# Evidence Based Practice for Maternity Nurses regarding Post-operative Nausea and Vomiting Using apfel's Score

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## Abstract

Post-operative nausea and vomiting (PONV) is the one of the most common adverse condition after surgery and can lead to other serious complications that need collaboration between nurse and physician for its prevention and treatment. **Aim:** This study aimed to evaluate the effects of Evidence Based Practice for Maternity Nurses regarding Post-operative Nausea and Vomiting Using apfel's Score. **Study design:** A quasi-experimental design (pre and post-test).**Study setting:** The study conducted at operating departments (main operating unit department, laparoscopic unit and operating rooms affiliated to labor unit) at Ain Shams University Maternity Hospital. **Sampling:** A convenient sample technique was used to recruit 54 nurses working at previous mentioned setting. **Tools of data collections** three tools were used; **I)** structured interview questionnaire sheet, **II)** maternity nurse practice Observational checklist regarding PONV risk screening using apfel's score, **III)** Nurse–physician collaborative scale (NPCS). **Result.** 13%, 85.2% and 81.5% of the studied sample had satisfactory level of total knowledge concerning post-operative nausea and vomiting pre, post and follow-up after one month respectively of implementation of evidence-based nursing practice **while** 5.6%, 81.5% and 79.6% of the studied sample had satisfactory level of total knowledge concerning apfel's score pre, post and follow-up after one month respectively of implementation of evidence-based nursing practice. **Moreover** 3.7%, 81.5% and 77.8% of the studied sample was competent regarding Apfel's score practice pre, post and follow-up after one month respectively. Also there is statistical significant improvement on total mean score of Nurse–Physician Collaboration scale post implementation of evidence based practice compared to pre-implementation. **Conclusion:** the current results supported the research hypotheses that evidence based practices improved maternity nurses' knowledge and practices regarding postoperative nausea & vomiting and its risk screening using apfel's score and also improved maternity nurses-physician collaboration regarding postoperative nausea and vomiting for women undergoing gynecological surgeries. **Recommendations:** The current study recommended that application of evidence based practice regarding postoperative nausea & vomiting and risk screening using apfel's score for maternity nurses as integral part in nursing care for women undergoing gynecological surgeries.

**Keywords**: Evidence Based Practice, Maternity Nurses, Post-operative Nausea and Vomiting, apfel's Score

## Introduction

Postoperative nausea and vomiting (PONV) refers to any nausea, vomiting or retching which occurs in the first 24–48 h post operation. Both are two of the most frequent adverse events in the post procedural period with an incidence of 20%–40% approximately of surgical patients after general anesthesia (GA) and increases as high as 80% among those who are at elevated risk factors. PONV is more insidious in female surgical patients than in male as females have more than a twofold greater probability of experiencing PONV. Therefore, PONV is a common side effect that women experience after gynecologic surgery **(Hailu et al., 2022).**

The occurrence of PONV can be a significant distressing experience. In addition, is related to potential patient dissatisfaction as well as a significantly longer stay in hospital or unanticipated hospital admission, further increase health care expenses due to the increasing need and use of resources, increase in nursing care delivery with added time and expenditures, increased cost of new and additional medications to treat the affected patient. Unfortunately, untreated PONV can lead to consequences such as dehydration, esophageal rupture, electrolyte imbalance, aspiration, pneumothorax, wound dehiscence, elevated intracranial pressure, and reduced quality of life or care. So, it is necessary

to determine cases at elevated risk early and manage PONV in a timely manner **(Jin, Gan, Bergese, 2020 & Niriella et al., 2022).**

Female sex, a history of PONV and/or motion sickness, nonsmoking status, young age, and particular types of surgery, such as laparoscopic or gynecological surgery, are all patient-specific risk factors for PONV in adults. PONV risk factors should be used to assess risks and guide PONV management. Some studies divided these factors into three categories patient، anesthetic, and surgical factors. Patient factors, including age, sex, medical history, BMI, past motion sickness, smoking and gastro paresis elevate the probabilities of experiencing PONV. Moreover, patients' age 6-16 years old is more predisposed to complain of PONV. Conversely, infants are the fewest affected population (5%). PONV incidences tend to decline reaching adulthood and its incidence is reduced to 13% for each ten year increase in age after 50 years old **(Kulkarni, Solanki, and Divatia,. (2021).**

The baseline risk of patients for PONV should be evaluated using a validated score based on independent determinants. The most frequent risk scores for inpatient undergoing surgery are the Apfel score that commonly clinically useful and most simplified risk screening score based on the evidence that have been displayed to reduce PONV rate and can be implemented in guide therapy. This score is based on four questions such as patient gender, non-smoker patient, history of PONV or motion sickness receiving post-surgical opioids. Each question answer "yes", will be scored 1 point, with a total of 4 points categorized into low (0-1), medium (2-3) or high (4) risk according to the frequency of risk factors ***(*Stephenson, etal*, 2021)*.**

"Evidence-based practice" (EBP) is the practice of applying professional expertise while also considering patient values and preferences when making clinical decisions. It describes the provision of high-quality patient care. EBP necessitates a mentality that regards evidence as an important component of excellent care, as well as a skill set that includes searching the literature, critical evaluation, synthesis, and reasoning to assess the relevance of evidence to present concerns **(Missi, et al., 2022 & Melnyk and Fineout-Overholt, 2022).**

Nurses' capacity to apply evidence successfully in practice is crucial for providing high-quality patient care. Evidence-based practice (EBP) is accepted as the gold standard for providing safe and effective patient-centered care. Evidence-based practice was created to give nurses and practitioners with a complete and up-to-date approach to risk stratification, prevention, and treatment of PONV in women. The guideline also gives information on how to treat PONV within enhanced recovery pathways. PONV is a factor of quality care and patient satisfaction, which are important components influencing organizational reimbursement **(Yetneberk, et al., 2020)**

