

# Maternal Satisfaction with Childbirth Services in a Birthing Center: A Comparative

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## ABSTRACT

**Background:** Maternal satisfaction is higher in the midwife-led model than in other models of maternity care. The objective of this study was to compare maternal satisfaction with childbirth services, receiving care in the birthing center, and the labor room.

**Methods:** A cross-sectional descriptive comparative research design was used for the study to compare the satisfaction of 70 postnatal mothers delivered in the birthing center (midwifery-led model) with 70 postnatal mothers delivered in the labor room (obstetrician-led model) of Paropakar Maternity and Women's Hospital. The study population comprised postnatal mothers with normal deliveries, selected using non-probability purposive sampling technique. Data were collected using a pretested structured interview.

**Results:** The median satisfaction score of the respondents delivered in the birthing center is higher (96.88%) than in the labor room (77.66%) with a statistical significant ( $p$ -value  $< 0.001$ ).

**Conclusions:** Almost all the mothers who delivered their newborns at the birthing center were more satisfied with the childbirth services provided by midwives compared with the services provided in the labor room led by other healthcare providers. Therefore, the midwifery-led model should be expanded to improve maternal satisfaction with the childbirth service.

**Keywords:** Birthing Centers; delivery setting; maternal satisfaction; model of childbirth services.

## INTRODUCTION

Maternal satisfaction is key predictor of utilization of health facilities.<sup>1</sup> With global efforts to reduce maternal mortality, it is important to look at maternal satisfaction.<sup>2</sup> The government's efforts to promote institutional deliveries have led to an increase from 18% in 2006 to 79% in 2022<sup>3</sup>, yet achieving the SDG target of 90% by 2030 remains a challenge.<sup>4</sup> Midwives are playing an important role in achieving the targets of the world's priority agendas.<sup>5</sup> Where midwife-led services had a significant impact in achieving the SDG goal.<sup>6</sup>

The midwife-led and medical models of maternity services present differing philosophies and care delivery approaches.<sup>7</sup> The midwife-led model, grounded in the belief that childbirth is a normal physiological event, is woman-centered care with minimal interventions

<sup>8, 9</sup> While the medical model considers childbirth an illness.<sup>10</sup>

Maternal satisfaction with care has a positive effect on mothers' health.<sup>11</sup> Understanding maternal perspectives helps to improve the quality of care.<sup>12</sup> While developed countries have explored maternal satisfaction across care models, such studies remain limited in Nepal. Hence, the study aimed to compare maternal satisfaction with childbirth services in the birthing center and Labor room in Nepal.

A cross-sectional descriptive comparative study was conducted at Paropakar Maternity and Women's Hospital (PMWH), Thapathali, which is the first maternity hospital in Nepal with 415 beds providing free delivery services under the Safe Motherhood Program of the Nepal Government.<sup>13</sup> Data were collected from

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postnatal mothers with normal vaginal delivery (both with and without episiotomy) in the labor room and in the birthing center. Data were collected from 17<sup>th</sup> July 2022 to 16<sup>th</sup> August 2022 in postnatal wards.

The sample size was calculated using Cochran's formula for a finite population that is  $n = (Z^2 \times PQ) / e^2$ .<sup>14</sup> with the 79.6% prevalence of maternal satisfaction<sup>15</sup>, 95% confidence level ( $Z = 1.96$ ) and a 10% margin of error ( $e = 0.1$ ), the initial sample size was:

$$n = (1.96^2 \times 0.796 \times 0.204) / 0.01 = 62.38 = 63.$$

Since the study was a comparative study, the sample was doubled,  $2n = 2 \times 63 = 126$ . Keeping the non-response rate at 10%, the required sample size was 140 with 70 participants in each group. Non-probability, purposive sampling technique was used to select the sample. Postnatal mothers with Cesarean section, high-risk cases and assisted vaginal birth, and complicated vaginal birth were excluded.

