



Overview of Post-Operative Nausea and Vomiting (PONV) in Patients Undergoing Caesarean Section with Spinal Anesthesia at Fatimah Islamic Hospital Cilacap

Tiara Octa Afrilya^{1,*}, Wilis Sukmaningtyas², Asmat Burhan³

¹²³Program Studi Keperawatan Anestesiologi Program Sarjana Terapan Fakultas Kesehatan Universitas Harapan Bangsa

¹tiaaraoctaf04@gmail.com*; ²wilis.sukmaningtyas@gmail.com; ³asmatburhan1@gmail.com

ABSTRACT

Spinal anesthesia has been established as the most effective and safest procedure for Sectio Caesarea. One of the most common side effects of spinal anesthesia is operative Nausea and Vomiting (PONV) or Nausea vomiting, which typically occurs within the first 24 hours after surgery. This study seeks to determine the description of Operative Nausea and Vomiting (PONV) based on age, surgery duration, and fasting duration in patients undergoing Caesarean section at RSI Fatimah Cilacap under spinal anesthesia. This research method employs quantitative analytic observation with a cross-sectional design and convenience sampling. The sample for this study was all patients who underwent Sectio Caesarea with spinal anesthesia on 1 May-30 June 2023 at RSI Fatimah Cilacap, totaling 32 patients. The results revealed that the majority of respondents were between the ages of 20 and 35 (90,6%), with an incidence of PONV of 58,6%; the duration of surgery was between one and two hours (90,6%), with an incidence of 46,9%; and fasting duration was less than six hours (50%) with an incidence of 43,8%. This study found that 53,1% of participants experienced Operative Nausea and Vomiting (PONV).

Keywords: *Spinal Anesthesia, Post Operative Nausea and Vomiting, Fasting.*

1. INTRODUCTION

Caesarean Section is a surgical procedure performed by making an incision to open the abdominal and uterine walls to deliver the fetus from the mother's womb (Putra, Wandia, and Harkitasari 2021). Spinal anesthesia falls under the category of regional anesthesia, involving the injection of a local anesthetic into the subarachnoid space, resulting in pain block (Karlina 2020).

The rate of births by Caesarean section continues to rise. The World Health Organization (WHO) states that the Caesarean section method in Indonesia contributes to 17.6% of all deliveries, surpassing the WHO standard of 15%. (Putra et al. 2021). The

percentage of Caesarean section patients in Africa is around 10%, in Asia it's 20%, in Europe it's 20-30%, in Oceania and North America it's 30-40%, and in Latin America and the Caribbean, it's over 40% (Chen et al. 2018).

The data from 2018 shows that Bali ranks second in the use of Cesarean section deliveries, accounting for 30.2% of all deliveries. In Indonesia, this figure has nearly doubled from 17.3% in 2013. (Putra et al. 2021). The number of Cesarean section deliveries at RSUD Temanggung in Central Java is 507. From January to March 2018, there were 121 Cesarean section deliveries at RSUD Temanggung in Central Java (Kemandirian, Post, and Caesarea 2018).

*Tiara Octa Afrilya.

Email:tiaaraoctaf04@gmail.com



Postoperative nausea and vomiting (PONV) is a condition characterized by the feeling of nausea and the act of vomiting experienced by patients after anesthesia and surgery within 24 hours post-surgery. However, some patients can experience their first episode of PONV in the Post Anesthesia Care Unit (PACU) (Johansson et al. 2021). Nausea is the desire to vomit without muscular action, often leading to increased saliva secretion, sweating, and vasomotor disturbances in severe cases. Vomiting, on the other hand, is the act of expelling stomach contents through the mouth or nasal passages (Tania et al. 2022).

There are several common risk factors for the occurrence of PONV, including gender, a history of nitrous oxide use, a history of PONV, and a history of perioperative opioid use. PONV is more commonly experienced by females compared to males (Lekatompessy et al. 2022). Pharmacological factors, such as the use of anesthesia drugs and their effects, can lead to post-operative vomiting and nausea. On the other hand, non-pharmacological factors suggest that nausea and vomiting symptoms can be triggered by the patients themselves. (Tania et al. 2022).