Additionally, reduce risk factors through ensure that the patient fasts 6-8 hours before the operation, observe vital signs and avoid hypoxia or hypotension, replenish the body with fluids and avoid dehydration, avoid feeding too early in the post-operative period to reduce the patient's fear. Furthermore, recommend the patient to take a sip of fluids two hours after surgery, and fluids should be drunk gradually, starting with warm water, avoid drinking acidic juices such as: orange, grapefruit, and lemon, because they increase the feeling of nausea and the desire to vomit, giving treatment according to the doctor's orders, and provide comfort measures **(Ma et al., 2019).**

Treatment and prevention of PONV requires a multidisciplinary team as the anesthesiologist, surgeons, and nurses. Nurses play a major role in preventing nausea and vomiting after surgeries. Prevention is more beneficial than waiting until symptoms appear to begin treatment. The nurse assists the patient in regaining her health, as postoperative nausea and vomiting have a negative impact. It is complex, has established risk factors, is easier to avoid than treat, and has a large negative impact on patient satisfaction, healthcare expenses, and lengths of stay. Nurse care providers should focus on prevention, rule out more severe causes or comorbidities, and act within their systems to reduce its prevalence in this patient population. **(Hailu, et al., 2022).**

**Significant of the Study**

There is no precise information on the global prevalence of PONV, individual research indicate the incidence of PONV is even higher especially after gynecologic surgery. A higher PONV was

found in Uganda (40.7%), Nigeria (41%), Tanzania (41.4%), Ghana (34%), and South West Ethiopia (27.4%), as revealed by Obsa et al., (2020). But in Egypt, there is no clear incidence **(Ibrahim, et al., 2020).**

PONV is a typical side effect that women have after gynecologic surgery. PONV has the potential to cause numerous undesired physical, psychological, and economic difficulties. Some patients may only experience a little delay in discharge; others may experience life-threatening complications such as pulmonary aspiration, dehydration, increased intracranial/intraocular pressures, esophageal rupture, and wound dehiscence. Anxiety, sadness, shame, embarrassment, and even fear of future surgery are all possible psychological repercussions. Economic difficulties necessitate an overnight stay, increasing costs for both patients and the institution due to probable overtime for staff. Its prophylactic treatment should be determined on the patients' risk. Therefore, risk evaluation is crucial to prevent postoperative nausea and vomiting **(Majors, 2021).**

The management strategy for PONV should include the evaluation of risk factors, interventions of risk reduction, prophylaxis, and rescue management. so that identifying subjects who are at risk of experiencing symptoms following surgery is the first step in this process. An increased emphasis on early mobilization and release following minor and major surgical procedures. Therefore, the care of PONV should be customized to the patient's risk level using established PONV risk-scoring systems to encourage cost-effective measures and decrease the potential for serious side effects due to drug interactions in the preoperative period **(Elvir-Lazo et al., 2020).**

Nurse role is an important role for prevention of PONV and its complications throughout using risk assessment by hazard identification, hazard associated risk evaluation (risk analysis, and evaluation). The determination of the appropriate methods to eradicate the hazard, or risk control by controlling the risk when the hazard cannot be eradicated. Moreover, there were very limited studies related to nursing practices regarding to the PONV and its risk screening. Also there were no adequate studies related to nurse –physician collaboration especially in maternity field. So that it is important to use evidence based nursing guideline regarding nausea and vomiting risk screening to improve maternity nurses' knowledge and practice **(Teshome et al., 2020).**

## Objective

To identify the effects of Evidence based practice for maternity nurses regarding post-operative nausea and vomiting using apfel's score through:

1- Assess maternity nurses' knowledge and practices regarding post-operative nausea & vomiting and its risk screening using apfel's score for women undergoing gynecological surgeries.

2- Assess the maternity nurse–physician collaboration regarding post-operative nausea & vomiting and its risk screening using apfel's score for women undergoing gynecological surgeries.

3- Implement evidence based practices for maternity nurses regarding post-operative nausea &vomiting and its risk screening using apfel's score for women undergoing gynecological surgeries.

4- Assess the influence of the evidence based practices on maternity nurses' knowledge and practice regarding post-operative nausea & vomiting risk screening using apfel's score for women undergoing gynecological surgeries.

5- Evaluate the effect of the evidence based practices on maternity nurses-physician collaboration regarding post-operative nausea & vomiting for women undergoing gynecological surgeries.

### Research Hypotheses

1- Implementation of Evidence based practices will improve knowledge and practices of post-operative nausea & vomiting risk screening using Apfel's score.

2- Implementation of Evidence based practices will improve maternity nurses-physician collaboration regarding PONV for women undergoing gynecological procedures.

## Subjects and Methods

**Study design:** A quasi-experiment (pre and post-test).

**Study setting:** At operating departments (main operating unit department, laparoscopic unit and operating rooms affiliated to labor unit) of Ain-Shams University Maternity Hospital. As it is one of the largest educational and governmental hospitals that servant many districts. So the maternity nurses deal with a large number of women undergoing to gynecological surgeries from different sectors. Therefore the researcher chose this setting.

**Sampling:** A convenient sample technique was adopted to recruit 54 nurses (all nurses) working at previous mentioned setting. Distributed as following operating theater (30) nurses, laparoscopic unit (8) nurses and operating room affiliated to labor unit (16) nurses of Ain Shams University Maternity Hospital.

**Tools**

***I: A structured interview questionnaire sheet named*** **"**Maternity nurses' knowledge regarding post-operative nausea & vomiting and its risk screening using apfel's score for women undergoing gynecological surgeries"***:*** It was divided into 3 parts:

**Part (1):** this part assessed nurses' general characteristics as; age, residence, educational level (grade) and years of experiences. It included 4 multiple choice questions. The questions from (Q1-Q4) and take 5 minutes to fill it by nurses.

