



Full Length Research Article

TREND IN PAIN AMONG POSTNATAL MOTHERS AT A TERTIARY CARE HOSPITAL IN SOUTH INDIA

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ABSTRACT

Introduction: The mothers experience various physical discomforts after child birth out of which pain is a major factor that contributes to maternal morbidity. For broadening the scope of care directed towards postpartum well-being, the present study aimed to assess the features of pain on the first three postpartum days among mothers after vaginal delivery and caesarean section.

Materials and Methods: With a prospective survey design using quota sampling technique, 100 postnatal mothers were selected consecutively (50 mothers who had vaginal delivery and 50 mothers who had caesarean section) and the data was collected using Postnatal Pain Questionnaire and a Checklist for the assessment of sites of pain.

Results: Abdominal incisional pain (100%,100%,86%), perineal pain(100%,100%,88%), abdominal after pain(42%,41%,18%) and back pain (38%,34%,19%)were the more frequently experienced forms of pain in the first three days respectively. The mean scores of perineal pain and abdominal incisional pain on the first three postpartum days were 7.5, 5.5 3.3 and 8.5, 6.4 and 4.2 respectively. Breast pain was present among more than 20% mothers on the third postpartum day. Back pain was found to be higher among mothers after caesarean section and after pain was more experienced by mothers after vaginal delivery. There was significant association found between back pain with age and parity.

Conclusion: Pain following childbirth was a significant problem among mothers in the immediate postpartum period. Therefore, pain management strategies employed in maternity care units need to be strengthened.

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INTRODUCTION

Postpartum period or puerperium is the period beginning immediately after the birth of a child and extending for about six weeks. Physiologically, it is a period when the mother's body, including hormone levels and uterus size, returns to the pre-pregnant state. As a result of the various physiological and psychological interactions that take place during this period, the women experience a number of minor ailments. The postpartum pain in various locations and intensities is one such common ailment reported by mothers in different parts of the body that seems to affect the quality of life in the immediate postpartum period. After the mother has passed through the various stages of childbirth and when finally has delivered a baby, the attention of everyone shifts to the newly arrived member of the family.

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Most mothers cope well with these changes, but since they have undergone an extremely tiring event, there is often an enhanced emotional reactivity neurologically identified especially among first-time mothers due to changes in the middle frontal gyrus and inferior frontal gyrus (Malin Gingnell *et al.*, 2015). This may put the mother at a greater risk of perceiving higher intensities of various forms of pain which are often designated as 'intolerable'. According to the International Association for the Study of Pain (IASP), pain has an association with actual or potential tissue damage. With respect to postpartum pain, this tissue damage is associated with childbirth. It further puts the mother at higher degrees of stress which intensifies the pain perception. A study conducted by Koschwanez *et al.* (2015) revealed that higher the psychological stress, slower is the dermal wound healing (Koschwanez *et al.*, 2015). Also, women with severe acute postpartum pain has a 3.0-fold increased risk of postpartum depression compared to those with mild postpartum pain (James *et al.*, 2008).

Hence, to prevent the psychological problems arising out of an environment after delivery, it is necessary to assess for pain in the early postnatal period. Hence, with the assumption that the level of pain varies with number of days postpartum, the present study was undertaken to assess the pain features among postnatal mothers. It also aims to compare the pain between mothers after vaginal delivery and caesarean section. The relationship of pain with selected variables was also investigated.

MATERIALS AND METHODS

A prospective survey of the trend in pain among mothers in the first three days after childbirth was carried out in the postnatal wards of a tertiary care, University teaching hospital in South India. The trend in pain was operationally defined as changes in the location, intensity and frequency of pain felt by the postnatal mother in the first three days following delivery. Ethical clearance was obtained from the institutional ethical committee before commencement of the data collection. The target population included all the postnatal mothers in the first three days after childbirth. Quota sampling technique was adopted to select 50 mothers who had vaginal delivery and 50 mothers who had caesarean section. The mothers who delivered after 35 weeks of gestation and who were willing to participate in the study were selected consecutively till the required sample size was obtained. Postnatal mothers who had complications like postpartum haemorrhage, puerperal infections and those who were not breastfeeding were excluded from the study. The mothers were recruited for the study 12 to 24 hours postpartum. Tools consisted of a proforma to collect the background information and labour-related data, The Postnatal Pain questionnaire and a checklist for the assessment of sites of pain.