The preliminary study conducted on November 11, 2022, at Fatimah Islamic Hospital Cilacap, covering the data from the last five months from August to December, included a total of 327 cesarean section patients. In August, there were 63 patients; in September, 79 patients; in October, 73 patients; in November, 70 patients; and in the last month of December, there were 42 patients.

Based on the background provided above, the problem statement is formulated as follows: "How is the Overview of Post-Operative Nausea and Vomiting (PONV) in Patients Undergoing Spinal Anesthesia for Caesarean Section at Fatimah Islamic Hospital, Cilacap?".

The objective of this research is to understand the overview of Post-Operative Nausea and Vomiting (PONV) in patients undergoing Caesarean section with spinal anesthesia at Fatimah Islamic Hospital, Cilacap.

2. RESEARCH METHOD

This research is a quantitative observational study that utilizes a cross-sectional methodology and employs the convenience sampling technique. The observation focuses on the post-operative nausea and vomiting (PONV) in patients who have undergone Caesarean section with spinal anesthesia at Fatimah Islamic Hospital, Cilacap. There were 32 patients who underwent Caesarean section with spinal anesthesia during the period from May 1 to June 30, 2023, at Fatimah Islamic Hospital, Cilacap. The inclusion criteria for this study include patients who are willing to participate as respondents, patients classified as ASA 1 and ASA 2, patients who underwent Caesarean section with spinal anesthesia, and patients who experienced early PONV (0-6 hours). Exclusion criteria, on the other hand, encompass patients who refuse to participate as respondents, patients who do not enter the recovery room, and patients whose anesthesia is changed from spinal to general anesthesia.

For data collection, this study employs an observation sheet. The researcher assesses the patients, recording their names, ages, pre-anesthesia fasting durations, and fills out the PONV assessment sheet and the duration of the operation in the recovery room or ward, based on the responses of the participants, which will be used as data. However, the researcher focuses only on patients who experience early PONV.

3. RESULT AND DISCUSSION

3.1 Respondent Characteristics

Table 4.1 Characteristics of Patients Undergoing Caesarean Section with Spinal Anesthesia at Fatimah Islamic Hospital, Cilacap, in 2023

Variable	<i>f</i>	%
Age		
1. < 20 years	0	0
2. 20-35 years	29	90,6
3. > 35 years	3	9,4
Total	32	100,0
Operation Duration		
1. < 1 hours	0	0
2. 1-2 hours	29	90,6
3. > 2 hours	3	9,4
Total	32	100,0
Fasting Duration		
1. < 6 hours	16	50,0
2. 7-8 hours	10	31,3
3. > 8 hours	6	18,8
Total	32	100

The research results in Table 4.1 indicate that the majority of respondents experienced PONV in the age range of 20-35 years, with 29 respondents (90.6%), while 3 respondents (9.4%) were over 35 years old, and there were no respondents under 20 years old. Regarding the characteristics of the respondents based on the duration of the operation, most respondents had an operation duration of 1-2 hours, totaling 29 (90.6%), 3 respondents (9.4%) had an operation duration of over 2 hours, and there were no respondents with an operation duration under 1 hour. The characteristics of the respondents based on fasting duration show that the majority had a fasting duration of less than 6 hours, consisting of 16 respondents (50.0%), 10 respondents (31.3%) had a fasting duration of 7-8 hours, and 6 respondents (18.8%) had a fasting duration of more than 8 hours.

Table 4.1 Frequency Distribution of Characteristics of Patients Undergoing Caesarean Section with Spinal Anesthesia Based on PONV at Fatimah Islamic Hospital, Cilacap, in 2023

	<i>f</i>	%
PONV	17	53,1
No PONV	15	46,9
Total	32	100,0

According to Table 4.2, the majority of respondents experienced PONV, with 17 respondents (53.1%), while 15 respondents (46.9%) did not experience PONV.