**Part (2):** assessed nurses' knowledge regarding post-operative nausea and vomiting it was adapted from **Yetneberk, et al. (2020).** It consists of 20 statements (true and false questions from Q5 to Q24) as definition of post-operative nausea and vomiting, causes, risk factors, complications, prevention and therapy etc….. It takes around 15 minutes to fill it by nurses.

**Scoring system:** The nurses' knowledge was scored as; 2 points were given for the correct answer and 1 for incorrect one. The overall score will be 1-40. The overall score will be sum and converted into two categories as:

- Satisfactory knowledge: ≥ 75% (30-40 score).
- Unsatisfactory: < 75% (20-29 score) of total score.

**Part (3):** assessed nurses' knowledge regarding Apfel's score it was adapted from **Bilbao, (2022**) it takes around 10 minutes to fill it by nurses and included 10 multiple choice questions (Q25-Q35) as what is Apfel's score, indication of Apfel's score, four questions of Apfel's score such as patient gender, the patient a non-smoker, patient have a history of PONV/ motion sickness, the patient receiving post-operative opioids, and categories of Apfel's score into low (0-1), medium (2-3) or high (4) risk based on the number of risk factors etc….

***Scoring system:*** The nurses' knowledge was scored as; correct answer received 2 points, whereas incorrect one received one point. The overall score was 1-20. The overall score will be sum and converted into two categories:

- Satisfactory: ≥ 75% (15-20 score).
- Unsatisfactory: < 75% (10-15 score).

**II:** Observational checklist **to observe** maternity nurses' practice regarding PONV **risk screening using** Apfel's score**: it was adapted from** Robynn Choy et al; (2022) and Darvall, et al (2021) the checklist takes around 10 minutes to fill it by researcher and consisted of 11 steps as (take complete history for women undergoing gynecological surgery, assess risk factors for women before gynecological surgery to prevent PONV, assess patient for PONV risk factors by Apfel's score**,** categized patient risk for PONV into low (0-1), medium (2-3) or high (4) risk based on the number of risk factors etc…..**.**

***Scoring system:*** Score (3) was given for done, score (2) for incomplete done and score (1) for not done. The total score will be ranged from (11-33).The total score will be sum and converted into two categories as the following:

- Competent Practice ≥ 90% (29.7-33 score).
- Incompetent Practice: < 90% (11-29.6 score).

**Tool III: Nurse - physician collaborative scale (NPCS): It** was adopted from **Endris, etal (2022)** to assess the nurse–physician collaboration regarding post-operative nausea and vomiting and its risk screening

for gynecological surgeries. The Scale takes around 20 minutes to fill it by nurses and contains 27 items divided into three subscales: sharing patient information contains 9 items, decision-making process contains 12 items and the relationship between nurse and physician contains 6 items.

***Scoring system:*** The nurse–physician collaboration (NPCS) item score from five Likert scales (1=Never, 2= rarely, 3= Sometimes, 4=usually, and 5=Always). NPCS overall score was calculated by adding each individual's scores out of the total. The NPC's overall score was calculated by summing all 27 items out of 135. The higher mean score indicates a higher level of nurse–physician collaboration. The total score will be sum and converted into two categories as the following:

- Good collaboration: ≥ 85% (114.7-135 score).
- Poor collaboration: < 85% ( 27- 114.6 score).

**Supportive material (Evidence based practices booklet regarding PONV and its risk screening using Apfel's score):(Hooper,2016)** was established by the researcher for nursing evidence-based practices about nausea and vomiting risk screening using (Apfel's score) for post gynecological surgeries, and the importance to improve maternity nurses' collaboration with physician regarding PONV risk screening for women undergoing gynecological surgeries. The evidence-based practice booklet was manufactured in Arabic language and supplemented with various illustrative images to aid comprehension. It comprised two main sections: The first section covered fundamental aspects of post operative nausea & vomiting, including its definition, risk factors, classification, causes, complications, , preventive measures, and nursing and medical treatment and importance of nurse – physician collaboration for proper treatment . The second section focused on practices related to PONV risk screening using Apfel score

**Preparatory phase**

During which related literature was reviewed

As well as the theoretical knowledge of different aspects using articles, books, magazines and internet periodicals.

**Validity& Reliability**

A group of three experts from maternity and gynecological nursing department at faculty of nursing, Ain-Shams University assessed tools' validity for accuracy, comprehensiveness and clarity of language.

Internal consistency was assessed via Cronbach's Alpha test. It was for the structured interview questionnaire sheet (0.88), Observational checklist (0.90) and nurse–physician collaborative scale (0.91).

**Ethical consideration:**

Ethical approval was secured from the Scientific Research Ethical Committee of faculty of Nursing / Ain Shams University before the pilot study. In addition to, each subject delivered written informed consent, researchers assured the study was harmless, confidentiality and anonymity for the subject and the right to withdraw from the study at any time.

**Administrative Design**

The dean of the Faculty of Nursing Ain Shams University, provided study approval for data collection upon receiving letter of the title and the objective of the research.

**Pilot study**

It was applied on 10% of the study sample (6) nurses to test the clarity and applicability of data collection tools and time needed to fill it. No alteration was performed in the tools so nurses involved in the pilot study were enrolled in main sample.

**Field work**

The study beginning at August 2023 and concluded in December 2023, elaborating duration of four months. The research was established through four phases; preparatory, assessment, implementation, and evaluation phase. The study settings were visited by the researchers three days/ week at 9.00 am-1.00 pm, and meet the nurses in the staff room

**Preparatory:**

It involved meticulous and extensive reviewing of related literature. This process enabled the researcher to gain familiarity with the scope, guiding the development of necessary data collection tools and the creation of educational material.