Prior to data collection, research proposal approval was obtained from the research committee of the Nepalese Army Institute of Health Sciences and ethical approval (Ref. No. 637) was obtained from the Institutional Review Committee (IRC) of Nepalese Army Institute of Health Sciences on 2079/03/20. Formal written permission was obtained on 2079/04/01 (Ref. No. : 62/2031) from the Institutional Review Board (IRB) of Paropakar Maternity and Women's Hospital after submitting the request letter from NAIHS-CoN. Then permission was taken from the in-charge of the respective wards. Objectives of the study were explained. Informed written consent was obtained from eligible respondents. Data were collected by interviewing the postnatal mothers at the bedside by using curtains for privacy. The dignity of the respondents was maintained by giving them the liberty to discontinue the study if they wanted. Confidentiality was maintained by using the information only for study purposes. Code was given to each respondent.

All data were collected using a structured interview schedule as developed according to the objectives of a study, which consists of two aspects: i) socio-demographic information and ii) assessment of maternal satisfaction in structure-related and process-related aspects of maternity care. The process-related aspect of care was further divided into two domains, i.e. interpersonal aspects of care and information-related aspects of care. The instrument was adapted and modified from Donabedian Model<sup>16</sup> and the extensive literature review. Structure-related aspects included

9 statements, interpersonal aspects of care included 7 statements, and information-related aspects of care included 8 statements, with a total score of 24 items, for a maximum score of 120 (the minimum score was 24). Satisfaction was measured in a five-point Likert scale (5=Very satisfied, 4=Satisfied 3=Neutral, 2=Dissatisfied 1=Very dissatisfied). Level of satisfaction was categorized as: High level of satisfaction > 50% obtained median score (i.e.>72) and Low level of satisfaction  $\leq$  50% obtained median score (i.e.  $\leq$ 72).

Instructions for answering were given. Deliberately equal numbers of primiparous and multipara were assigned in both groups to maintain homogeneity. Approximately the duration of the interview was 20-25 minutes and responses were reviewed for completeness.

The tools were translated into Nepali Language and then back- translated into English by two independent bilingual translators. Pretesting was done among 14 postnatal mothers (10%) of the study population in the same setting (Paropakar Maternity and Women's Hospital) having similar characteristics to the study population. Those respondents were excluded from the actual study. Cronbach's alpha was tested which yielded a score of **0.865** for the satisfaction scale, interpreting high reliability.

After the data collection, collected data were checked for completeness and accuracy then classified, coded, entered, cleaned, and tabulated using the Statistical Package for Social Science (SPSS) version 16. Data were analyzed by using descriptive statistical methods such as frequency, percentage, mean, and standard deviation. Due to non-normal distribution (identified via Whisker Box Plot), Mann-Whitney U and Kruskal-Wallis test were used to compare maternal satisfaction level. Differences were considered statistically significant at  $p$ -value <0.05 at 95% confidence interval.

Variables		Delivered in BC (n=70)		Delivered in LR (n=70)	
		No.	%	No.	%
Age in completed years	Below 20	11	15.7%	11	15.7 %
	20-24	33	47.1%	33	47.1%
	25-29	16	22.9%	17	24.3%
	30-34	8	11.4%	7	10%
	35-39	2	2.9%	2	2.9%
<i>Median age- Birthing Center- 24 and Labor Room- 23</i>					
Ethnicity	Dalit	8	11.4%	6	8.6%
	Janajati	30	42.9%	40	57.1%
	Madhesi	7	10%	4	5.7%
	Muslim	1	1.4%	-	-
	Brahmin/ Chhettri	24	34.3%	20	28.6%
Educational Status	Can Read and write	70	100%	68	97.1%
	Cannot read and write	-	-	2	2.9%
If can read and write, Level of Education		(n=70)		(n=68)	
	Informal	3	4.3%	6	8.6%
	Basic (1-8 Class)	16	22.9%	18	25.7%
	Secondary (9-12 Class)	37	52.9%	39	55.7%
	Bachelor and Above	14	20%	5	7.1%
Family Income	Insufficient	11	15.7%	9	12.9%
	Sufficient	39	55.7%	44	62.9%
	More than sufficient	20	28.6%	17	24.3%
Parity	Primiparous	42	60%	42	60%
	Multipara	28	40%	28	40%
Sex of recent baby	Male	34	47.2%	38	52.8%
	Female	36	52.9%	32	47.1%

