

## The Magnitude of Postoperative Nausea and Vomiting: A Descriptive Study in Rajshahi Medical College Hospital, Bangladesh

Kundu, S. R<sup>1</sup>, Islam, H<sup>2\*</sup>, Kundu, S. K<sup>3</sup>, Rahman, M. M<sup>4</sup>, Khatun, M. K<sup>5</sup>

<sup>1</sup>Dr. Sampa Rani Kundu, Assistant Professor, Department of Gynecology & Obstetrics, Rajshahi Medical College & Hospital, Rajshahi, Bangladesh

<sup>2</sup>Dr. Md. Habibul Islam, Assistant Professor, Department of Anesthesia, Rajshahi Medical College & Hospital, Rajshahi, Bangladesh

<sup>3</sup>Dr. Samiran Kumar Kundu, Assistant Professor, Department of Anesthesia, Rajshahi Medical College & Hospital, Rajshahi, Bangladesh

<sup>4</sup>Dr. Md. Mostafizur Rahman, Assistant Professor, Department of Anesthesia, Rajshahi Medical College & Hospital, Rajshahi, Bangladesh

<sup>5</sup>Dr. Mosammat Khadiza Khatun, Junior Consultant, Department of Gynecology & Obstetrics, Upazilla Health Complex, Rajshahi, Bangladesh

DOI: [10.36347/sjams.2022.v10i11.015](https://doi.org/10.36347/sjams.2022.v10i11.015)

| Received: 03.10.2022 | Accepted: 09.11.2022 | Published: 18.11.2022

\*Corresponding author: Dr Md. Habibul Islam

Assistant Professor, Department of Anesthesia, Rajshahi Medical College &amp; Hospital, Rajshahi, Bangladesh

## Abstract

## Original Research Article

**Introduction:** Postoperative Nausea and Vomiting remains a challenge, despite having clinical perception and evidence that its severity has diminished. **Aim of the study:** This study intends to identify the magnitude of postoperative nausea and vomiting in patients aged 3–79 years. **Methods:** A descriptive study was carried out in the postoperative ward of Rajshahi Medical College Hospital, Bangladesh from October 2020 to September 2020. A total of 150 patients were enrolled in this study following the inclusive criteria. **Results:** Nausea, vomiting and the need for anti-emetic medication were recorded for 24 h postoperatively. In the early post-operative period, nausea and vomiting were 27.25% and 13.25%, respectively. Over the whole 2 day period, nausea and vomiting were 65.75% and 35%. 52% of the patients who received general anaesthesia and 38% of the patients who received regional anaesthesia reported nausea. **Conclusion:** Female gender, a previous history of postoperative sickness, a longer duration of surgery and a history of motion sickness are the most important predictive factors associated with an increased risk for nausea and vomiting. Even though nausea and vomiting problem is neglected in developing worlds like Bangladesh but it's indeed a big problem for the patients and can affect the outcome of the treatment & the patients' wellbeing as well.

**Keywords:** Vomiting, Nausea, Anaesthesia.

Copyright © 2022 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY-NC 4.0) which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

## INTRODUCTION

Following anaesthesia and surgery, nausea and vomiting are one of the most common complaints which are no less distressing than postoperative pain. The overall incidence of postoperative nausea and vomiting and pain, any feeling of fatigue or drowsiness postoperatively and the overall satisfaction with the given treatment, including surgery, anaesthesia and postoperative care. Following the assessment of symptoms and their measurements, nausea was evaluated by the patient's subjective sensation of feeling sick or wishing to vomit. In the recovery room is around 10% [1] but ranges from 20% to 30% during the first 24 h after surgery according to recent reports [1-4]. Despite the advances in modern anaesthetic practice and surgical techniques, there is still room for

improvement in identifying the causative factors as well as in the prophylaxis and treatment of this problem. The assessment intervals were 0–2 h and 2–24 h in the post-operative ward. The OT staff completed the items on the surgical procedure, the premeditation and the anaesthetic drugs given by the respective anesthesiologist. The questionnaire accompanied each patient's medical report to the ward. They also recorded medication for postoperative pain and possible postoperative nausea and vomiting and its treatment after the 2-h & over 24-h in the post-operative ward. The patients were interviewed on the first postoperative day, 24 h after the operation and the anaesthetic records were reviewed to ensure the completeness of the collected data. All interviews were conducted by the data collectors. Before visiting the patient, the interviewer recorded data from the medical notes about