The evidence based practices was manufactured in Arabic language and supplemented with various illustrative images to aid comprehension. It comprised two main sections: The first section covered fundamental aspects of post-operative nausea & vomiting, including its definition, risk factors, classification, causes, complications, preventive measures, and nursing & medical treatment. Adding to importance of nurse – physician collaboration for proper treatment. The second section focused on practices related to PONV risk screening using apfel score.Top of Form

**Assessment:**

The researcher will introduce herself to the subjects. The researchers will explain the research objective, reassure the subjects. Then verbal & written consent of maternity nurses will be obtained. The researcher will meet every participant individually in nursing room in operating department. The researchers start to assess nurses' characteristics, and nurse's knowledge about post-operative nausea & vomiting and their knowledge regarding apfel's scale by using tool (I). Then assessed the practices by using tool (II) that filled by the researcher. Finally using tool (III) to assess nurse–physician collaboration regarding PONV and its risk screening for women undergoing gynecological surgeries as a baseline data

**Implementation phase:**

The content of the initial two sessions focused on augmenting knowledge pertaining to PONV. Subsequently, the third and fourth sessions were dedicated to addressing

Implementation done in four sessions each session took about 20-25 minutes. At the start of the **first session**, an orientation held regarding the components of evidence based nursing practices, their purpose for nurses' practice. Nurses were categorized into categories; each one will be involve 3-5 nurses. Simple language was used and at the end of session, a summary was provided.

The evidence based nursing practices applied in two sessions, **second session** concerned with providing the nurses with essential knowledge about nausea and vomiting post gynecological surgeries as definition, risk factors, complications, prevention and nursing and medical treatments and importance of nurse – physician collaboration for proper treatment. While the **third session** includes nursing evidence based practice about PONV risk screening using apfel score that based on 4 parameters: female gender, PONV history and/ or motion sickness, nonsmoking, and use of post-surgical opioids. Then classifies women into three groups as 0–1, 2, or 3-4 risk factor into "low," "medium," and "high" risks, respectively; the explanation done using a lecture and discussion and role play as a methods of teaching. Each session took about 20-30 minutes.

The **fourth session** addressing the importance of the nurse–physician collaboration in managing PONV and risk screening for women undergoing gynecological surgeries. Through sharing patient information, decision-making process between nurse and physician and Relationship between nurse and physician

**Phase III**: (*evaluation and follow-up*): The researcher will evaluate the effect of evidence based nursing practice regarding PONV and its risk screening on maternity nurses' knowledge, practice and on the nurse–physician collaboration regarding PONV risk screening immediately after completing the nursing evidence based practices and after one month by using the pre constructed tools to measure the change in maternity nurses' knowledge, practice and nurse–physician collaboration against the baseline .

**Statistical design:** The collected data was revised, coded, and entered using a personal computer (PC). Data entry and statistical analysis was done using the Statistical Package for Social Sciences (SPSS) version 25.data analyzed using t test, Chi square test, fisher exact test and spearman 's correlation test

## Results

**Table (1):** Reveals that 31.5% of the studied sample their age ranged between 40 – 49 years old, the mean age was 42.88 ±3.58 years. Also,

87.0% of them live in urban areas. Moreover, 53.7% of them had ≥ 15 years of experiences with mean 14.76 ± 4.86 years.

**Figure (1):** Displays that 50.0% of the studied sample had nursing diploma. While, 13.0% of them had bachelor of nursing.

**Figure (2):** Points out that 13% of the studied sample had satisfactory level of total knowledge score concerning post-operative nausea and vomiting pre implementation of evidence-based nursing practice which changed to 85.2% of them post implementation of evidence-based nursing practice and 81.5% of them after one month of implementation

**Figure (3):** Indicates that 5.6% of the studied sample had satisfactory level of total knowledge score concerning apfel's scale pre implementation of evidence-based nursing practice which changed to 81.5% of them post implementation of evidence-based nursing practice and 79.6% of them after one month of implementation.

**Figure (4):** shows that, 3.7% of the studied sample was competent regarding practice towards Apfel's score pre implementation of evidence-based nursing practice which changed to 81.5% post implementation of evidence-based nursing practice and 77.8% after one month of implementation

**Table (2):** Discloses that there is statistical significant improvement on total and subtotal mean score of Nurse–Physician Collaboration Scale post implementation of evidence based practice compared to pre-implementation.

**Table (3):** Clarify that, there were highly statistical significant positive correlation between studied nurses' knowledge, practice, and nurse physician collaboration regarding PONV using Apfel's risk screening score post implementation of evidence-based nursing practice ( $p < 0.001$).

**Table (1):** Frequency of The Sample regarding Their Characteristics**(n=54).**

| **Characteristics** | **No.** | **%** |
|---|---|---|
| **+Age (years)** | | |
| 20- | 10 | 18.5 |
| 30 - | 16 | 29.6 |
| 40 - | **17** | **31.5** |
| 50 - | 11 | 20.4 |
| **Mean ± SD** **42.88± 3.58** | | |
| **Residence** | | |
| Rural | 7 | 13.0 |
| Urban | **47** | **87.0** |
| **Years of experiences** | | |
| 1 - | 15 | 27.8 |
| 5 - | 2 | 3.7 |
| 10 - | 8 | 14.8 |
| ≥ 15 | **29** | **53.7** |
| **Mean ± SD** **14.76± 4.86** | | |