The Postnatal Pain Questionnaire identified pain in terms of intensity of pain in each location and frequency of pain. Intensity was measured in terms of a 10 point rating scale. The mothers were asked to rate the pain in terms of the number which best described the level of pain. The score of 0 to 3 indicated mild pain, 4-7 indicated moderate pain and 8-10 indicated severe pain. Frequency of pain was measured in terms of how often the mother experienced pain as 'all the time', 'when moving' and 'once only'. Checklist for the assessment of sites of pain was to assess the locations where the mothers reported pain like breast, nipple, abdomen, legs, back and arms. For the mothers who had vaginal delivery, perineal assessment was also included. Assessment of abdominal incision was meant for mothers who had caesarean section. IBM Statistical Packages for Social Sciences (SPSS) version 22 was used for analysis. Statistical analyses were performed using Mann-Whitney U test for non-normality distributions and chi-square test for nominal data. Data were presented in terms of mean and percentage. Statistical significance was considered $p < 0.05$.

RESULTS

Demographic data

The mean age of mothers was 27.98 ± 5.32 that ranged from 19 to 40 years. The mean age of mothers who had caesarean section was 28.64 ± 5.19 (Ranged from 19 to 39 years) and that of mothers after vaginal delivery was 27.32 ± 5.42 (Ranged from 19 to 40 years).

The mean weight of babies in the caesarean group was 3.022 ± 0.52 and in the vaginal delivery group was 2.87 ± 0.38 .

Postpartum pain

Perineal pain, abdominal incisional pain, abdominal afterpain, backpain, pain on the breasts and nipples, leg pain, shoulder pain, headache as well as pain on the arms and neck were the major locations of pain identified in the first three postpartum days Table 1.

Table 1. Distribution of postnatal mothers based on the presence of pain

Location	n = 100		
	Day I	Day II	Day III
Perineum (n=50) †	100%	88%	48%
Abdominal incision (n=50) ‡	100%	100%	86%
Abdominal afterpain	42%	41%	18%
Back	38%	34%	19%
Breast-Right	8%	11%	24%
Breast-Left	8%	11%	21%
Leg	5%	5%	3%
Nipple - Right	1%	6%	5%
Nipple - Left	1%	6%	3%
Shoulder	6%	4%	2%
Arms	6%	9%	0%
Neck	5%	8%	2%
Headache	2%	3%	3%
Axilla	3%	3%	1%
Thighs	7%	4%	1%

[† The mothers had vaginal delivery] [‡ The mothers had caesarean section]

Table 2. Mean scores of pain among postnatal mothers at different locations

Location	n=100		
	Day I	Day II	Day III
Perineum (n=50) §	7.5	5.5	3.3
Abdominal incision (n=50) ¶	8.5	6.4	4.2
Abdominal afterpain	2.22	1.88	0.79
Back	2.26	1.65	0.94
Breast-Right	0.39	0.72	1.31
Breast-Left	0.37	0.65	1.06
Leg	0.29	0.20	0.07
Nipple-Right	0.06	0.36	0.19
Nipple-Left	0.06	0.36	0.19
Shoulder	0.32	0.15	0.12
Arms	0.26	0.44	0
Neck	0.27	0.31	0.15
Headache	0.08	0.17	0.15
When passing urine	0.07	0	0

[§ The mothers had vaginal delivery] [¶ The mothers had caesarean section]