Table 1 depicts the socio-demographic parameters of the study population. The median age of the clients was 24 and 23 in the birthing center and labour room, respectively. Thirty-three (47.1%) of the respondents in both groups were 20-24 years. Nearly half (n= 30, 42.9%) and more than half (n= 42, 57.1%) of the respondents delivered in the birthing center and the labor room belonged to the Janajati ethnicity, respectively. Literacy levels were high among both groups, with all seventy participants (100%) in the birthing center and the majority i.e., sixty-eight (97.1%) in the labor room, being able to read and write. Regarding household income, thirty-nine (55.7%) of the birthing center group and forty-four (62.9%) of the labor room group reported having sufficient income to meet daily living expenses for one year. Forty-two (60%) of the respondents in both groups were primiparous, which was deliberately kept to maintain homogeneity. Regarding the sex of recent babies, thirty-six (52.9%) were delivered in the birthing center and thirty-two (47.1%) were female in the labor room.

Variables	Satisfaction in Birthing Center					Satisfaction in Labour Room				
	5	4	3	4	5	5	4	3	2	1
	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)
<b>Satisfaction towards:</b>										
Comfort of delivery bed	48 (68.6)	14 (20)	6 (8.6)	1 (1.4)	1 (1.4)	53 (75.5)	2 (2.9)	10 (14.3)	4 (5.7)	1 (1.4)
Location of nursing station	62 (88.6)	5 (7.1)	3 (4.3)	-	-	55 (78.6)	6 (8.6)	8 (11.4)	-	1 (1.4)
Physical distance between bed	65 (92.3)	5 (7.1)	-	-	-	50 (71.4)	4 (5.7)	6 (8.6)	6 (8.6)	4 (5.7)
Provision of bedside locker	64 (91.4)	5 (7.1)	1 (1.4)	-	-	49 (70)	9 (12.9)	6 (8.6)	5 (7.1)	1 (1.4)
Provision of necessary medicines and supplies	64 (91.4)	6 (8.6)	-	-	-	55 (78.6)	9 (12.9)	5 (7.1)	1 (1.4)	-
Cleanliness of ward	64 (91.4)	3 (4.3)	1 (1.4)	2 (2.9)	-	48 (68.6)	9 (12.9)	9 (12.9)	4 (5.7)	-
Accessibility and cleanliness of ward	70 (100)	-	-	-	-	40 (57.1)	11 (15.7)	8 (11.4)	8 (11.4)	3 (4.3)
Provision of drinking water	42 (60)	9 (12.9)	14 (20)	4 (5.7)	1 (1.4)	34 (48.6)	9 (12.9)	13 (18.6)	10 (14.3)	4 (5.7)
Ventilation of ward	57 (81.4)	5 (7.1)	6 (8.6)	1 (1.4)	1 (1.4)	37 (52.9)	9 (12.9)	7 (10)	9 (12.9)	8 (11.4)

n=140

Note: 5= Very Satisfied, 4= Satisfied, 3= Neutral, 2= Dissatisfied, 1= Very Dissatisfied, BC- Birthing Center, LR- Labor Room

Table 2 summarizes the maternal satisfaction towards structure-related aspects of childbirth services across nine items. Satisfaction was generally higher in the birthing center regarding physical bed distance (n= 65, 92.8%), bedside locker provision (n = 64, 91.4%), availability of medicines and supplies (n= 64, 91.4%), and ward cleanliness (n =64, 91.4%). Notably, all seventy respondents in the birthing center (100%) were very satisfied with toilet accessibility and cleanliness, 42.9% higher than in the labor room. However, forty-two (60%) and thirty-four (48.6%) were very satisfied with the provision of drinking water in the birthing center and the labor room, respectively. Additionally, fifty-seven (81.4%) of birthing center respondents were very satisfied with ward ventilation, 28.5% higher than labor room respondents. In contrast, satisfaction with delivery bed comfort was slightly higher in the labor room (75.5%) compared to the birthing center (68.6%).

