Postpartum Pain Score and Analgesic Use in Hospital Kemaman

Marina MN[1], Atikah S[1], Nur Ainina BS[1], Khairunnisa M[2], Ema Shafiqah H[1], Nor Akma S[1], Rubiatul Munira MJ[1], Noraliza M[1], Mazlina M[3]

[1]Department of Pharmacy, Hospital Kemaman, Terengganu, Ministry of Health, Malaysia
[2]School of Pharmaceutical Sciences, Universiti Sains Malaysia (USM), 11800 Gelugor, Pulau Pinang.
[3]Department of Pharmacy, Hospital Sultanah Nur Zahirah, Terengganu, Ministry of Health, Malaysia.

Abstract

Introduction: Pain has been a major distress in postpartum women. Failure to treat pain appropriately in the early postpartum period might increase the risk of postpartum complications.
Objective: The objectives of this study were to evaluate the pain score of postpartum women at discharge and two weeks after discharge, and to identify the correlation between the pain score and the quantity of analgesic consumed.
Methods: This prospective observational study included women who had undergone child delivery at Hospital Kemaman during the period of March to August 2020. Pain score was measured using the Ministry of Health (MOH) pain scale. Information on patients' pain score and quantity of oral analgesic prescribed was collected at hospital discharge. Two weeks after the discharge, information on pain score, quantity of unused analgesics, additional analgesics used and postpartum complications was collected via phone calls.
Results: A total of 168 patients with a mean ± standard deviation (SD) age of 30.3 ± 5.3 year were involved in this study. They were all Malay with a mean ± SD parity of 2.6 ± 1.2. The majority (82.1%) of them had spontaneous vaginal deliveries. Most of the patients (53.5%) had a moderate pain score in the ward. At hospital discharge, 57.2% of them had a mild pain score. Pain had resolved in the majority of the patients (76.2 %) after two weeks of discharge, while 21.4% still experienced mild pain. There was a poor positive correlation between the pain score at discharge and the quantity of analgesics consumed after two weeks discharge ($r= -0.183$, $p<0.05$).
Conclusion: Careful assessment of pain scores among postpartum patients upon discharge was important to ensure optimal quantity of analgesics were provided to them upon discharge to prevent postpartum complications and fostering a healthy maternal-new born bonding at home.
Keywords: Postpartum pain, analgesic, pain score

NMRR ID: NMRR-20-474-53232
Corresponding author: Atikah Shaharudin
Department of Pharmacy, Hospital Kemaman, Jalan Da'Omar, 24000, Kemaman, Terengganu.
Email: atikah.s@moh.gov.my

Introduction

It is common to experience pain, fatigue, and discomfort after childbirth especially during the early postpartum period (1). On the first postpartum day, 95% of women with first- and second-degree perineal tears and 75% of women who gave birth over intact perineum reported experiencing perineal pain (2). In addition, generalised body ache, breast and nipples tenderness following lactation and headache also contribute to the severity of postpartum pain in mothers. Untreated acute pain during the early days of post-delivery is associated with the development of persistent pain, greater opioid use, and postpartum depression (3). As the pain level and experience vary among individual, postpartum pain must be treated based on the severity and intensity of the pain.

Paracetamol is commonly used as the first-line pain relief in postpartum management, as well as during breastfeeding. The other preferred choices of analgesics are ibuprofen and diclofenac (4). Mothers who receive paracetamol in their early postpartum had reported adequate perineal pain relief and were less likely to require additional analgesics compared to mothers who only receive a placebo (5). On the other hand, the concurrent use of paracetamol and diclofenac sodium in post-caesarean section was shown to fasten the onset and prolong the duration of the analgesic action, thus decreasing the demand for analgesics and improved the patients' quality of life (6).

