studied nurses had unsatisfied practice regarding fall preventive measures. The finding of the present study in the same context with **Mohamed Weheida et al., (2021)**, who showed in the study entitled “Safety Nursing Practices for Fall Control for Patients Post Internal Fixation Surgeries of the Lower Limb” that the total scores of the studied nurses' practice regarding the universal fall precautions were unsatisfactory.

While this result in disagreement with **Alsaad et al., (2024)** who clarified in the study entitled “Knowledge, Attitudes, and Practices of Nurses toward Risk Factors and Prevention of Falls in Older Adult Patients in a Large-Sized Tertiary Care Setting” that a good level of practices adopted by nurses in patient safety and fall prevention.

Concerning total environmental safety measures, the current study revealed that most of studied nurses had unsatisfied practices regarding environmental safety measures. The finding of the present study in the same context with **Faltas, (2018)** who stated in the study entitled “Effect of Nursing Guideline on Performance of Nurses regarding Prevention of Patients' Fall in Intensive Care Units” that knowledge and practice of his study regarding environmental hazards pre implementations of the nursing guideline are inadequate.

Related to total nurses' practices regarding safety measures post arthroplasty, most of studied nurses had unsatisfied total nurses' safety measures practice. The finding of the present study in agreement with **Mohammed et al., (2023)**, who revealed in the study entitled, “Patient Safety Knowledge, Attitude and Practice among Undergraduate Health Science Students in Southwest Ethiopia”, that, practice of patient safety among health science students was low. While the findings of the study in contrast with **Ayyad et al., (2024)**, who reported that over 60% of participants exhibited good practice inpatient safety.

The current study findings showed there was a statistically significant positive correlation between studied nurses' total knowledge and total practice. This result is in the same context with **Taha & Ibrahim, (2021)**, who showed a statistically significant positive correlation between the total nurses' knowledge and their practices pre, immediately, post, and three months post -program implementation



with a p-value of ≤ 0.05 .

Moreover, the current findings in the contrast with **Abozeid et al., (2025)**, who mentioned in the study entitled “Assessment of Nurses, Performance regarding Medication Administration at Main Mansoura University Hospital” that, there is no statistically significant relation between nurses’ knowledge and their practice.

The current study findings showed there was a highly statistically significant positive correlation between studied nurses’ total knowledge of patients’ care and total attitude, the current study finding in contrast with **Darwesh et al., (2024)** who reported in the study entitled “Maternity Nurses' Role toward Safety Measures in Labor Unit” that there was no significant statistical correlation between total attitude and total knowledge among the studied nurses.

The current study findings showed there was a highly statistically significant positive correlation between studied nurses’ total safety measures knowledge and total safety measures practice. The current study findings in the same context with **Nabil Mohamed et al., (2025)**, who mentioned that there was statistically significant correlation between nurses’ knowledge and practice.

Furthermore, the current study findings are in contrast with **Darwesh et al., (2024)**, who clarified that there was no significant statistical correlation between total knowledge and total practice regarding safety measures.

Conclusion

On the light of the present study results, can concluded that, majority of studied nurses had unsatisfactory total knowledge regarding care of patients undergoing arthroplasty, more than half had unsatisfactory total knowledge regarding patients’ safety measures post arthroplasty, less than two thirds had negative total attitudes regarding caring and maintaining safety measures of patients undergoing arthroplasty, the majority had unsatisfactory total practices. As well as the most had unsatisfactory total practices regarding patients’ safety measures. There was a highly statistically significant positive correlation between studied nurses’ total scores for knowledge of patients’ care and safety measures knowledge, knowledge of patients’ care and attitude, practice and safety measures practice, safety measures knowledge and attitude, and safety measures knowledge and Safety Measures Practice.

Recommendations

Based on the study findings, the following recommendations are proposed:

- Implement continuous educational programs to improve nurses’ performance regarding care of patients undergoing arthroplasty.
- Ensure continuous supervision and periodic evaluation of nurses’ performance to maintain safety of patients’ care.
- Develop and distribute updated nursing guidelines and procedure manuals related to arthroplasty patients care and safety measures.
- Replicate the study on a larger sample and in different healthcare settings to improve the generalizability of findings.
- Further study regarding impact of arthroplasty on patients’ QoL and outcome must be conducted.