**Citation:** Kundu, S. R, Islam, H, Kundu, S. K, Rahman, M. M, Khatun, M. K. The Magnitude of Postoperative Nausea and Vomiting: A Descriptive Study in Rajshahi Medical College Hospital, Bangladesh. Sch J App Med Sci, 2022 Nov 10(11): 1898-1902.

1898

pain medication, emetic episodes and anti-emetics used. During the interview, the patients were asked, in addition to their background characteristics, about the presence and intensity of nausea,

## OBJECTIVE

### General objective:

- To observe the magnitude of postoperative nausea and vomiting.

### Specific objectives:

- To analyze the predictive factors associated with these symptoms.
- To analyze key anaesthetic and surgical factors associated with these symptoms.

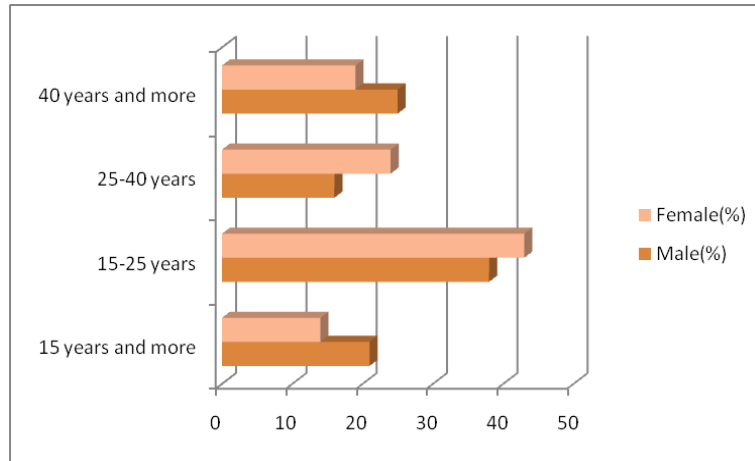
## METHOD AND MATERIALS

This was a prospective descriptive study to estimate the incidence of postoperative nausea and vomiting. We conducted this study in the post-operative ward of Rajshahi Medical College Hospital, Rajshahi, Bangladesh during the period from October 2020 to September 2021. We aimed to estimate the incidence of nausea and vomiting in the post-operative room. To achieve a representative sample of everyday surgery, we collected data from several types of common surgical procedures in four different disciplines of surgery including the departments of orthopaedics, gynaecological & obstetrics, general surgery and otolaryngological of Rajshahi Medical College Hospital. The study scheduled was to observe undergoing elective surgery requiring general or regional anaesthesia and follow-up for the first 2 hours & over 24 hours post-operative ward. Both genders were included, but critically ill patients and those requiring treatment in the intensive care unit were not studied. All patients during this period who met the inclusion criteria and gave their informed consent enrolled in the study. Anaesthetic staff were instructed to keep records on nausea and vomiting. All statistical calculations were performed by the SPSS statistical package.

