

# EXPLORING THE DYNAMICS OF LABOUR PAIN: A COMPREHENSIVE STUDY ON PRIMIGRAVIDA WOMEN DURING THE ACTIVE PHASE OF LABOUR

Lavanya Nandan<sup>1\*</sup>, Dr. Jagdish Gohil<sup>2</sup>

<sup>1</sup> Research Scholar, Faculty of Nursing, Parul University, Vadodara, Gujarat, India. [lavyanandan61@gmail.com](mailto:lavyanandan61@gmail.com)

<sup>2</sup> Ph.D Nursing Supervisor, Dean, Parul Institute of Medical Sciences And Research, Parul University, Vadodara, Gujarat, India

## Abstract

Childbirth is a transformative experience marked by the profound physical and emotional intensity of labor pain. The uniqueness of this journey, especially for primigravida women, underscores the need to understand predictors of labor pain for effective healthcare interventions. This study explores the multifaceted nature of labor pain among primigravida women during the active phase of labor, aiming to inform tailored support strategies and enhance the childbirth experience. This prospective observational study involved primigravida women aged 20-49 admitted in hospital during the active phase of labor. Data collection utilized structured interviews and medical record reviews, including demographic information, medical history, obstetrical history, coping strategies, and a standardized pain assessment tool. Results: The demographic distribution revealed a diverse sample, with significant associations found between age, marital status, educational level, type of family, employment status, annual household income, place of residence, and the level of labor pain. Predictors of labor pain included gestational age, number of gravida, mode of delivery, prenatal check-ups, prenatal education, chronic medical conditions, medication use, complications during pregnancy, history of abortion/miscarriages, coping techniques, birthing partner, history of anxiety, physical activity, and fear related to childbirth. Conclusion: This study contributes valuable insights into the predictors of labor pain among primigravida women. Findings highlight the importance of considering demographic variables in tailoring support strategies. Limitations include the cross-sectional nature of the study, warranting future longitudinal research on pain perception changes throughout pregnancy.

Keyword: Labor pain, primigravida women, predictors, childbirth experience, coping strategies, maternal healthcare

## BACKGROUND

Childbirth is a profound and transformative experience, often marked by the physical and emotional intensity of labor pain. The process of bringing a new life into the world is a unique journey for every woman, encompassing diverse physiological, psychological, and sociodemographic dimensions.<sup>(1)</sup> Among these, the experience of labor pain stands out as a central and complex phenomenon, shaping the childbirth experience for primigravida women.<sup>(2)</sup> Understanding the predictors of labor pain is crucial for healthcare professionals to tailor interventions and support strategies effectively. Primigravida women, those experiencing their first pregnancy, represent a distinctive cohort as they navigate the uncharted territories of childbirth.<sup>(3)</sup> The journey from conception to delivery involves a myriad of factors, ranging from maternal demographic characteristics to medical histories and coping mechanisms.<sup>(4)</sup>

Childbirth, while a natural and biological process, is inherently accompanied by pain during the active phase of labor.<sup>(5)</sup> The intensity and nature of this pain can vary widely among individuals, influenced by a myriad of factors. For primigravida women, the experience is particularly unique, as they encounter the challenges of labor for the first time.<sup>(6)</sup> Despite the universality of labor pain, the individualized nature of the experience underscores the need for a nuanced understanding of

its predictors. The predictors of labor pain are multifactorial, encompassing demographic variables, medical history, psychosocial factors, and coping strategies employed by women during labor.<sup>(7)</sup> By exploring these predictors, healthcare professionals can tailor interventions to enhance the childbirth experience, optimize pain management, and provide holistic support. This study aims to delve into the predictors of labor pain among primigravida women during the active phase of labor, shedding light on the multifaceted nature of this pivotal aspect of the childbirth process. Moreover, a comprehensive understanding of the predictors of labor pain contributes to the broader discourse on maternal healthcare, informing policies and practices that promote positive birth experiences.