A previous pilot study done among postpartum patients after two weeks post discharge revealed that the amount of analgesics provided at discharge was inadequate (7). In Hospital Kemaman, all postpartum patients were supplied with a standard quantity of analgesic upon discharge, which are ten capsules of mefenamic acid for spontaneous vaginal delivery (SVD), and paracetamol (ten tablets) and diclofenac sodium (ten capsules) for Caesarean delivery (8). This might risk under-or overprescribing to certain patients (9). Therefore, this study was conducted to evaluate the pain score of postpartum women at discharge and two weeks after discharge, and to identify the correlation between the pain score and the quantity of analgesic consumed. It was hoped that understanding the pain scores can provide some insights to improve the prescribing of analgesic that can better tailor to individual's need. In addition, this study provided the opportunity to revise the practice of pain management for postpartum mothers in Hospital Kemaman.

Methods

This study was registered with the National Medical Research Register (NMRR) (NMRR-20-474-53232). Ethical approval was granted by the MOH Medical Research and Ethics Committee (MREC). This prospective observational study was carried out a postpartum care ward in Hospital Kemaman, Terengganu. All patients who had undergone child delivery during the period of March to August 2020 were reviewed for inclusion into the study. Patients were identified through prescription delivery notifications to the pharmacy by nurses. All consented postpartum women were included, excluding patients with limited Malay proficiency, had complicated Caesarean delivery as defined by hysterectomy, bowel or bladder injury, as well as those who needed reoperation or had an immediate wound complication, hospital stays greater than seven days following delivery and admission to an intensive care unit.

The sample size was calculated using Krejcie and Morgan's calculator (10). The average population of postpartum women at Hospital Kemaman was 280 per month. Using the table given, the recommended sample size was 162 individuals. Considering 20% of any missing data, the final calculated sample size was 195.

Patients' demographics, type of delivery, and analgesic used in the ward were gathered from the bed head ticket (BHT) and medication chart. These information was recorded into the data collection forms which comprised of three parts. Part one of the data collection form was completed during the patient's stay in the ward, while part two and three of data collection was completed at discharge and two weeks after discharge. For part one data collection, patients were interviewed 24 hours after normal delivery or 72 hours after caesarean delivery. This was in line with the standard practice at Hospital Kemaman to observe the maternal health. During the data collection, patients were asked to assess their pain score during the hospital stay and at discharge, as well as their perception about analgesics including the perceived adequacy of pain management and limiting factor in the usage of analgesic during these periods. Information about the type and quantity of oral analgesics prescribed upon discharge was also collected. Two weeks post discharge, data was collected again via phone call, including information on pain score, quantity of unused analgesics, additional analgesics used, patients' perception about analgesics and postpartum complications. Patients were considered lost to follow up if they were not reachable by telephone after three consecutive days.

The pain score was assessed using the Ministry of Health (MOH) pain scale. This is a standardised pain scale tool used in all government hospital facilities in Malaysia. This scale consisted a numerical rating scale and a visual analogue scale. The pain score was categorised into; 0 for no pain, 1–3 for mild, 4–6 for moderate, and 7–10 for severe pain (9). The questions in the data collection form were asked in Malay if the patients were confused or unable to understand English. A discussion took place before the data collection sessions to ensure standardisation in asking the questions in Malay language among the investigators.

The data was analysed using SPSS version 24. Demographic variables were presented descriptively as frequencies (n) and percentages (%) and mean ± standard deviation (SD). Paired t-test was employed to compare the mean pain score during ward stay, upon discharge, and two weeks after discharge. Pearson correlation was used to find the correlation between the pain score after discharge and the quantity of analgesics used. P-value less than 0.05 was set as statistically significant.

Results

A total number of 201 patients were enrolled in the study. However, 33 patients were unable to be reached via phone call two weeks after discharge, resulting in a final number of 168 patients. All patients included in this study were Malay (100%) with a mean ± SD age of 30.3 ± 5.3 years old. The mean duration of

hospital stay was 2.7 ± 1.2 days, while the mean parity was 2.6 ± 1.2. There were 138 (82.1%) patients who had SVD and 28 (16.7%) patients underwent caesarean section (Table 1).