## RESULTS

Questionnaires and interviews were completed for 150 patients, of whom 50% were male and another 50% were females (Figure 1). The distribution of the inpatients within the surgical departments and different

procedures is shown in the tables and figures. Out of 150 patients, 38% were daily smokers, about half of the participants had a history of migraine, and 77% of patients had a history of migraine during childhood only (Table 1). Out of 75 female participants, 22 patients underwent abdominal surgery, 10 patients underwent general surgery and 7 patients underwent lower limb surgery and of 75 male participants, 29 patients underwent general surgery, & 8 patients underwent joint replacement (Table 2) Nausea, vomiting and the need for anti-emetic medication were recorded for 24 h postoperatively. In the post-operative ward in the first two hours, nausea and vomiting were 27.25% and 13.25%, respectively. Over the whole 24-h period, nausea and vomiting were 65.75% and 35%, respectively. The highest incidence of nausea & vomiting was observed in gynaecological & obstetrics patients. The most important predictive factors associated with an increased risk for nausea and vomiting were female gender, a previous history of postoperative sickness, a longer duration of surgery and a history of motion sickness. The highest number of vomiting episodes was three in seven patients. The highest incidence of nausea (27%) was reported in gynaecology and obstetrics patients, of whom 21% were treated with anti-emetic medication. During the second observation period from 2 to 24 h postoperatively, the proportions of patients with nausea and vomiting in the whole population were average 43.50% and 21.75%, respectively (Table 3). 52% of the patients who received general anaesthesia and 38% of the patients who received regional anaesthesia reported nausea (Table 4). Vomiting was treated with anti-emetics more often than nausea only. In most cases, nausea assessment was mild with no differences in median nausea scores (calculated for patients with nausea) between surgical departments. Following factors as predictors of the incidence of nausea among adult patients: gender, previous experience of postoperative nausea and vomiting, duration of surgery, history of motion sickness, smoking, use of opioids, ceftriaxone, metronidazole etc. postoperatively, type of anaesthetic drugs, obesity and history of migraine. Gender, previous experience of postoperative nausea and vomiting, duration of surgery, history of motion sickness and smoking are also the five strongest predictors in the same order as for nausea when the outcome was vomiting.



**Figure 1: Distribution of the study participants based on Age and Sex (n=150)**

**Table 1: Demographic data of the patients for the different types of Surgery and Anaesthesia (n= 150)**

Characteristic	GYN & OBS (%)	OTO (%)	GEN (%)	Total
Current daily smokers	02%	14%	22%	150
History of migraine	23%	12%	14%	
History of migraine in childhood only	24%	31%	22%	
History of migraine as an adult also	15%	8%	9%	
Previous GA	77%	65%	72%	
in previous GA	49%	43%	41%	
Previous RA	94%	84%	93%	
median	80%	35%	73%	
(Q1, Q3)	(47, 113)	(23,100)	(45, 105)	
Use of postoperative opioids	48%	53%	49%	

**Table 2: Distributions of procedures (Departments) of surgery among study participants (n=150)**

Department	Procedure	Male	Female	Total
Gynaecology&Obstetrics	Abdominal surgery	==	22	22
	Laparotomy	==	13	13
	Vaginal surgery	==	3	3
Otolaryngology	Tonsillectomy	3	5	8
	Nose and sinus surgery	8	3	11
	Aural surgery	1	1	2
General surgery		29	10	39
Orthopaedic:	Joint replacement	8	3	11
	Lower limb surgery	12	7	19
	Upper limb surgery	7	4	11
	Spine surgery	7	4	11
Total		75	75	150

**Table 3: Distribution of episodes with nausea and vomiting in different types of surgery (n=150)**

Type of Surgery				
0–2 hours in the recovery room				
	GYN (%)	OTO (%)	GEN (%)	Average
Nausea	42	21	27	27.25%
Vomiting	19	14	12	13.25%
2-24 hours onward				
Nausea	60	41	37	43.50%
Vomiting	31	21	22	21.75%
2-48 hours onward				
Nausea	82	62	64	65.75%
Vomiting	50	35	34	35.00%

**Table 4: The distribution (%) of the severity of nausea as assessed by the patients on the ward (2–24 h), by the type of surgery, anaesthetic technique and gender (n=150)**

Nausea Score				
	none	mild	moderate	severe
Type of Surgery				
Gynaecological& obstetrics	40%	29%	21%	10%
Otolaryngological	49%	24%	16%	11%
General surgical	54%	23%	16%	7%
Type of anaesthesia				
General	48%	25%	18%	9%
Regional	62%	20%	11%	7%
Gender				
Male	68%	17%	11%	4%
Female	43%	27%	20%	10%

## DISCUSSION

This survey was designed to investigate the magnitude of postoperative nausea and vomiting. Our findings indicate that the occurrence of nausea and vomiting is still surprisingly high, especially during the first 2 hours of the post-operative period. Although the incidence of nausea was high the proportion of severe nausea was generally below 10%. About half of the patients with nausea also vomited. This study was conducted by personally interviewing all the subjects during the first postoperative day while still in the hospital.