Authors’ contributions

F.H.M; Conceived and designed the study, developed the research tools, conducted data collection, and contributed significantly to data interpretation and manuscript writing. N.A.M; Supervised all stages of the study, revised multiple drafts critically for intellectual content. F.M.A; Provided the first draft of the manuscript before its publication, participated in all the steps of research. F.A.M; Conducted the overall supervision of the manuscript before its publication and approved the final version for publication. All authors reviewed and approved the final manuscript and took full responsibility for the integrity of the work.

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Declaration of conflicting interest

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**Table 1: Frequency and Percentage Distribution of the Studied Nurses Demographic Characteristics (n=50).**

Demographic Characteristics	NO	%
Age		
≤30 years	14	28.0
>30 years	36	72.0
Mean ±SD	39.78±11.20	
Sex		
Male	5	10.0
Female	45	90.0
Marital status		
Married	40	80.0
Unmarried	10	20.0
Residence		
Rural	33	66.0
Urban	17	34.0
Monthly income		
Sufficient	13	26.0
Insufficient	37	74.0
Years of Experience in nursing		
<10 years	17	34.0
≥10 years	33	66.0
Mean ±SD	15.24±11.54	
Years of Experience in the Orthopedic unit		
<10 years	14	28.0
≥10 years	36	72.0
Mean ±SD	21.10±12.62	
Attended training courses about care and safety measures of arthroplasty patients		
Yes	33	66.0
No	17	34.0
Presence of nursing guidelines booklet regarding arthroplasty and patients' safety measures		
NO	50	100.0

SD: Standard deviation



Table 2: Frequency, Percentage and Mean Distribution of Total Studied Nurses Knowledge regarding Arthroplasty (n=50).

Items	NO	%	Mean ±SD
Arthroplasty (hip & knee):			
Satisfactory ≥75%	7	14.0	7.74±2.19
Unsatisfactory <75%	43	86.0	
Pre-arthroplasty Patients’ Care:			
Satisfactory ≥75%	8	16.0	6.82±2.63
Unsatisfactory <75%	42	84.0	
Post Arthroplasty patients’ Care:			
Satisfactory ≥75%	3	6.0	7.24±1.94
Unsatisfactory <75%	47	94.0	
Arthroplasty Complications:			
Satisfactory ≥75%	10	20.0	3.80±1.55
Unsatisfactory <75%	40	80.0	
Follow-Up and Discharge Plan:			
Satisfactory ≥75%	0	0.0	8.86±1.55
Unsatisfactory <75%	50	100.0	