In all locations, except breast and nipple there was a decrease in the number of mothers experiencing pain with increasing number of days postpartum. The number of mothers experiencing breast pain increased each day with maximum in Day III. All the mothers who had vaginal delivery experienced perineal pain in day I and it was experienced by 88% and 48% of mothers in day II and day III respectively. The mean pain score in perineum was 7.5, 5.5 and 3.3 respectively in the first three days. Abdominal incisional pain was experienced by all the mothers who had caesarean section in day I and day II and 86% of the mothers in day III. The mean pain score on the abdominal incision were 8.5, 6.4 and 4.2 respectively. The mean score of abdominal after pain were 2.22, 1.88 and 0.79 and the mean score of back pain were 2.26, 1.65 and 0.94 in the first three days respectively. In all other locations, the mean pain score was less than one [Table 2]. In all the locations, most of the mothers experienced pain 'while moving'.

Table 3. Distribution of postnatal mothers based on the frequency of pain on perineum, abdominal incision, abdominal after pain and back

Location	F			Frequency (f)
	All the time	When moving	Once only/ Intermittently	
n=100				
Perineum (n=50)				
Day I	6	44	0	
Day II	1	43	0	
Day III	1	23	0	
Abdominal incision (n=50)				
Day I	19	31	0	
Day II	5	45	0	
Day III	7	36	0	
Abdominal after pain				
Day I	1	14	27	
Day II	1	14	26	
Day III	0	5	13	
Back				
Day I	12	26	0	
Day II	5	29	0	
Day III	3	16	0	

Table 4. Distribution of the mothers who underwent vaginal delivery and caesarean section based of pain on first three postpartum days

Location	n = 100					
	Vaginal delivery (n= 50)			Caesarean section (n=50)		
	Day 1	Day 2	Day 3	Day 1	Day 2	Day 3
After pain	27%	26%	10%	15%	15%	8%
Back	13%	10%	6%	25%	24%	13%
Breast-Right	6%	8%	11%	2%	3%	13%
Breast-Left	6%	8%	9%	2%	3%	12%
Leg	1%	0%	0%	4%	5%	3%
Nipple-Right	0%	2%	2%	1%	4%	3%
Nipple-Left	0%	3%	1%	1%	3%	2%
Shoulder	2%	0%	0%	4%	4%	2%
Arms	2%	3%	0%	4%	6%	0%
Neck	1%	3%	1%	4%	5%	1%
Headache	1%	0%	1%	1%	3%	2%
On passing urine	0%	0%	0%	1%	0%	0%
Axilla	2%	2%	0%	0%	1%	1%
Thighs	6%	3%	1%	0%	1%	0%
Chest	0%	0%	0%	2%	0%	0%

Table 5. Mean and standard deviation of the scores of afterpain and backpain among mothers after vaginal delivery and caesarean section

Pain	Mode of delivery	Day I	Day II	Day III
		Mean and S.D [¶]	Mean and S.D [¶]	Mean and S.D [¶]
Abdominal afterpain	Vaginal delivery	2.84±3.015	2.10±2.35	0.84±1.88
	Caesarean section	1.6±2.63	1.66±2.72	0.74±1.78
Backpain	Vaginal delivery	1.28±2.29	0.96±2.06	0.56±1.97
	Caesarean section	3.24±3.44	2.34±2.75	1.32±2.60

[S.D[¶] = Standard deviation]

Abdominal afterpain was experienced by more number of mothers intermittently [Table 3]. On day one and two, the breast pain was experienced by more number of mothers 'While feeding' but on day three more number of mothers experienced pain 'All the time'. Nipple pain was also felt by more number of mothers 'While feeding'.

Signs and symptoms in the sites of pain

Breast pain on both breasts were reported by 16 mothers but hardness on both the breasts was identified among 27 mothers. Out of eight mothers who had cracked nipple on both sides, only three mothers reported pain. Among 24 mothers who had pain on the perineum, redness was present for one mother, discharge on the episiotomy was observed in two mothers and wound gapping was identified among two mothers.