Table 1: Demographic and obstetric characteristics of the patients (n=168)

Characteristics	Frequency, n (%)	Mean ± SD
Age (years)	-	30.3 ± 5.3
Race		-
Malay	168 (100)	
Duration of hospital stay (days)	-	2.7 ± 1.2
Parity	-	2.6 ± 1.2
Co Morbidities		-
Gestational Diabetes Mellitus	45 (26.8)	
Pregnancy Induced Hypertension	5 (3.0)	
Asthma	5 (3.0)	
Type of Delivery		-
Spontaneous Vaginal Delivery	138 (82.1)	
Cesarean	28 (16.7)	
Delivery with instrument	2 (1.2)	

Abbreviation: SD = Standard deviation

Half of the patients (53.6%) had a moderate pain score in the ward. During hospital discharge, the proportion of patients experiencing moderate pain decreased to 14.9% with the majority (57.1%) reporting a mild pain score. Majority of the patients (75.6 %) experienced no pain two weeks after hospital discharge, while 21.4% of them were still experiencing mild pain. Out of the five patients who reported moderate pain with a pain score of 4, three of them had Caesarean delivery (Table 2).

Table 2: Pain category at different time post-delivery (n=168)

Time of pain assessment	Pain category*	n (%)
Highest pain score in ward post delivery	No pain	0 (0.0)
	Mild	60 (35.7)
	Moderate	90 (53.6)
	Severe	18 (10.7)
Pain score at discharge	No pain	46 (27.4)
	Mild	96 (57.1)
	Moderate	25 (14.9)
	Severe	1 (0.6)
Highest pain score at home	No pain	5 (3.0)
	Mild	75 (44.6)
	Moderate	79 (47.0)
	Severe	9 (5.4)
Pain score 2 weeks post discharge	No pain	127 (75.6)
	Mild	36 (21.4)
	Moderate	5 (3.0)
	Severe	0 (0.0)

* Pain score: 0 (no pain), 1-3 (mild pain), 4-6 (moderate pain), 7-10 (severe pain)

The mean pain score at discharge was significantly lower than in ward [mean difference (MD) 2.31; 95% confidence interval (CI) 2.06, 2.56; p< 0.001]. The mean pain score two weeks post discharge also showed a significant reduction compared to pain score at discharge (MD 1.35, 95% CI 1.117, 1.573; p<0.001) (Table 3). There was a poor positive correlation between the pain score at discharge and the quantity of analgesics consumed at home (r=0.183, p<0.05) (Figure 1).

Table 3: Comparison of mean pain score reported in ward, upon discharge and at two weeks post discharge (n=168)

	Mean ± SD	Mean Difference (95% CI)	p value[a]
Highest pain score in ward post delivery	4.15 ± 1.69	2.31 (2.063, 2.556)	< 0.001
Pain score upon discharge	1.85 ± 1.54		
Pain score upon discharge	1.85 ± 1.54	1.35 (1.117, 1.573)	< 0.001
Pain score at 2 weeks post discharge	0.50 ± 1.04		

[a] paired t test was applied
Abbreviation: CI = Confident interval

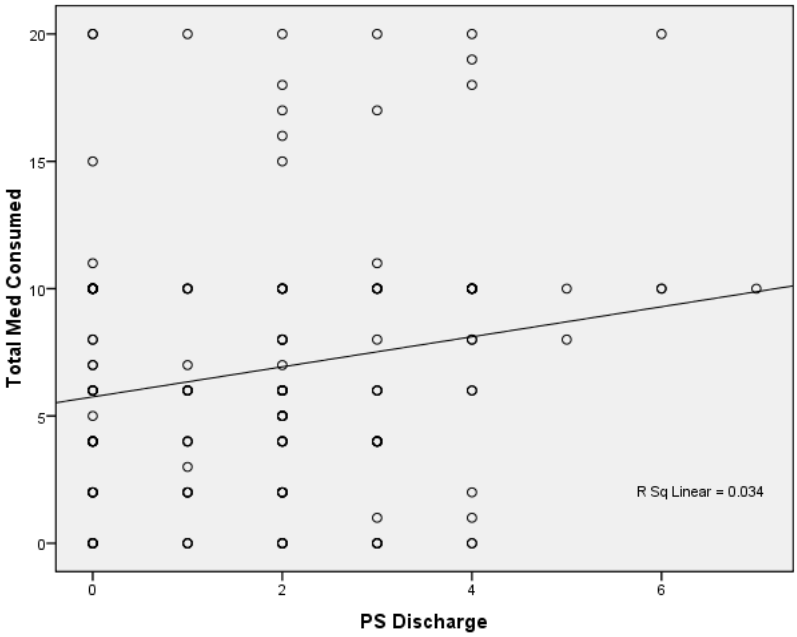

Figure 1: Plot of the relationship between the pain score during patient discharge and the number of tablets consumed