**N.B: The last nurses' age to work is 60 because it is the retirement age in Egypt**

**Figure (1):** Percentage distribution of the studied sample according to their educational level **(n=54).**

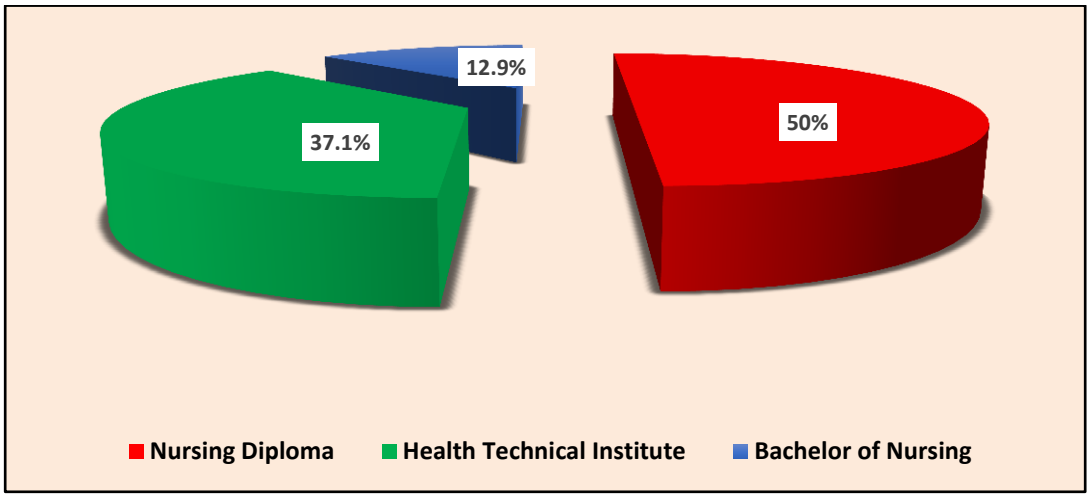
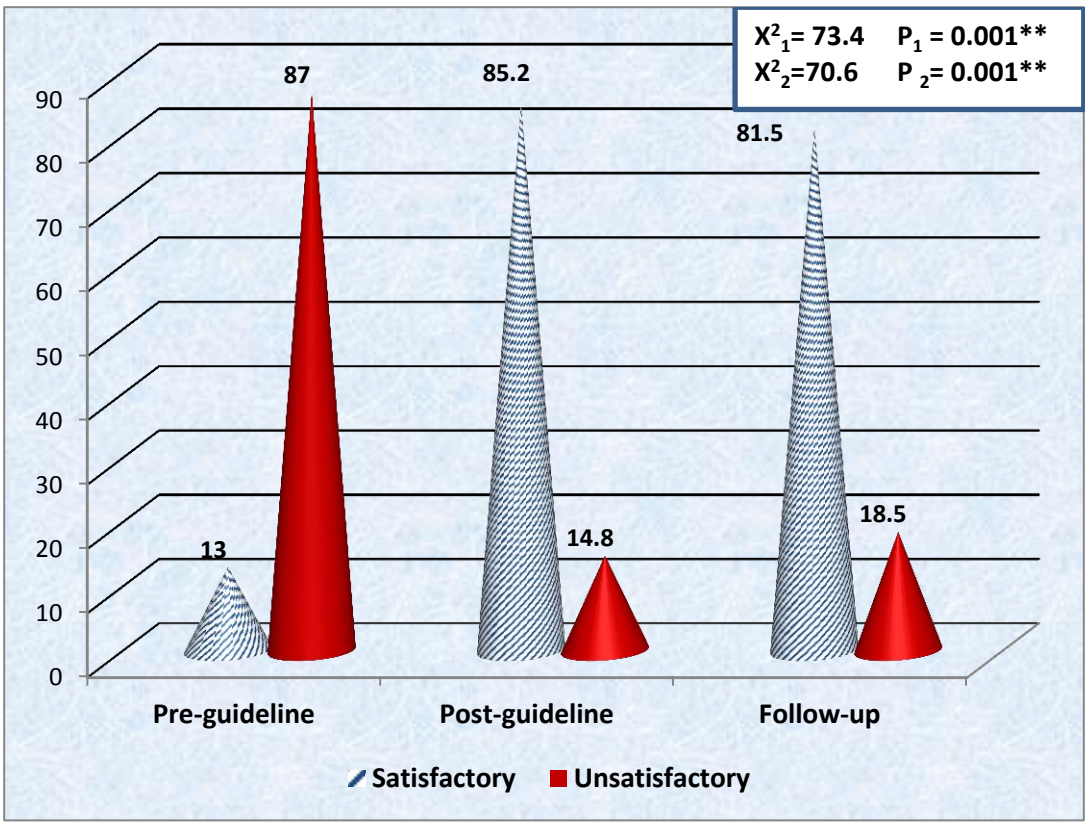



**Figure (2):** Proportion distribution of total sample' knowledge score concerning post- operative nausea and vomiting at pre, immediate post and follow-up intervention of evidence-based nursing practice (n=54).