n=140

Variables	Satisfaction in Birthing Center					Satisfaction in Labour Room				
	5	4	3	2	1	5	4	3	2	1
	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)
<b>Satisfaction on interpersonal aspects of care</b>										
Politeness of health Personnel	56 (80)	7 (10.1)	5 (7.1)	1 (1.4)	1 (1.4)	43 (61.4)	12 (17.1)	6 (8.6)	7 (10)	2 (2.9)
Explanation of delivery plan	62 (88.6)	6 (8.6)	1 (1.4)	-	1 (1.4)	43 (61.4)	11 (15.7)	3 (4.3)	10 (14.3)	3 (4.3)
Involvement in decision making	65 (92.9)	5 (7.1)	-	-	-	48 (68.6)	12 (17.1)	5 (7.1)	4 (5.7)	1 (1.4)
Emotional support provided	66 (94.3)	3 (4.3)	-	1 (1.4)	-	50 (71.4)	9 (12.9)	4 (5.7)	4 (5.7)	3 (4.3)
Attitude of health personnel	66 (94.3)	3 (4.3)	1 (1.4)	-	-	27 (52.9)	11 (18.6)	15 (15.7)	12 (8.6)	5 (4.3)
Maintenance of privacy & confidentiality	59 (84.3)	7 (10)	4 (5.7)	-	-	6 (38.6)	1 (15.7)	5 (21.4)	4 (17.1)	54 (77.1)
Provision of companion during birth	70 (100)	-	-	-	-	6 (8.6)	1 (1.4)	5 (7.1)	4 (5.7)	54 (77.1)
<b>Satisfaction on informative aspects of care</b>										
Pain relief measure	65 (92.9)	3 (4.3)	2 (2.9)	-	-	56 (80)	5 (7.1)	6 (8.6)	-	3 (4.3)
State of fetal and maternal condition	67 (95.7)	2 (2.9)	1 (1.4)	-	-	58 (82.9)	5 (7.1)	3 (4.3)	3 (4.3)	1 (1.4)
Treatment Procedure	65 (92.9)	4 (5.7)	1 (1.4)	-	-	57 (81.4)	7 (10)	2 (2.9)	3 (4.3)	1 (1.4)
Status of newborn after examination	66 (94.3)	4 (5.7)	-	-	-	52 (74.3)	13 (18.6)	1 (1.4)	2 (2.9)	2 (2.9)
Breastfeeding	66 (94.3)	3 (4.3)	1 (1.4)	-	-	53 (75.7)	10 (14.3)	1 (1.4)	3 (4.3)	3 (4.3)
Identification of signs	59 (84.3)	7 (10)	2 (2.9)	-	2 (2.9)	25 (35.7)	16 (22.9)	2 (2.9)	14 (20)	13 (18.6)
Personal and perineal care	57 (81.4)	4 (5.7)	4 (5.7)	1 (1.4)	4 (5.7)	19 (27)	7 (10)	2 (2.9)	24 (34.3)	18 (25.7)
Immunization	65 (92.9)	4 (5.7)	-	-	1 (1.4)	24 (34.3)	5 (7.1)	4 (5.7)	22 (31.4)	15 (21.4)

Note: 5= Very Satisfied, 4= Satisfied, 3= Neutral, 2= Dissatisfied, 1= Very Dissatisfied, BC- Birthing Center, LR- Labor Room

Table 3 highlights maternal satisfaction with interpersonal aspects of care. All seventy respondents (100%) in the birthing center were fully satisfied with the provision of a birth companion, in sharp contrast, fifty-four (77.1%) in the labor room reported dissatisfaction due to the lack of a companion. Satisfaction with other interpersonal aspects—such as politeness of staff, explanation of delivery plans, involvement in decision-making, emotional support, respectful attitude, and privacy—was consistently higher in the birthing center (ranging from 80% to 94.3%) compared to the labor room (ranging from 38.6% to 71.4%). Regarding the informative aspects of care, fifty-nine (84.3%) were very satisfied with information on postpartum danger signs in the birthing center versus twenty-five (35.7%) in the labor room. Satisfaction with baby immunization, pain relief, and breastfeeding information exceeded

90% in the birthing center, compared to 34-80% in the labor room.

Group	Median (Q1, Q3)	Mann-Whitney U test Value	p-value
<b>Structure related aspects of care</b>			
Delivered in Birthing Center (n=70)	94.44 (88.88,100)		
Delivered in Labor Room (n=70)	83.33 (75, 82.14)	1257	<.001*
<b>Process related aspects of care</b>			
Delivered in Birthing Center (n=70)	98.33 (88.5, 100.00)		
Delivered in Labor Room (n=70)	73.33 (56.83, 81.66)	108.5	<.001*
<b>Overall maternal satisfaction</b>			
Delivered in Birthing Center (n=70)	96.88 ( 92.71, 98.96)		
Delivered in Labor Room (n=70)	77.66 (69.79, 83.33)	147.0	<.001*