Discharge on the abdominal suture after caesarean section was noted in one mother. Leg edema was observed in eight mothers out of which three mothers reported pain.

Comparison of pain between mothers who underwent caesarean section and vaginal delivery

The distribution of pain on all the major locations were compared among mothers after vaginal delivery and caesarean section [Table 4]. Abdominal afterpain and backpain which were the most commonly experienced form of pain by both the groups were chosen for comparison of mean pain scores between the groups [Table 5]. The statistical comparison of the mean scores of both the forms of pain between mothers who underwent caesarean section and vaginal delivery was found using Mann-Whitney U test as the data followed a non-normal

distribution. Mothers after vaginal delivery experienced higher intensities of afterpain than mothers after vaginal delivery. The statistical comparison of the mean scores of afterpain pain between mothers who underwent caesarean section and vaginal delivery using Mann-Whitney U test showed that the mean ranks of back pain between mothers who underwent caesarean section and vaginal delivery on first postpartum day was significant. [Mann-Whitney U=964, p=0.028]. Mothers after caesarean section experienced more back pain than mothers after vaginal delivery. The statistical comparison of the mean scores of back pain between mothers who underwent caesarean section and vaginal delivery using Mann-Whitney U test showed that the mean ranks of back pain between mothers who underwent caesarean section and vaginal delivery on first and second postpartum days are significant. [Day I Mann-Whitney U=862.5, p=0.002][Day2 Mann-Whitney U=901, p=0.004]

Association with selected variables

Backpain and afterpain were also considered for finding the relationship with variables like age of the mother and parity. The results revealed that there was significant association between age of the mother and back pain on first day postpartum. With reference to back pain, severe intensities of pain were perceived by approximately 46% of the mothers above 30 years and 23% of the mothers below 30 years. Thus, back pain had an association with age [$\chi^2 = 5.45$, p=0.020]. No association was found with afterpain and age of the mother. When parity was considered, 44% of the multiparous mothers and 18% of the primiparous mothers perceived severe form of back pain. Hence there was significant association between parity and backpain with severe intensities of backpain being more experienced by multiparous mothers [$\chi^2 = 7.901$, p=0.005]. Considering afterpain, a significant association was found with parity, as 20% of the primiparous mothers and 38% of the multiparous mothers perceived severe intensities of afterpain, with more severe intensities of afterpain being perceived by multiparous mothers. [$\chi^2 = 3.394$, p=0.047] .

DISCUSSION

Caesarean section significantly affects the activity level of mothers as well as their ambulation due to severity in the intensities of most forms of pain, than vaginal delivery (Kainu *et al.*, 2010; Thompson *et al.*, 2002; Polushin *et al.*, 2015). Persistent pain is more common even one year after a caesarean section than after vaginal birth. Compared with unassisted vaginal births, women who had caesarean sections report more exhaustion, lack of sleep, and bowel problems; report less perineal pain and urinary incontinence in the first 8 weeks; and are more likely to be readmitted to hospital within 8 weeks of the birth. But in the present study, most forms of pain were more frequently reported by mothers after caesarean section than those with vaginal delivery except for after pain and breast pain. Perineal pain is common after vaginal delivery even among mothers with an intact perineum (M Colleen Stainton, 1999). In our study, all mothers experienced perineal pain on the first postpartum day which decreased on the second and third postpartum days as 88% and 48% respectively. Abdominal afterpain and backpain were the third and fourth most frequently experienced forms of pain. Breast pain started increasing with the number of days postpartum but the mean score of nipple pain was highest on the second postpartum day. Urinary problems after the catheter removal are quite prevalent among mothers after caesarean. The urinary