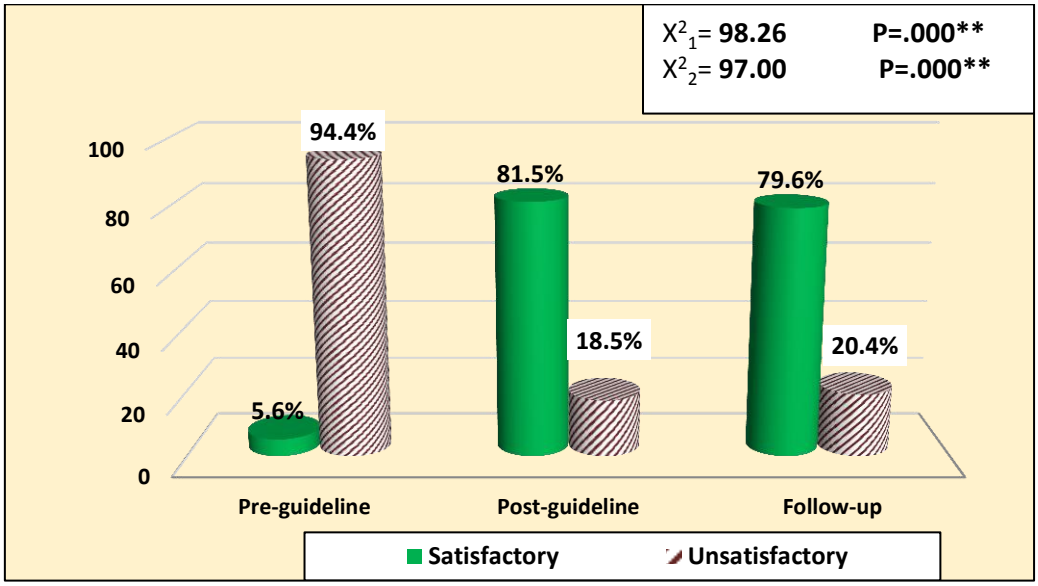



**Highlysignificantatp‹0.001.

**P1:**p value for comparison between **pre and post** intervention.

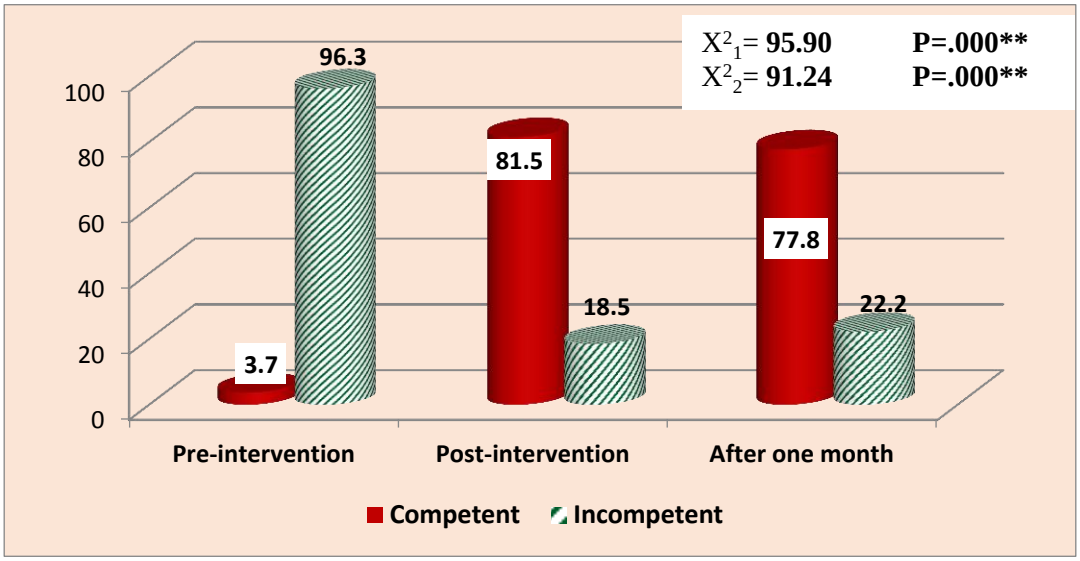
**P2:** For comparison between the **pre and Follow-up** intervention

**Figure (3):** Distribution of overall score of knowledge of the sample concerning apfel's scale at pre, immediate post and follow-up intervention of evidence-based nursing practice **(n=54)**.




**Highly significant at p ‹ 0.001.
**$P_1$:** for comparison between **pre and post**intervention.
**$P_2$:** for comparison between the **pre and Follow-up**intervention.

**Figure (4):** Distribution of total practice of the sample regarding Apfel's score at pre, immediate post and follow-up implementation of evidence-based nursing practice **(n=54)**.




**Highly significant at p ‹ 0.001.
**$P_1$:** p value for comparing between **pre and post** intervention.
**$P_2$:**p value for comparing between the **pre and Follow-up** intervention.
**$P_3$**: p value for comparing between **post and Follow-up** intervention.

**Table (2):** Comparison between Mean Score of Studied Sample regarding Nurse–Physician Collaboration Scale (NPCS) Pre and Post implementation of Evidence Based practice.

| NPCS subscale | Pre- evidence based practice | Post- evidence based practice | T test | P value |
|---|---|---|---|---|
| | $\bar{X}$ ± SD | $\bar{X}$ ± SD | | |
| Shared patient information | 22.51 ±2.23 | 28.64 ±5.05 | 10.64 | 0.002** |
| Decision making process | 9.41 ± 1.19 | 12.07 ± 2.23 | 11.68 | 0.002** |
| Relationship between nurse and physician | 10.78 ±1.23 | 12.57 ±1.82 | 8.97 | 0.001** |
| Total | 42.50 ± 5.05 | 53.74 ± 9.20 | 14.58 | 0.003** |

**Figure (5):** Percent distribution of the studied sample according to maternity nurse–physician collaboration scale pre & post implementation of evidence based practice