\*p-value statistically significant at 0.05 level of significance

Table 4 compares maternal satisfaction with childbirth services delivered in the birthing center and the labour room using the Mann-Whitney U test, as the data were non-normally distributed. The median satisfaction score for structure-related aspects of care was significantly higher among respondents in the birthing center (94.44%) compared to those in the labor room (83.33%), with a statistically significant difference ( $p < 0.001$ ). Similarly, for process-related aspects, the birthing center group reported a higher median satisfaction (98.33%) than the labor room group (73.33%), also statistically significant ( $p < 0.001$ ). Overall maternal satisfaction was significantly greater in the birthing center (median: 96.88%) than in the labor room (median: 77.66%), with a p-value of  $<0.001$ , indicating a statistically significant difference.

The study findings further revealed that the satisfaction level of the respondents delivered both in the labor room and birthing center was not statistically significant to their selected socio-demographic characteristics ( $p$ -value  $>.05$ ). Analysis was done using the Mann-

Whitney U test and Kruskal-Wallis test.

The study tried to compare maternal satisfaction with childbirth services between the birthing centers and labor rooms, focusing on two aspects of care: structural aspects and process aspects, which include interpersonal and information-related domains. Regarding the comparison, maternal satisfaction was significantly higher in the birthing center (median 96.88%) compared to the labor room (median 77.66%), with a p-value  $<0.001$ . This indicates greater satisfaction with the midwifery-led model than the biomedical model. These findings align with a study by Conesa Ferrer et al. in Spain, which reported a higher mean satisfaction score in the humanized care model ( $M = 82.01$ ,  $SD = 7.97$ ) than in the biomedical model ( $M = 78.33$ ,  $SD = 8.46$ ).<sup>17</sup>

A similar study conducted in Palestine by Mortensen et al. concluded that the midwife-led model was associated with statistically significantly higher satisfaction with care during the antenatal, intrapartum, and postnatal period, with a mean sum-score of 5.2 compared to

4.8 in the group receiving regular care ( $p < 0.0001$ ).<sup>18</sup> Likewise, a Canadian Study revealed that women cared for by midwives were three times more likely to be satisfied with their care (OR 3.32 [95% CI 2.26-4.86]) when compared with obstetrician-led care.<sup>19</sup>

The present study also reveals that there is no difference in maternal satisfaction based on socio-demographic characteristics ( $p$ -value  $> 0.05$ ). This finding is consistent with the study conducted in Iran, which showed that satisfaction was not related to demographic characteristics and maternal parity ( $p$ -value  $> 0.05$ ).<sup>20</sup> Another similar study conducted by Panta and Kafle in Bheri Zonal Hospital, Nepal, revealed no statistically significant association between socio-demographic and obstetric characteristics and maternal satisfaction ( $p$ -value  $> 0.05$ ).<sup>21</sup>

This study assessed maternal satisfaction between two care models but did not examine the specific care processes, which could have a significant impact on maternal satisfaction. Another limitation of the study is that it only included postnatal mothers who were interviewed 6 to 24 hours after vaginal birth, rather than using an exit interview approach. Additionally, the study was conducted in only one setting; thus, the findings may not represent the national data.

The findings of this study on maternal satisfaction across two models of care may provide valuable insights for healthcare organizations and professionals directly involved in maternity services. The results can serve as baseline data for future researchers conducting similar studies. Furthermore, the study holds potential implications for hospital administrators and policymakers, offering evidence to support the development and implementation of policies that allow for the presence of lay companions during childbirth in labor rooms, as a strategy to enhance maternal satisfaction.

## CONCLUSIONS

Most of the respondents delivered in the labor room were satisfied, rather than almost all in the birthing center. The findings indicate that maternal satisfaction with childbirth services was significantly higher among mothers who delivered in the birthing center compared to those who delivered in the labor room. The study found high maternal satisfaction among those who delivered in birthing centers, particularly regarding companion support, infrastructure, interpersonal care, and information. In contrast, mothers in labor rooms

reported dissatisfaction with the lack of companion support and postnatal information, though they were satisfied with the delivery bed. Socio-demographic factors showed no significant influence on satisfaction. Therefore, the midwifery-led model should be expanded to improve maternal satisfaction with the childbirth service.

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## CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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