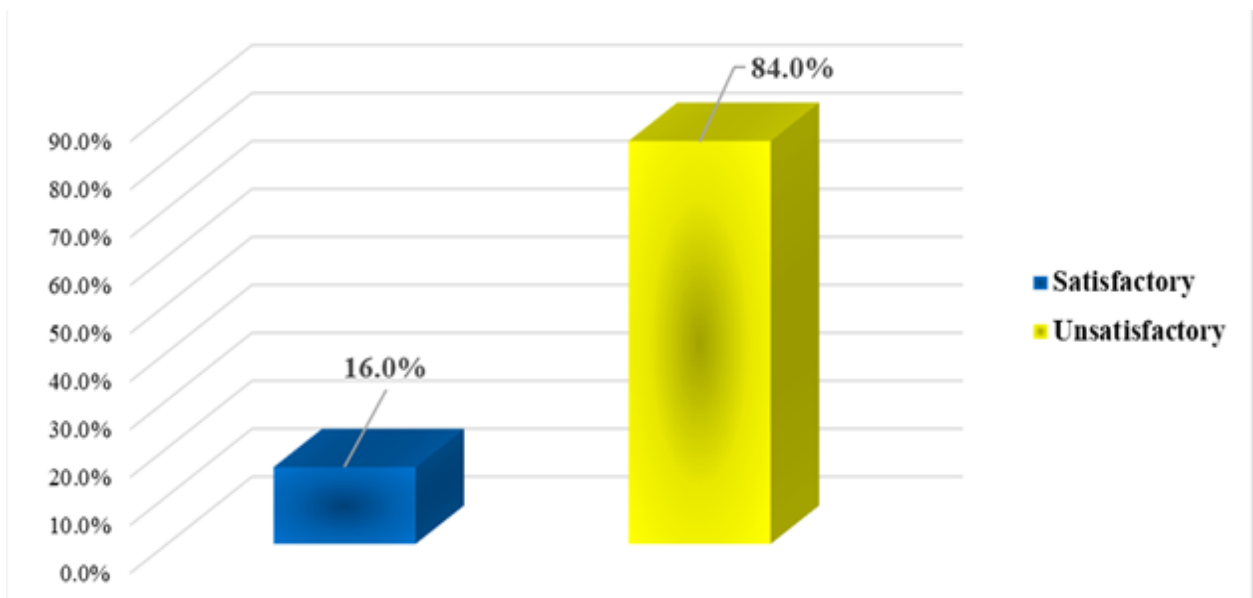


Figure 1: Percentage Distribution of Studied Nurses' Total Knowledge regarding Arthroplasty (n=50).



Table 3: Frequency and Percentage Distribution of Studied Nurses' Knowledge regarding Patients' Safety Measures Post Arthroplasty (n=50).

Safety Measures Post Arthroplasty	Nurses' Knowledge			
	Correct		Incorrect	
	NO	%	NO	%
Definition of patients' safety	49	98.0	1	2.0
Goal of safety measures generally	47	94.0	3	6.0
Objectives of safety procedures	49	98.0	1	2.0
Nursing goals in the postoperative phase	21	42.0	29	58.0
Goals of safety measures PA	36	72.0	14	28.0
Factors influencing patient safety PA	31	62.0	19	38.0
Educating the patient about the signs of infection doesn't affect safety	17	34.0	33	66.0
Failure to manage and control pain affect patient mobility	11	22.0	39	78.0
Proper nutrition and wound healing	40	80.0	10	20.0
Patients' non-compliance with wearing specially designed shoes	31	62.0	19	38.0
Depression and Anxiety PA	46	92.0	4	8.0
Using assistive devices	38	76.0	12	24.0
Regular monitoring of vital signs PA	31	62.0	19	38.0
safety hospital environment	47	94.0	3	6.0
Educating patients about safe methods of standing up and sitting down PA	26	52.0	24	48.0
Ignoring patient teaching regarding correct ways of standing and sitting	26	52.0	24	48.0
Accurate documentation of nursing procedures	45	90.0	5	10.0
Educating the family about how to assist the patient at home	34	68.0	16	32.0
Properly positioning the patient in bed and chair	44	88.0	6	12.0
Adhering to instructions on avoiding bending or rotating the limb after hip surgery	43	86.0	7	14.0
Total nurses' knowledge: - Satisfactory $\geq 75\%$ - Unsatisfactory $< 75\%$	21 29		42.0% 58.0%	



Table 4: Frequency, Percentage and Mean Distribution of Studied Nurses Total Attitude regarding Care of Patients undergoing Arthroplasty and Patients' Safety Measures (n=50).

Items	NO	%	Mean ±SD
Caring for Patients:			
Negative <75%	14	28.0	15.72±3.39
Positive≥75%	36	72.0	
Safety Measures for patients:			
Negative <75%	29	58.0	24.18±11.26
Positive≥75%	21	42.0	
Total Attitude:			
Negative <75%	31	62.0	39.78±13.04
Positive≥75%	19	38.0	

Table 5: Frequency Percentage Distribution and Mean $\pm$ SD of Studied Nurses' Total Practice regarding Patients Care Post Arthroplasty (n=50).