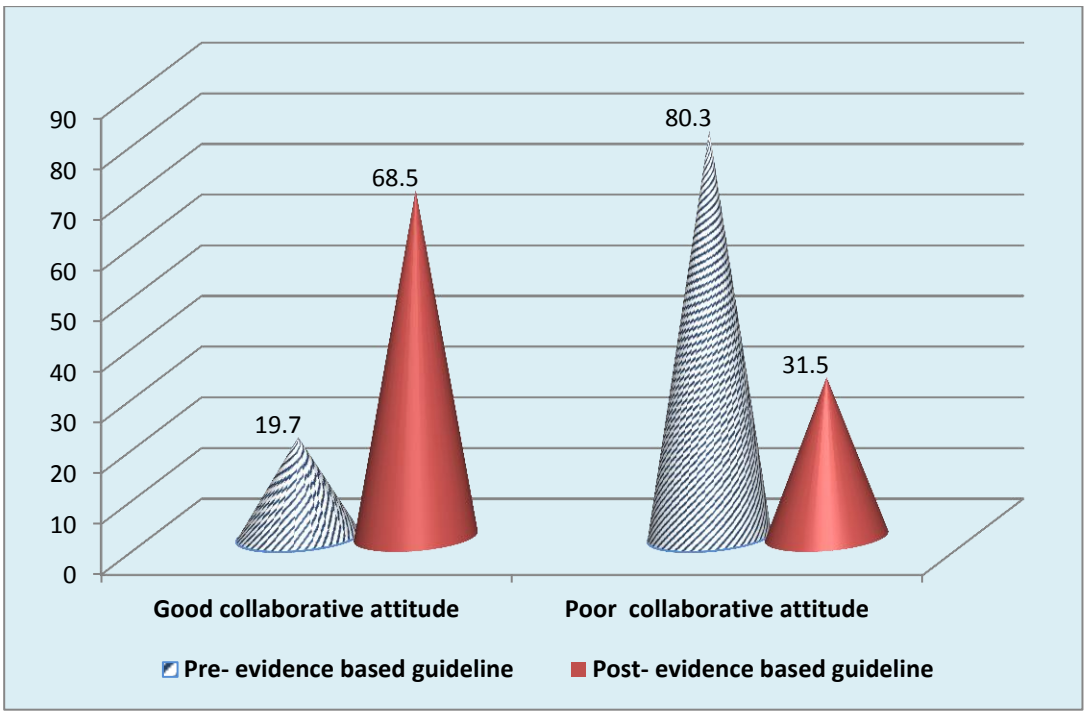



**Table (3):** Correlation between total score of the studied nurses' knowledge, practices, and total collaborative attitude score(post the implement of evidence-based practice) (N=54).

| | | Total knowledge score | Total practice score | Total nurse physician collaboration score |
|---|---|---|---|---|
| **Total knowledge score** | R | | 0.83 | 0.78 |
| | p-value | | 0.001* | 0.001* |
| **Total practice score** | R | 0.83 | | 0.88 |
| | p-value | 0.001* | | 0.001** |
| **Total nurse physician collaboration score** | R | 0.78 | 0.88 | |
| | p-value | 0.001* | 0.001* | |

r-Pearson Correlation Coefficient.

*p-value <0.05 significant correlation; **p-value <0.001 highly significant

## Discussion

Nausea and vomiting after surgery are not only uncomfortable, but it can also slow return to normal eating and drinking. Vomiting is a more serious concern due to the rapid loss of body fluids and the physical stress it can place on incisions, particularly those around the abdomen . prolonged nausea and vomiting can result in physiological complications, psychological changes and social difficulties that could have short- or long-term consequences for health. The most frequent and severe effects include dehydration, nutritional deficiencies and electrolyte and acid-base imbalance. **(AT A GLANCE, Claire Ford, Laura J Park, 2020).**

Concerning to general characteristics of the study sample this study revealed that, slightly less than one third of the studied sample their age ranged between40 – 49 years old, with the mean age 34.88 ± 9.58 years. Also, most of them live in urban areas. Moreover, half of them had ≥ 15 years of experiences with mean 14.76 ± 4.86 years. This result disagree with (**Gözde Filizli and Ebru Önler(2020)** who studied Nurse-physician collaboration in surgical units and found that The average age of the nurses was 27.490 ± 3.881,. moreover, most nurses (n = 81, 62.8%) had 4–6 years of job experience. From my side of view this difference may be due difference of sample type as half of the study sample their academic experience were nursing diploma and they are hiring from a long period ago (≥ 15 years of experiences).

Regarding to total knowledge level concerning post-operative nausea and vomiting the current result pointed out that slightly more than one tenth of the studied sample had satisfactory level of total knowledge score concerning post-operative nausea and vomiting pre implementation of evidence-based nursing practice which changed to most of them had satisfactory level post implementation of evidence-based nursing practice and after one month of implementation.

This agreed with **Donna Dolezal ,etal (2023)** who studied Reduction in post-operative nausea and vomiting using nurse led initiative and mentioned that nurse knowledge of evidence based strategies for the management of postoperative nausea and vomiting such as risk assessment using Apfel scoring ,aromatherapy fasting preoperative , PC6 acupressure , hydration ,showing gum and use of multimodal antiemetic medication . increased from 67% pre to 81%post guidelines from my prospective this support that adoption of evidence based practices awareness and training is very important as they improve nurse's knowledge that in turn reflects on their practices also may have contributed to reduced PONV and also reduce variance in its management between nurses,

This disagreed with **Yewlsew Fentie Alle, et al. (2021)** who studied Factors associated with knowledge towards postoperative nausea and vomiting management among health professionals in referral Hospitals of Northwest Ethiopia. A multi-center cross-sectional study and found that more than half of health care professionals who are working in the perioperative sites of the referral hospitals had good knowledge about the PONV management. As they are taking in-service training on PONV management were significantly affecting their knowledge level of health professionals on PONV management. From my side the physicians took in service training more than nurses therefore providing regular in-service training on PONV management, is highly recommended given especially to nurses who has an important role in preventing and managing PONV and in other way improve nurse-physician collaboration to work as vital member in a multidisciplinary team with woman undergoing to gynecological surgeries.

Regarding to total knowledge level concerning Apfel's scale the current result illustrated that only less than one tenth of the studied sample had satisfactory level of total knowledge scale concerning Apfel's score pre implementation of evidence-based nursing practice which improved to most of them were had satisfactory knowledge post implementation of evidence-based nursing practice and more than three quarter of them were had satisfactory knowledge after one month of implementation.

This findings disagreed with **leni Alejo et al, (2022)** who studied Will Apfel score awareness among care givers improve (PONV) incidence and management in day surgery . and found that most of them has knowledge regarding Apfel's score from my side such difference may due to difference of study sample as they realized

that use of Apfels score may guide nurses and physician towered earlier and more effective PONV management or may be due to lack of evidence based practices related to post-operative risk assessment between my study sample that may be due to their difficulties in English to find the best evidence as have of them had nursing diploma education

This agreed with **A. H. Dagne, et al. (2021)** who studied "Implementation of evidence-based practice and associated factors among nurses and midwives working in Amhara Region government hospitals: a cross-sectional study revealed 34.8% of nurses and midwives practice evidence based practice. From my point of view this similarity may be due to lack of training about evidence based practices because of lack of time needed for training or resistance to change of nurses.

This findings agreed with **Stephanie Keeth , Ellen D'Errico ,and Andrea M Champlin (2020)** who studied A Nurse-Led Evidence-Based Practice Protocol to Reduce Postoperative Nausea and Vomiting in the Bariatric Surgery Patient, and found that Clinically significant PONV The nurse-led creation and implementation of evidence based practice may have contributed to reduced PONV, and reduced provider variability in care management.