The patients were questioned regarding their symptoms, mostly by the same investigator, in a consistent manner. The intensity of nausea, as perceived by the patient, can be measured only by a subjective scale and the same approach was chosen as with pain evaluation [7, 8]. These aspects of measurements might elicit the true proportion of patients with emetic symptoms and this study was conducted by Cohen *et al.*, [3]. In interpreting our results some factors must be taken into consideration. The proportion of females was twice that of males and men generally are less susceptible to nausea [1-4]. The proportion of gynaecological & obstetrics patients contributed to the imbalance of gender distribution, as well as to the high overall rate of nausea. Similar findings have been described recently [3-5, 9]. Severe nausea was more common in females, who were also far more often treated with antiemetics than were men. Seventy-two patients were operated upon under Regional anaesthesia, which is known to provoke more emetic reactions [2, 4] and was also similar to our study. This may have increased the overall incidence of postoperative nausea and vomiting although the anaesthetic techniques used were representative of current practice elsewhere. In this population, the incidence of nausea and vomiting after regional anaesthesia (mostly spinal) was greater than that reported by Carpenter *et al.*, [10]. Over one-third of our nauseated patients associated the sensation with movement, either active or passive. Kamath *et al.* reported that 66% of their patients who could identify a

cause for postoperative nausea blamed movement [11]. Muir *et al.*, suggested that the increase in postoperative nausea and vomiting after leaving the recovery room (2 hours of the postoperative period) might be related to patient transport [12]. Opioids are considered to sensitise the vestibular organ to movement-induced emesis [2, 13]. According to Andersen & Krohng [14], opioids are seldom the cause of postoperative nausea if the patient is immobile. They also pointed out that nausea frequently accompanied pain in the early postoperative period and the relief of pain with opioids resulted in relief of nausea as well. Quinn *et al.* reported significantly higher mean pain scores in nauseated patients [4]. Our survey confirmed that female gender, a history of previous postoperative emetic sequelae and a history of motion sickness as the most important patient-related risk factors for postoperative nausea and vomiting. These items were also included in the risk score model of Palazzo & Evans [6] developed for a specific patient group under-going minor orthopaedic surgery. In addition, we found smoking and the duration of operation among the five most important determinants of postoperative nausea and vomiting not considered by Palazzo & Evans. On the other hand, their strongest individual predictor was the use of opioids in postoperative pain management [6], which was the sixth predictor in our analysis. Despite the differences in the study populations and items included in the prediction model, the performance of the score of Haigh & Kaplan was only slightly worse than ours [15]. We were not able to detect any clear effect of age on nausea but, in females, increasing age was associated with some increased risk. Our sample of children was far too small to draw any conclusions about the incidences of postoperative nausea and vomiting. Smokers had a decreased risk of nausea and vomiting, a fact also observed by Cohen *et al.*, [3].

## LIMITATIONS OF THE STUDY

The study was conducted in a single community. Also, our sample size was too small to exclude chance variation. So, so study results may not reflect the scenarios of the whole country. Our practice of using opioids and sedatives in association with some

regional blocks may also have contributed to them unexpectedly.