catheters are rarely removed immediately after the procedure. The common protocol is to remove the same 12 hours after the procedure. However, the mothers who had catheter removal immediately after the procedure has a 40% lesser chance to have dysuria when attempting to pass urine, than the mothers with catheter removal 12 hours after the procedure (El-Mazny *et al.*, 2014). But in our study, all the mothers had urinary catheter removal 12 hours after the procedure. Still, only one mother had complained of dysuria and pain. Establishing breastfeeding in the early postpartum period is a significant task to be attained by all postnatal mothers soon after childbirth. There are many hindrances to successful breastfeeding (Osman *et al.*, 2009; Wen *et al.*, 2015). Pain during breastfeeding is one such important factor that stands as a barrier to successful breastfeeding (Buck *et al.*, 2014; McClellan *et al.*, 2015; Ziemer *et al.*, 1993; Holdcroft *et al.*, 2003; Elisabeth Jangsten, 2005). The causes for it are many. Normal neonatal sucking appears to induce a suction on the skin of the nipples of many breastfeeding women that may account for pain experienced at the onset of lactation. About 90% women report such pain on the nipple as a significant hindrance to effective breastfeeding and 65% of the women suffer severe nipple skin damage (Ziemer, 1993). Physiological delay in establishing breastfeeding also contribute to the nipple pain due to suction effect on empty nipples.

A number of physiological abnormalities have been identified as an etiology for nipple pain. The most common attributed causes are incorrect positioning and attachment, followed by tongue tie, infection, palatal anomaly, flat or inverted nipples, mastitis, and vasospasm. Pain resolves in 57% of cases after 18 days (Kent 2015). Out of the ten mothers who reported nipple pain in the study, 7 had cracked nipple and 3 had flat nipple. When nipple pain persists, the mothers may hesitate to breastfeed their babies. But, there may be active production of milk in the breasts. This would ultimately lead to breast engorgement which is often manifested by hardness, pain and warmth on the breasts. The prevalence of breast engorgement is about 65% in mothers with nipple pain (L'Esperance, 1980). However, 6 out of the 10 mothers whom we approached, developed breast engorgement due to nipple pain and feeding difficulty. As far as breastfeeding problems are concerned, primiparous mothers are more prone to have the same, may be because of their increased anxiety with meeting the nutritional requirements of the neonate. Primiparous mothers are found to take longer time for the first breastfeeding attempt and are less likely to have more than eight feeding attempts in the first 24 hours. Also more breast engorgement cases are identified among primiparous mothers (Hackman, ?). In the present study, 18 (62%) mothers who had breast engorgement were primiparous mothers. In the remaining 11 out of 29 mothers with breast engorgement, three were grand-multiparous mothers. It would be because of the inadequacy of support from significant others and lack of motivation towards breastfeeding that these mothers developed breast engorgement. Similarly, pain on the perineum is also affected by various factors (Leeman *et al.*, 2009; Amorim Francisco, 2011). Mothers with a perineal trauma during childbirth report higher intensities of parineal pain than those with an intact perineum (Leeman *et al.*, 2009). Even before discharge from our care unit, perineal pain was identified among 24 women, the cause of which were repaired perineal tear in one mother, wound gapping in two mothers and redness on the episiotomy in one mother.

Pain on the back is affected by various factors as age, mode of delivery, parity and many others (Smith *et al.*, 2008; Breen *et al.*, 1994; Gartland *et al.*, 2010). While analysing the results of the present study, it was found that back pain was more severe in intensities among multiparous mothers and mothers who were above the age of 30 years. Even though this was the trend in pain among postnatal mothers, there were many problems encountered during the course of the study. The main problem was the disparity in the number of days of hospitalisation among mothers even with the same mode of childbirth. Some mothers after caesarean section even had to stay months for the concern of their preterm infants, while most mothers who had a healthy infant after vaginal delivery left the care centre in three days. Hence to set a uniform timing for collecting the data from mothers was challenging. Also, their first interview took more time whereas the subsequent assessments of pain did consume lesser time period. Since, pain was identified as one of the most contributing factors that hamper the maternal-infant bonding process, novel interventions may be undertaken for pain relief in the area of postnatal care in various maternity care centres.

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