Further analysis from this study on patients' perception of dispensed analgesic quantity revealed that 65.5% of the patients felt they received an appropriate amount of analgesic upon discharge, while 20.2% believed that they were given too much medication. The mean duration of analgesics used at home was 4.3 ± 3.5 days. One of the limiting factors in the usage of analgesic was the concern about the effect of analgesics on breastfeeding and baby (15%, n=16). Among the 168 patients surveyed, only ten (6%) had to purchase additional analgesics which included seven patients who had SVD, two with Caesarean deliveries, and one with vacuum-assisted delivery (Table 4).

The most common delivery complications-related pains were breast engorgement (60.7 %) followed by uterine contraction (33.3 %), and nipple pain (21%). In addition, 17.1% and 16.9% of the patients experienced uterine cramping and haemorrhoids, respectively. Nonetheless, 25 patients (14.8%) did not develop any delivery complications and none of the patients experienced any side effects from analgesic usage (Table 4).

Table 4: Patient outcome

Patient outcome	Frequency, n (%)	Mean ± SD
Patients' perception of analgesic quantity dispensed		
Too little	24 (14.3)	
Appropriate	110 (65.5)	
Too many	34 (20.2)	
Limiting factor in using analgesic		
No pain or tolerable pain	104 (97.2)	
Worried on the effects of analgesic on breastfeeding and baby	16 (15)	
Worried on the side effects of analgesic	6 (5.6)	
Duration of analgesic use post discharge (days)		4.3 ± 3.5
Self-bought analgesic	10 (6)	
Delivery complications-related pains		
Breast engorgement	102 (60.7)	
Uterine contraction	56 (33.3)	
Nipple pain	36 (21)	
Uterine cramping	30 (17.9)	
Haemorrhoid	21 (16.1)	
Side effect	0 (0)	

Abbreviation: SD = Standard deviation

Discussion

Our study aimed to evaluate the pain scores of postpartum women and to find the correlation between the pain scores at discharge and the quantity of analgesic consumed post-discharge. Overall, the majority of patients experienced mild pain during discharge, and most of them reported receiving an adequate amount of analgesics.

According to the Fahey 2017, the proper management of childbirth-related pain entails the adequate assessment of patients' complaints of pain during the postpartum period and the timely identification of postpartum complications. Thus, it requires assessing the quality, location, intensity, onset and duration of pain as well as the aggravating and alleviating factors (11). Hence, the gaps in the common practices in our hospital setting need to be identified and proper action must be planned to improve postpartum pain management.

In this study, all patients were regularly administered analgesics in the ward and pain score was improved during discharge. This was similar to a previous study which found that patients who receive analgesics in the early postpartum had adequate perineal pain relief and were less likely to require additional analgesic (5). Bateman et al. (2017) concluded that most patients experienced reduction in pain after child birth where they had moderate pain at discharge but improved to mild pain in the second week after delivery (12). In a similar trend, majority of the patients in this study had mild pain score in the ward but then experienced no pain at all after two weeks. Difference in population selection might influence the pain reduction as the majority of our patients had SVD compared to the previous study.

In a review study by Vermelis et al., they found that the prevalence rate of chronic pain after caesarean delivery was between 6-18% (13). In this study, 75.6% patients including patient with normal delivery and caesarean experienced no pain followed by mild pain (21.4%) and moderate pain (3%) after two weeks of delivery. The number of parities was also related to pain tolerence in postpartum patients which might influence the pain assessment as both pain and previous delivery experiences were considered one of the modulators of the pain threshold (14). No patient reported experiencing severe pain in our study. In terms of complications, it was common to have painful perineum, uterus cramping, and breast engorgement during confinement (15-17). In this study, majority of our patients reported having breast engorgement. The breast pain related to engorgement can occur in women who are not lactating including women who have suffered perinatal loss. Hence, timely management of this pain as well as patient education on strategies to decrease and eventually stop milk production is essential. The pain relief agents that can be offered to these women to manage the discomfort are paracetamol or ibuprofen (11). The same analgesic agents were considered safe for use in lactation as they achieve very low milk levels and have not been linked to the harm of infants due to high protein binding (18-20).