## CONCLUSION AND RECOMMENDATIONS

Management of postoperative nausea and vomiting is important for public health practitioners as well as policymakers. The highest incidence of emetic sequelae was observed in gynaecological & obstetrics patients. The most important predictive factors associated with an increased risk for nausea and vomiting were female gender, a previous history of postoperative sickness; a longer duration of surgery and a history of motion sickness. This survey does not support the current clinical impression of a decreased incidence of postoperative nausea and vomiting. However, this survey has enhanced our awareness of postoperative sickness and raised the possibility of recognizing patients at risk for nausea preoperatively. Applying risk scoring to improve the patient outcome, antiemetics are given like prochlorperazine, promethazine, ondansetron, palonosetron, granisetron, and dexamethasone prophylactically to patients with a high probability of emesis which could prevent or at least reduce these adverse symptoms.

**Funding:** No funding sources

**Conflict of interest:** None declared

**Ethical approval:** The study was approved by the Institutional Ethics Committee

## REFERENCE

- Lerman, J. (1992). Surgical and patient factors involved in postoperative nausea and vomiting. *British Journal of Anaesthesia*, 69, 24S-24S.
- Watcha, M. F., & White, P. F. (1992). Postoperative nausea and vomiting. Its etiology, treatment, and prevention. *Anesthesiology*, 77(1), 162-184.
- Cohen, M. M., Duncan, P. G., DeBoer, D. P., & Tweed, W. A. (1994). The postoperative interview: assessing risk factors for nausea and vomiting. *Anesthesia and analgesia*, 78(1), 7-16.
- Quinn, A. C., Brown, J. H., Wallace, P. G., & Asbury, A. J. (1994). Studies in postoperative sequelae. Nausea and vomiting—still a problem. *Anaesthesia*, 49(1), 62-65.
- Hanley, J. A., & McNeil, B. J. (1982). The meaning and use of the area under a receiver operating characteristic (ROC) curve. *Radiology*, 143(1), 29-36.
- Palazzo, M., & Evans, R. (1993). Logistic regression analysis of fixed patient factors for postoperative sickness: a model for risk assessment. *British journal of anaesthesia*, 70(2), 135-140.
- Melzack, R., Rosberger, Z., Hollingsworth, M. L., & Thirlwell, M. (1985). New approaches to measuring nausea. *CMAJ: Canadian Medical Association Journal*, 133(8), 755-758.
- Korttila, K. (1992). The study of postoperative nausea and vomiting. *British Journal of Anaesthesia*, 69, 20S-23S.
- Larsson, S., & Lundberg, D. (1995). A prospective survey of postoperative nausea and vomiting with special regard to incidence and relations to patient characteristics, anesthetic routines and surgical procedures. *Acta anaesthesiologica scandinavica*, 39(4), 539-545.
- Carpenter, R. L., Caplan, R. A., Brown, D. L., Stephenson, C., & Wu, R. (1992). Incidence and risk factors for side effects of spinal anesthesia. *Anesthesiology*, 76(6), 906-916.
- Kamath, B., Curran, J., Hawkey, C., Beattie, A., Gorbett, N., Guiblin, H., & Kong, A. (1990). Anaesthesia, movement and emesis. *BJA: British Journal of Anaesthesia*, 64(6), 728-730.
- Muir, J. J., Warner, M. A., Offord, K. P., Buck, C. F., Harper, J. V., & Kunkel, S. E. (1987). Role of nitrous oxide and other factors in postoperative nausea and vomiting: a randomized and blinded prospective study. *Anesthesiology*, 66(4), 513-518.
- Rabey, P. G., & Smith, G. (1992). Anaesthetic factors contributing to postoperative nausea and vomiting. *British Journal of Anaesthesia*, 69, 40S-45S.
- Andersen, R., & Krohg, K. (1976). Pain as a major cause of postoperative nausea. *Canadian Anaesthetists' Society Journal*, 23(4), 366-369.
- Haigh, C. G., Kaplan, L. A., Durham, J. M., Dupeyron, J. P., Harmer, M., & Kenny, G. N. C. (1993). Nausea and vomiting after gynaecological surgery: a meta-analysis of factors affecting their incidence. *British journal of anaesthesia*, 71(4), 517-522.