Items	NO	%	Mean ±SD
Immediate PA Care:			
Satisfied ≥75%	6	12.0	14.06±3.46
Unsatisfied <75%	44	88.0	
Ongoing Care:			
Satisfied ≥75%	0	0.0	7.78±2.11
Unsatisfied <75%	50	100.0	
Applying Cold Compression:			
Satisfied ≥75%	1	2.0	9.90±2.33
Unsatisfied <75%	49	98.0	
Performing Range of Motion Exercises:			
Satisfied ≥75%	21	42.0	9.30±0.70
Unsatisfied <75%	29	58.0	
Wound care:			
Satisfied ≥75%	14	28.0	25.26±2.80
Unsatisfied <75%	36	72.0	
Patients' Gait Assessment:			
Satisfied ≥75%	0	0.0	7.70±1.58
Unsatisfied <75%	50	100.0	
Pain Assessment:			
Satisfied ≥75%	0	0.0	3.88±0.68
Unsatisfied <75%	50	100.0	
Swelling Assessment:			
Satisfied ≥75%	13	26.0	8.56± 1.59
Unsatisfied <75%	37	74.0	

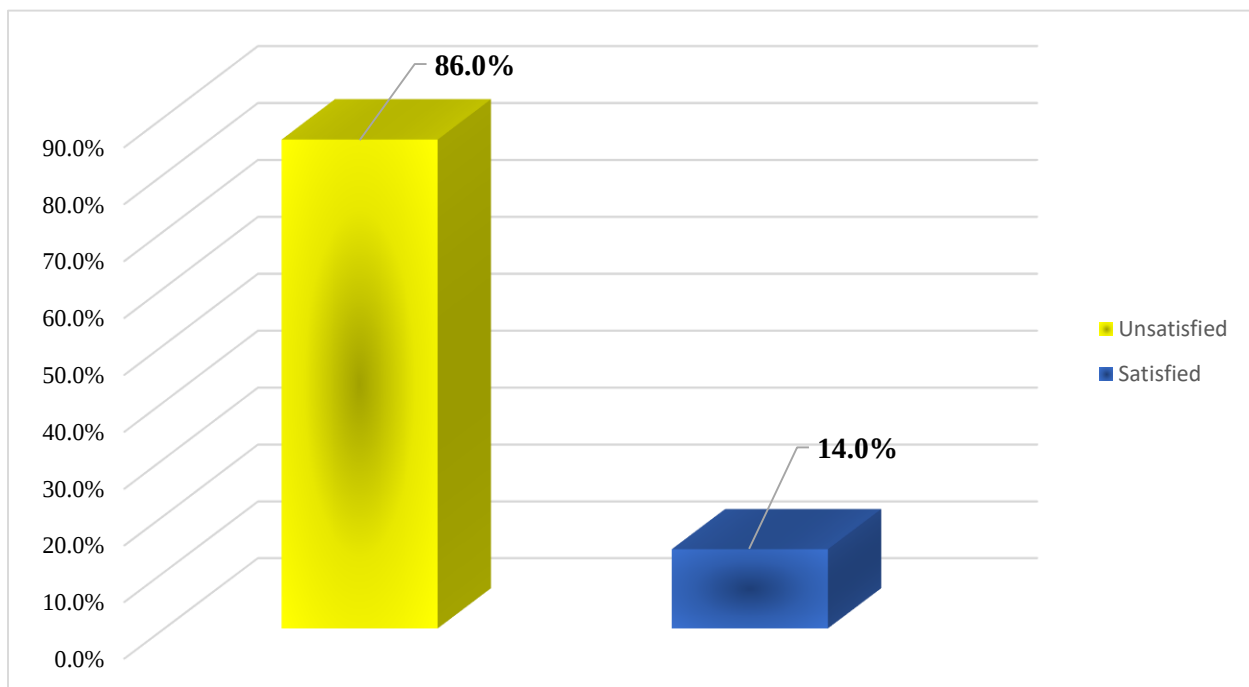


Figure 2: Percentage Distribution of Studied Nurses' Total Practices Regarding Care of Patients Post Arthroplasty (n=50).

Table 6: Frequency Percentage Distribution and Mean $\pm$ SD of Studied Nurses' Total Practices regarding Safety Measures Post Arthroplasty (n=50).