## NEED OF THE STUDY

The exploration of labor pain dynamics in primigravida women during the active phase of labor addresses a critical gap in maternal healthcare research and has significant implications for improving childbirth experiences.<sup>(8)</sup> Childbirth is a transformative journey, and the intensity of labor pain has a profound impact on the physical and emotional well-being of women. This study specifically focuses on primigravida women, those experiencing their first pregnancy, recognizing the unique

challenges they face as they navigate the unfamiliar territory of labor.<sup>(2)</sup>

Assessing a woman's pain during labour poses a significant challenge, particularly in those experiencing pain as extreme. In some settings, pain is measured using simple self-rating scales either at specific time intervals or at particular degrees of cervical dilation. Women can be asked to mark a VAS or NRS, or rate their pain verbally, at multiple stages throughout their labour.<sup>(9)</sup>

Understanding the predictors of labor pain is essential for healthcare professionals to tailor interventions effectively and provide targeted support strategies.<sup>(10)</sup> The comprehensive approach of this study, incorporating demographic variables, medical history, psychosocial factors, and coping strategies, contributes valuable insights into the multifaceted nature of labor pain.<sup>(11)</sup>

The demographic distribution of the sample reveals a diverse population, emphasizing the need for personalized support strategies that consider factors such as age, marital status, educational level, employment status, and place of residence. The association between these demographic variables and the level of labor pain underscores the importance of tailoring interventions to individual needs. The study also explores various predictors of labor pain, including gestational age, mode of delivery, prenatal check-ups, education, chronic medical conditions, coping techniques, and fear related to childbirth. These findings provide a nuanced understanding of the factors influencing labor pain, allowing healthcare professionals to develop targeted interventions that optimize pain management and enhance the overall childbirth experience.

#### AIM OF THE STUDY

This study aimed to investigate predictors of labor pain in primigravida women during the active phase of labor.

#### RESEARCH METHODOLOGY

**Study Design:** This research adopted a prospective observational study design to investigate the predictors of labor pain among primigravida women during the active phase of labor. The observational nature of the study allowed for the collection of data in real-time, capturing the dynamic interplay of various factors influencing the childbirth experience.

**Participants:** The study involved primigravida women, defined as those experiencing their first pregnancy, who were admitted to CHC and PHC, Gautam Budh Nagar, Uttar Pradesh, India during the active phase of labor. The inclusion criteria encompassed primigravida women aged 20-49 years, irrespective of gestational age, with the ability to comprehend and respond to the study questionnaire.

**Sampling Procedure:** Convenience sampling was employed to recruit participants, given the practical constraints associated with accessing and engaging with pregnant women during labor. The sample size was determined based on the availability of participants within the specified inclusion criteria during the study period.

**Data Collection:** Data were collected through structured interviews and medical record reviews. Trained research assistants, well-versed in ethical considerations and the study protocol, conducted interviews using a standardized questionnaire. The questionnaire encompassed sections on demographic information, medical history, obstetrical history, coping strategies, and a standardized pain assessment tool.

**Ethical Considerations:** The study adhered to ethical guidelines outlined in the Declaration of Helsinki. Informed consent was

obtained from each participant before enrollment. Participants were assured of confidentiality, and data were anonymized during analysis.

#### Data Analysis:

Descriptive statistics, including frequencies and percentages, were used to characterize the demographic distribution and predictors of labor pain. The relationship between demographic variables and the level of labor pain was assessed using appropriate statistical tests, such as chi-square for categorical variables. A p-value of less than 0.05 was considered statistically significant.

#### RESULT

Regarding demographic distribution demographic distribution of the study participants revealed a diverse sample of primigravida women during the active phase of labor. The majority were in the 20-29 age group, married, and held a bachelor's degree, with varied family structures and employment statuses. The income distribution primarily ranged from Rs.20,000 to Rs.80,000, and the participants predominantly resided in semi-urban areas.

**Table 1: Predictors of Labour Pain**

**N=100**

Predictor	Frequency	Percentage
<b>Gestational Age</b>		
Less than 37 weeks	25	25.00
37-40 weeks	75	75.00
41-42 weeks	0	0.00
<b>Number of Gravida</b>		
1	41	41.00
2	59	59.00
3 and above	0	0.00
<b>Mode of Delivery</b>		
Normal vaginal delivery	49	49.00
Epidural delivery	51	51.00
Caesarean section	0	0.00
Forceps delivery	0	0.00
Induction with oxytocin	0	0.00
Augmentation with oxytocin	0	0.00
<b>Prenatal Check-ups</b>		
Yes	37	37.00
No	63	63.00
<b>Prenatal Education</b>		
Yes	71	71.00
No	29	29.00
<b>Chronic Medical Conditions</b>		
Yes	30	30.00
No	70	70.00
<b>Medication Use</b>		
Yes	62	62.00
No	38	38.00
<b>Complications During Pregnancy</b>		
Yes	0	0.00
No	100	100.00
<b>History of Abortion, Miscarriages, or Stillbirths</b>		
Yes	8	8.00
No	92	92.00