Table 4.2 Frequency Distribution of Characteristics of Patients Undergoing Caesarean Section with Spinal Anesthesia Based on Age at Fatimah Islamic Hospital, Cilacap, in 2023

Age	PONV		No PONV		Total	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
20-35 years	17	53,1	12	37,5	29	90,6
>35 years	0	0,0	3	9,4	3	9,4
Total	17	53,1	15	46,9	32	100,0

Based on Table 4.3, out of the 29 patients in the age range of 20-35 years, the majority experienced PONV, with 29 respondents (90.6%). Of the 3 patients in the age range of >35 years, the majority did not experience PONV, with 3 respondents (9.4%).

Table 4.3 Frequency Distribution of Characteristics of Patients Undergoing Caesarean Section with Spinal Anesthesia Based on Operation Duration at Fatimah Islamic Hospital, Cilacap, in 2023

Operation Duration	PONV		No PONV		Total	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
1-2 hours	15	46,9	14	43,8	29	90,6
> 2 hours	2	6,3	1	3,1	3	9,4
Total	17	53,1	15	46,9	32	100,0

Based on Table 4.4, out of 29 respondents with an operation duration ranging from 1-2 hours, the majority experienced PONV, with 15 respondents (46.9%). Of the 3 patients with an operation duration >2 hours, the majority also experienced PONV, with 2 respondents (6.3%).

Tabel 4.4 Frequency Distribution of Characteristics of Patients Undergoing Caesarean Section with Spinal Anesthesia Based on Fasting Duration at Fatimah Islamic Hospital, Cilacap, in 2023

Fasting Duration	PONV		No PONV		Total	
	f	%	f	%	f	%
< 6 hours	14	43,8	2	6,3	16	50,0
6-8 hours	3	9,4	7	21,9	10	31,3
> 8 hours	0	0,0	6	18,8	6	18,8
Total	17	53,1	15	46,9	32	100,0

Based on Table 4.5, out of the 16 patients with fasting duration <6 hours, the majority experienced PONV, with 14 respondents (43.8%). Of the 10 patients with fasting duration ranging from 6-8 hours, the majority did not experience PONV, with 7 respondents (21.9%). And out of the 6 patients with fasting duration >8 hours, the majority did not experience PONV, with 6 respondents (18.8%).

3.2 Discussion

Overview of Post-Operative Nausea and Vomiting (PONV) Incidence Based on Age

Based on Table 4.3, the majority of respondents were in the age group of 20-35 years, totaling 29 respondents (90.6%). Among these 29 respondents, more experienced PONV than those who did not, with 17 respondents (53.1%). This aligns with the findings of a study by (Setiawan 2022) which indicated that individuals undergoing Caesarean section within the age range of 20-35 years had a 40% occurrence of PONV. These findings are also supported by (Muntasir et al., 2019) who reported that complications of post-spinal anesthesia nausea and vomiting were more

frequent among respondents aged 20-35 years, accounting for 35 respondents (68.6%).

Younger patients are more likely to experience Post-Operative Nausea and Vomiting (PONV) than older patients. This may be attributed to the fact that older patients are better at controlling nausea and vomiting compared to their younger counterparts (Lekatompessy et al. 2022). In adolescent patients, afferent neurons are highly sensitive to stimulation, sending signals to the vomiting center in the brainstem, where nausea and vomiting occur. Consequently, the younger age group is more vulnerable to PONV (Muntasir et al. 2019).

Overview of Post-Operative Nausea and Vomiting (PONV) Incidence Based on Operation Duration

Based on Table 4.4, the majority of respondents had a moderate duration of surgery (1-2 hours), with a total of 29 respondents (90.6%). Out of these 29 respondents, more experienced PONV than those who did not, with 15 respondents (46.9%). These findings align with the research by Pujianto and Sukmaningtyas (2022), which revealed that the longest recorded surgery duration by respondents in this study was of moderate length, ranging from one to two hours for twenty-four respondents. This is attributed to the fact that longer surgery duration can increase the likelihood of PONV as patients may not be able to reposition themselves adequately.

The results of this study are further supported by the research of (Rizki 2020) which states that many PONV patients had a moderate surgery duration, approximately 1 to 2 hours, for 24 respondents in this study. As the duration of antiemetic effect nears its end and patients may have difficulty repositioning due to anesthesia and neuromuscular blockade, the risk of post-operative nausea and vomiting (PONV) increases by up to 60% when the surgery lasts more than one hour. PONV can occur due to additional activation of the chemoreceptor trigger zone (CTZ) via the vestibular nerve due to lack of activity (Rizki 2020).