The second highest reported complication related to the delivery was uterine contraction, which might be due to the breast-feeding mother who are more likely to have stronger uterine contractions in the postpartum period due to the endogenous oxytocin release of lactation (14). A Cochrane review and meta-analysis that included nine studies and 750 women suggested that NSAIDs are more effective than

paracetamol in the management of pain from normal uterine involution (21). Since pain score recorded during discharge might not reflect the intensity of pain due to the late onset of some complications, accurate pain assessment is essential since it helps healthcare providers to make a correct intervention, prescribe appropriate medications and reduce complications.

Standard analgesic regimen in Hospital Kemaman might be unable to adequately address pain for some patients that need extra pain management as pain threshold, pain predictors, genetic and other demographic factors varied from person to person. There were some limitations of this study. First, it was conducted in a limited number of patients that might not represent the population. Secondly, an unbalance number of patients having Caesarean section delivery and SVD might influence the findings. Thirdly, other confounder that might influence the pain severity were not explored in this study.

Conclusion

The majority of the patients in Hospital Kemaman had moderate pain score during their hospital stay, and the pain resolved two weeks after discharge. Careful assessment of pain scores among postpartum patients before discharging the patients is important to ensure that appropriate analgesics in optimal quantity were dispensed.

Acknowledgement

We thank the Director-General of Health Malaysia for his permission to publish the article. We acknowledge the Hospital Director and Head of Pharmacy Department of Hospital Kemaman for their support during this study period. We also would like to express our great appreciation to our colleagues who has greatly assisted us in the completion of this study.

Conflict of Interest Statement

No external funding was received and the authors declared no conflict of interest.

References

1. Wuytack F, Smith V, Cleary BJ. Oral non-steroidal anti-inflammatory drugs (single dose) for perineal pain in the early postpartum period. Cochrane Database Syst Rev [Internet]. 2016 Jul;7(7):CD011352. Available from: 10.1002/14651858.CD011352.pub2.
2. Eisenach JC, Pan PH, Smiley R, Lavand'homme P, Landau R, Houle TT. Severity of acute pain after childbirth, but not type of delivery, predicts persistent pain and postpartum depression. Pain [Internet]. 2008 Nov 15;140(1):87–94. Available from: 10.1016/j.pain.2008.07.011.
3. Macarthur AJ, Macarthur C. Incidence, severity, and determinants of perineal pain after vaginal delivery: a prospective cohort study. Am J Obstet Gynecol [Internet]. 2004 Oct;191(4):1199-1204. Available from: 10.1016/j.ajog.2004.02.064.
4. Bisson DL, Newell SD, Laxton C. Antenatal and Postnatal Analgesia. Scientific Impact Paper No. 59. BJOG [Internet]. 2019;126(4):e114-e124. Available from: https://obgyn.onlinelibrary.wiley.com/doi/pdf/10.1111/1471-0528.15510.
5. Abalos E, Sguassero Y, Gyte GML et al. Paracetamol/acetaminophen (single administration) for perineal pain in the early postpartum period. Cochrane Database of Systematic Reviews [Internet]. 2021 Jan 8 [cited 25 Nov 2021];1(1):CD008407. Available from: 10.1002/14651858.CD008407.pub3.
6. Bakhsha F, Niaki AS, Jafari SY, Yousefi Z, Aryaie M. The Effects of Diclofenac Suppository and Intravenous Acetaminophen and their Combination on the Severity of Postoperative Pain in Patients Undergoing Spinal Anaesthesia During Caesarean Section. J Clin Diagn Res [Internet]. 2016 Jul;10(7):UC09-12.Available from: 10.7860/JCDR/2016/15093.8120.
7. Nur Ainina BS, Marina MN, Khairunnisa M et al. Pospartum pain data collection survey; pilot study. Unpublished work. 2021.
8. Portal Rasmi Kementerian Kesihatan Malaysia [Internet]. Putrajaya (Ministry of Health, Malaysia); 2023. Pain Management in Obstetrics and Gynaecology Guidelines 2023; [cited 13 June 2023] Available from: https://www.moh.gov.my/moh/resources/Penerbitan/Program%20Bebas%20Kesakitan/Garis%20Panduan/PAIN_MANAGEMENT_IN_OBSTETRICS_AND_GYNAECOLOGY_20231.pdf.
9. Portal Rasmi Kementerian Kesihatan Malaysia [Internet]. Putrajaya (Ministry of Health, Malaysia); 2018. Pain as The 5th Vital Sign Guideline 2018. 3rd Edition. Available from: https://www.moh.gov.my/moh/resources/Penerbitan/Program%20Bebas%20Kesakitan/Garis%20Panduan/2_in_1_P5VS_Guideline_3rd_Edition_Corrected_2020.pdf.