This findings agreed with **Sinem Gecit, Turkan Ozbayir (2020)** who investigated Evaluation of preoperative risk Assessment and postoperative nausea and vomiting importance for nurses,. and stated that PONV risk score should be evaluated by nurses and health care providers in preoperative period from the researchers point of view it is important to involve risk screening in nursing planning to identify the patient at risk, prevent great complications as well as decrease hospitalization period and prior decrease in extra cost.

This findings were in contrast with a study done by **leni Alejo et al. (2022)** entitled" Will apfel score awareness among care givers improve (PONV)incidence and management in day surgery" , found that most of studied sample has knowledge regarding apfel's score, this difference may be due to differences in study sample characteristics between two studies as half of our study sample had nursing diploma education and they may have difficulties in English to find the best evidence stated in English references.

Regarding to total practices level concerning Apfel's scale the current result mentioned that, only about three percent of the studied sample was competent regarding practice towards Apfel's score pre implementation of evidence-based nursing practice which changed to most of them became competent post implementation of evidence-based nursing practice and three quarter of them after one month of implementation became competent. from my point of view this reveals that the evidence-based practice was effective

This results agreed with **Robynn Cho, et al. (2022)** who found a significant positive correlation between Apfel Simplified Risk Score and PONV onset in the post-group (rs=0.21, *P*=.0428).

Moreover this result was in consistent **with Hans – Jorg Gillmann, et al. (2019)** who found that adherence to PONV guidelines recommendations was considerably low, with (26%) of patients receiving insufficient PONV prophylaxis and 23% of cases were discharged with insufficient PONV prophylaxis . from my point of view this confirming the great need to increase care givers especially nurses in crevice training about PONV prophylaxis through using apfel score for improve their quality of care delivered and patient satisfaction.

As regard to Nurse–Physician Collaboration this study Disclosed that there was significant improvement on total and subtotal mean score of Nurse–Physician Collaboration Scale post implementation of evidence-based practice compared to pre-implementation. This illustrated that the evidence-based practice was effective regarding the convincing and explaining the importance of collaboration between nurse and physician for PONV management. despite there were improvement but also near to one third of the study sample still have poor Nurse-physician collaboration from my side this may be because of poor physician's collaboration as some physicians refuse nurse collaboration as they have feeling of dominant authority in patient care.

This came in the same line with **Gözde Filizli,and Ebru Önler (2020)**who found that Physicians have the common self-perception

that they are still the dominant authority in patient care. This shows that physicians in the sample category may not yet feel comfortable interacting with nurses in the surgical context.

This in accordance with **Yimer Endris, etal (2022)** who revealed that inter-professional collaboration among physicians and nurses was 44.2%. That mean collaboration was low. So that from my point of view training on the importance of health teamwork, organizational support, timely monitoring and professional empowerment towards a favorable attitude of inter-professional collaboration is very important in such field of critical care (operating department) as they all work as a one team so it is most integral part not only in providing good care but also low complication and risks for patient and increase team satisfaction

Additionally, this work Clarified that, there were highly statistical considerable positive correlation between nurses' knowledge, practice, and nurse physician collaboration regarding post-operative nausea and vomiting using Apfel's risk screening score post implementation of evidence-based nursing practice ( $p< 0.001$). from my perspective this probably because gaining new knowledge increase nurses awareness and expand their critical reasoning and practical skills that gives them self-confidence and reflects on their way of thinking, capabilities to involved in team work and increase their professionalism as care provider in multidisciplinary team

This matches with Ibrahim Saleh Al-Busaidi, etal (2019) who investigate Nurses' Knowledge, Attitudes, and Implementation of Evidence-based Practice in Oman: A Multi-institutional, Cross-sectional Study, and found that there was potential positive associations between knowledge ($rs = 0.145$, $n = 198$, $p = 0.041$), practice ($rs = 0.172$, $n = 198$, $p = 0.015$), and attitudes ($rs = 0.158$, $n = 197$, $p = 0.026$) mean scores.

Moreover, these results was similar with **Adamu Ambachew Shibabaw , etal,(2023**) who showed that health professionals' knowledge was potentially associated with EBP implementation. as good EBP was 1.91 fold higher among those with good EBP knowledge compared to professionals with poor knowledge. Likewise, professionals who had knowledge were more prone to display evidence-based practice than those who did not have knowledge. The reason behind such similarities might be due to the association between knowledge and practice, as the chance of exercising something after knowing it is better in most circumstances when applying evidence-based practice. From my prospective such similarity may be due to more half of them had $\geq$ 15 years of work experiences as work experience increasing professionalism that enhance their knowledge and practices and in turn promote teamwork and multi-disciplinary approach that reflected on nurse - physician collaboration.

In conclusion, this study confirmed important fact concerning the valuable impact of implementing evidence-based practice on maternity nurses such method improved nurses' knowledge and practice in delivering high quality safe care as well as enhance nurses- physician collaboration in minimizing many health hazards because it is recognized as the gold standard for the delivery of safe and effective patient-centered care also it was developed to provide nurses with a comprehensive and up-to-date, evidence-based practice on the risk stratification, prevention, and treatment.

## Conclusions

This study concluded that implementing evidence-based practice improved maternity nurses' knowledge and practices regarding postoperative nausea & vomiting and its risk screening using Apfel's score and also improved maternity nurses-physician collaboration regarding PONV for women undergoing gynecological surgeries. these results supported research hypotheses.

## Recommendations

- This research recommended that application of evidence-based practice regarding postoperative nausea & vomiting and risk screening using Apfel's score for maternity nurses as integral part in nursing care plan for women undergoing gynecological surgeries.
- Increase awareness for nurses regarding the importance and professional empowerment towards a nurse–physician collaboration.

- Further research is still needed to assess the effect of implementing evidence based practices on other aspects of nurses competences in other related patient health issues.

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