According to the researchers in this study, patients with a moderate surgery duration (1-2 hours) are more susceptible to PONV. This susceptibility arises because a surgery duration of more than one hour results in the nearly complete cessation of the antiemetic center's action, leading to lower antiemetic levels as the duration of action increases.

Overview of Post-Operative Nausea and Vomiting (PONV) Incidence Based on Fasting Duration

Based on Table 4.5, the majority of respondents had a fasting duration of less than 6 hours, totaling 16 respondents (50.0%). Out of these 16 respondents, more experienced PONV than those who did not, with 14 respondents (43.8%). These results align with the findings of (Thamrin T 2022) where the nausea and vomiting experienced by respondents were specifically attributed to insufficient fasting time. Respondents who fasted for 6 hours experienced more nausea and vomiting compared to the 24 respondents who fasted for 6-8 hours. This is further supported by the research of (Saraswati, Majid, and Ratnawati 2020) which showed that a shorter fasting period of less than 6 hours resulted in a higher incidence of nausea compared to patients who fasted for 6-8 hours.

Consuming food in the preoperative period can increase the risk of vomiting during and after surgery. Therefore, fasting before anesthesia is a preventive measure against aspiration (Fitrianingsih, Rumantika, and Burhan 2021). The increase in parasympathetic nervous system activity caused by anesthesia can lead to increased intestinal motility, resulting in nausea. The purpose of preoperative fasting for surgical patients is to reduce gastric volume without causing thirst or dehydration (Thamrin T 2022). Based on the research in this study, it can be concluded that the longer the fasting duration for respondents, the less likely they are to experience post-operative nausea and vomiting.

CONCLUSION

Based on the results and discussions in this study, it is found that in patients undergoing Caesarean section, Post-Operative Nausea and Vomiting (PONV) occurred in 17 respondents (53.1%). In terms of patient age, the majority of PONV cases were observed in the age group of 20-35 years, with 17 respondents (53.1%). Regarding the duration of surgery, most PONV cases occurred during surgeries lasting 1-2 hours, with 15 respondents (46.9%). Additionally, in relation to fasting duration, patients who fasted for less than 6 hours experienced the highest incidence of PONV, with 14 respondents (43.8%).

RECOMMENDATION

For the Hospital, the results of this research are expected to serve as input for the development of Standard Operating Procedures (SOP) in anesthesia services, with an emphasis on providing high-quality care. The hospital should also develop strategies to anticipate and manage PONV in anesthetic patients by considering risk factors based on patient characteristics. This will ultimately enhance the quality of service at Fatimah Islamic Hospital in Cilacap.

For Educational Institutions, there should be an addition of up-to-date materials and references related to anesthesia, especially the factors that have the most significant impact on patients, whether related to anesthesia or beyond. Keeping the curriculum current and comprehensive is essential to prepare future healthcare professionals.

For other researchers, it is recommended to explore other factors associated with PONV using different research designs. These studies should be planned more comprehensively to investigate the potential relationships between PONV characteristics and the risk factors mentioned above. Additionally, researchers should consider examining the degree of PONV, and it is advisable to gather larger sample sizes to ensure greater data accuracy in future research.