10. Krejcie RV, Morgan DW. Determining sample size for research activities. Educational and Psychological Measurement [Internet]. 1970;30(3):607–610. Available from: https://doi.org/10.1177/001316447003000308.
11. Fahey JO. Best Practices in Management of Postpartum Pain. J Perinat Neonatal Nurs [Internet]. 2017 Apr;31(2):126-136. Available from: 10.1097/JPN.0000000000000241.
12. Bateman BT, Cole NM, Maeda A, Burns SM, Houle TT, Huybrechts KF et al. Patterns of Opioid Prescription and Use After Cesarean Delivery. Obstet Gynecol [Internet], 2017 Jul;130(1): 29-35. Available from: 10.1097/AOG.0000000000002093.
13. Vermelis JM, Wassen MM, Fiddelers AA, Nijhuis JG, Marcus MAE. Prevalence and predictors of chronic pain after labor and delivery. Curr Opin Anaesthesiol [Internet]. 2010 Jun; 23(3):295-299. Available from: 10.1097/aco.0b013e32833853e8.
14. Pereira TRC, Souza FG, Beleza ACS. Implications of pain in functional activities in immediate postpartum period according to the mode of delivery and parity: an observational study. Braz J Phys Ther [Internet]. 2017;21(1):37-43. Available from: 10.1016/j.bjpt.2016.12.003.
15. East CE, Sherburn M, Nagle C, Said J, Forster D. Perineal pain following childbirth: Prevalence, effects on postnatal recovery and analgesia usage. Midwifery [Internet]. 2012 Feb;28(1):93-97. Available from: 10.1016/j.midw.2010.11.009.
16. Thompson JF, Roberts CL, Currie M, Ellwood DA. Prevalence and persistence of health problems after childbirth: associations with parity and method of birth. Birth [Internet]. 2002 May 16;29(2):83-94. Available from: https://doi.org/10.1046/j.1523-536X.2002.00167.x.
17. Mascarello KC, Horta BL, Silveira MF. Maternal complications and Cesarean section without indication: systematic review and meta-analysis. Rev Saude Publica [Internet]. 2017; 51(1). Available from: 10.11606/S1518-8787.2017051000389.
18. Berens PD. Breast Pain: engorgement, nipple pain, and mastitis. Clin Obstet Gynecol [Internet]. 2015 Dec;58(4):90-914. Available from: 10.1097/GRF.0000000000000153.
19. Sachs HC, Frattarelli DA, Galinkin JL, Green TP, Johnson T, Neville K et al. The transfer of drugs and therapeutics into human breast milk: an update on selected topics. Paediatrics [Internet]. 2013 Sep; 132(3):e796-e809. Available from: 10.1542/peds.2013-1985.
20. Mangesi L, Zakarija-Grkovic I. Treatments for breast engorgement during lactation. Cochrane Database Syst Rev [Internet]. 2016 Jun 28;2016(6):CD006946. Available from: 10.1002/14651858.CD006946.pub3.
21. Deussen AR, Ashwood P, Martis R, Stewart F, Grzeskowiak LE. Relief of pain due to uterine crampin g/involution after birth. Cochrane Database Syst Rev [Internet]. 2020;10(10):CD004908. Available from: 10.1002/14651858.CD004908.pub3.