Items	NO	%	Mean ±SD
Fall preventive measures			
Satisfied ≥75%	0	0.0	13.56±3.06
Unsatisfied <75%	50	100.0	
Transferring safety measures			
Satisfied ≥75%	5	10.0	10.22±2.33
Unsatisfied <75%	45	90.0	
Environmental safety measures			
Satisfied ≥75%	3	6.0	8.14±3.28
Unsatisfied <75%	47	94.0	

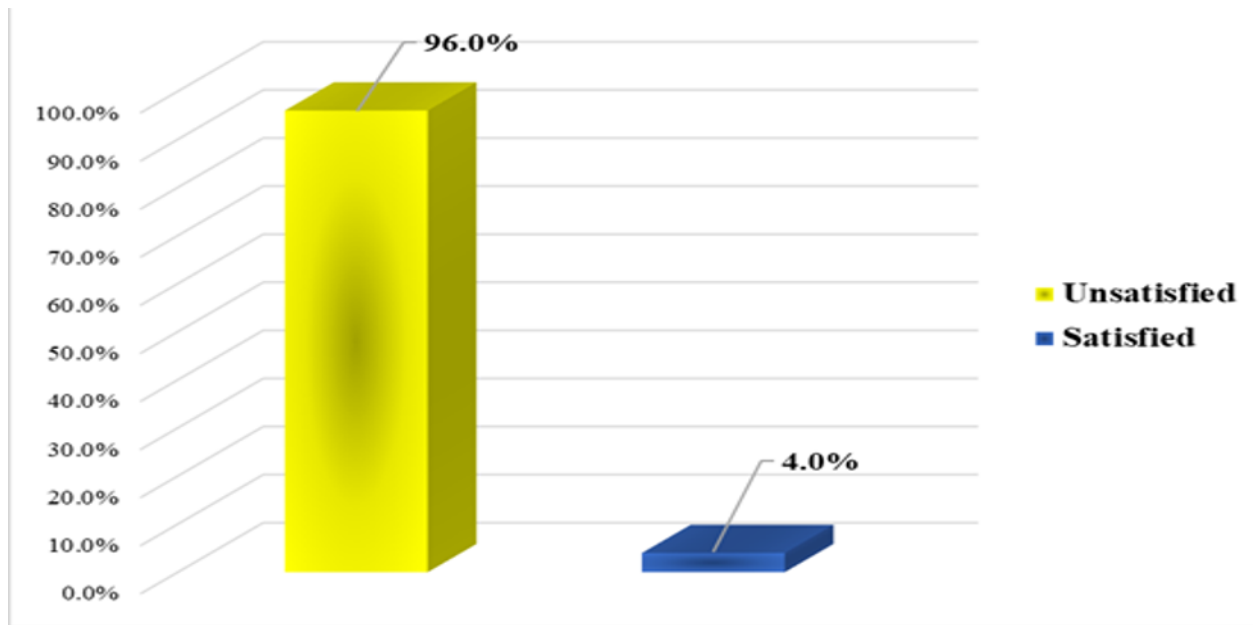


Figure 3: Percentage Distribution of Studied Nurses' Total practices regarding patients' safety measures post arthroplasty (n=50).

Table 7: Correlation Matrix Between, Studied Nurses' Total Scores for Knowledge of Patients' Care, Safety Measure Knowledge, Attitude, Practice and Practice of Safety Measure (n=50).

Items	Total Knowledge of Patients' Care		Total Safety Measure Knowledge		Total Attitude		Total Practice		Total Safety Measure Practice	
	r	P	r	P			r	P	r	P
Total Knowledge	-	-	.705	<0.001**	.548	<0.001**	.307	0.030*	.177	0.219
Total Safety Measure Knowledge	.705	<0.001**	-	-	.580	<0.001**	.265	.063	.702	<0.001**
Total Attitude	.548	<0.001**	.580	<0.001**	-	-	.271	.057	.312	0.027*
Total Practice	.307	0.030*	.265	.063	.271	.057	-	-	.110	0.448
Total Safety Measure Practice	.177	0.219	.312	0.027*	.271	.057	.702	<0.001**	.-	-

(r) correlation coefficient

*<0.05= statistically significant

**<0.001= highly statistically significant



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