REFERENCES

- Chen, Innie, Newton Opiyo, Emma Tavender, Sameh Mortazhejri, Tamara Rader, Jennifer Petkovic, Sharlini Yogasingam, Monica Taljaard, Sugandha Agarwal, Malinee Laopaiboon, Jason Wasiak, Suthit Khunpradit, Pisake Lumbiganon, Russell L. Gruen, and Ana Pilar Betran. 2018. "Non-Clinical Interventions for Reducing Unnecessary Caesarean Section." *Cochrane Database of Systematic Reviews* 2018(9). doi: 10.1002/14651858.CD005528.pub3.
- Fitrianingsih, Rumantika, and Asmat Burhan. 2021. "Efek Hypotermia Pasca General Anestesi: A Scoping Review." *Viva Medika: Jurnal Kesehatan, Kebidanan dan Keperawatan* 11.
- Johansson, Emma, Magnus Hultin, Tomi Myrberg, and Jakob Walldén. 2021. "Early Post- - Operative Nausea and Vomiting : A Retrospective Observational Study of 2030 Patients." (April):1229–39. doi: 10.1111/aas.13936.
- Karlina, Nonok. 2020. "Hubungan Mean Arterial Pressure Dengan Kejadian Mual Muntah Pasca Operasi Pada Pasien Post Anestesi Spinal Di Rumah Sakit Bhayangkara." *Jurnal Kesehatan Mahardika* 7(1):1–3.
- Kemandirian, Tingkat, Pasien Post, and Sectio Caesarea. 2018. "Hubungan Mobilisasi Dini Dengan Tingkat Kemandirian Pasien Post Sectio Caesarea Di Bangsal Mawar RSUD Temanggung." 1(1):20–28.
- Lekatompessy, Prily G., Cokorda I. A. Devi, Presli Glovrig Siahaya, and Is Ikhsan Hataul. 2022. "Hasil Penelitian Faktor Risiko Dengan Angka Kejadian Post Operative Nausea and Vomiting Pada Pasien Yang Dilakukan Anestesi Spinal Di RSUD Dr . M . Haulussy Ambon Dan RS Bhayangkara Ambon Mahasiswa Fakultas Kedokteran Universitas Pattimura Ambon Dosen Fak." 4(April).
- Muntasir, Eva, Rahmaya Nova Handayani, and Ema Wahyuningrum. 2019. "Analisis Faktor Yang Mempengaruhi Kejadian Post Operatif Nausea and Vomiting (Ponv) Pada Pasien Sectio Caesarea Dengan Anestesi Spinal Di RSUD Tgk Chik Ditiro Sigli Kabupaten Pidie Provinsi Aceh." *Jurnal Kesehatan* 12(00007):1–19. doi: 10.35960/vm.v16i2.920.
- Pujianto, R., and W. Sukmaningtyas. 2022. "Hubungan Lama Operasi Dengan Kejadian Early Post Operative Nausea And Vomiting (PONV) Post Spinal Anestesi Pada Pasien Sectio Caesarea." ... *Nasional Penelitian Dan ...* 212–19.
- Putra, ida Bagus Giri Sena, Made Wandia, and Saktivi Harkitasari. 2021. "Indikasi Tindakan Sectio Caesarea Di RSUD Sanjiwani Gianyar Tahun 2017-2019." *Aesculapius Medical Journal* 1(1):63–64.
- Rizki, Fahrunnisa Ananda. 2020. "Hubungan Lama Operasi Dengan Kejadian Post Operative Nausea Vomiting (PONV) Di RSUD Panembahan Senopati Bantul." *Kesehatan, Poltekkes Kemenkes Yogyakarta* 1–235.
- Saraswati, Rachma Dewi, Abdul Majid, and Ana Ratnawati. 2020. "Hubungan Lama Puasa Dengan Kejadian Post Operative Nausea Vomiting di RS PKU Muhammadiyah Yogyakarta"
- Setiawan, Teddy, and Susaldi Susaldi. 2022. "Aroma Terapi Peppermint Dapat Menurunkan Kejadian Nausea Pada Pasien Post Operasi Sectio Caesarea." *Journal of Nursing Education and Practice* 2(1):161–69. doi: 10.53801/jnep.v2i1.85.
- Tania, Marta, Gabriel Ching, Tati Hardiyani, and Deisy Sri Hardini. 2022. "Faktor Yang Mempengaruhi Kejadian Mual Muntah Post Operasi Factors Affecting

the Event of Post Operation Nausea and
Vomiting.” 16(1):16–21.

Thamrin T, M. 2022. “Hubungan Lama Puasa
Dengan Kejadian Mual Muntah Post

Operasi Sectio Caesarea Dengan
Tindakan Spinal Anestesi Di RSUD
Dr. Soedirman Kebumen.” *Naskah
Publikasi. Universitas Aisyiyah
Yogyakarta* 3.