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Coping Techniques for Labour Pain		
Breathing exercises	61	61.00
Meditation	39	39.00
Analgesic medications	0	0.00
Massage	0	0.00
Other (Specify)	0	0.00
Birthing Partner		
Yes	37	37.00
No	63	63.00
History of Anxiety		
Yes	65	65.00
No	35	35.00
Physical Activity in Latter Two Months of Prenatal Period		
Yes	7	7.00
No	93	93.00
Fear Related to Childbirth		
Yes	76	76.00
No	24	24.00

The Table 1 shows the Predictors of Labour Pain

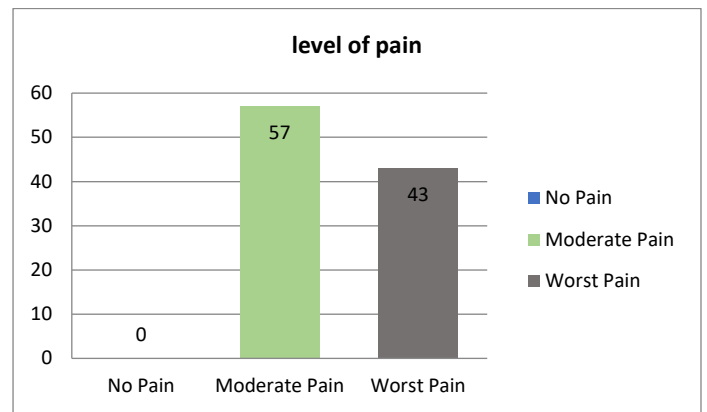


Figure 1. showing distribution of sample as per their level of pain

The bar graph represents that the 57% of the women experienced moderate level of pain while 43% of women experienced worst pain (figure 1).

Table 2: Association Between Level of Pain and Demographic Variables

N=100

Demographic Variable	Calculated Value	Degrees of Freedom (df)	p-Value	Remark
Age	40.77	2	0.001	Significant
Marital Status	13.59	3	0.03	Significant
Educational Level	32.09	3	0	Significant
Type of Family	30.01	2	0	Significant
Employment Status	29.66	4	0	Significant
Annual Household Income	8.14	1	0.01	Significant
Place of Residence	8.14	1	0.01	Significant

Note: All calculated values were compared against critical chi-square values with a significance level of 0.05

The table 2 shows the Association Between Level of Pain and Demographic Variables.

## DISCUSSION

The present study aimed to investigate the predictors of labor pain among primigravida women during the active phase of labor, regarding epidural delivery and normal vaginal delivery were the primary modes, with a negligible number opting for other interventions, aligning with the trends reported by Sturrock (1990)(12) found that childbirth education classes did not significantly reduce interventions during labor and delivery, but Bahadoran (2010)(13) reported that participation in labor preparation classes improved maternal vitality and positive affect during pregnancy and after labor. Gluck (2020) did not find a significant association between childbirth education classes and pregnancy outcomes.(14)

The prevalence of chronic medical conditions and medication use in our study aligns with previous research highlighting the importance of addressing pre-existing health issues during pregnancy (John L. Kitzmiller, et al., 2008).(15) Coping techniques varied, with breathing exercises and meditation (Deenadayalan et al ,2023)(16)being predominant, consistent with the findings of Hilal Yuksel et al. (2017)(17), emphasizing the value of non-pharmacological pain management strategies. The low physical activity levels and the prevalence of fear related to childbirth observed in our study align with previous literature emphasizing the need for holistic maternal well-being support (Araceli Navas et al., 2018)(18).Our study demonstrates a significant association between age and the level of labor pain. Primigravida women in the 20-29 years age group experienced

varying levels of pain compared to older age groups. In contrast, the akadri et al (2018) might have reported no significant association between age and pain. This discrepancy emphasizes the importance of considering age as a crucial factor in understanding the dynamics of labor pain.(19)Regarding Educational Level, there was significant association between educational level and the level of labor pain, indicating that higher education might influence awareness and utilization of coping strategies. In the study conducted by O. Olayemi (2009), the association between education and pain level may not have been observed. This disparity underscores the potential impact of health literacy on the perception and management of labor pain.(20)

Our findings show a significant association between place of residence and the level of labor pain, indicating potential environmental influences on the childbirth experience. One more study consistency with this result conducted by Amie Steel et al (2015),(21) it may not have been evident, emphasizing the need for region-specific interventions to address environmental factors affecting labor pain perception.

## CONCLUSION

The findings of this comprehensive study offer nuanced insights into the multifaceted dynamics of labor pain among primigravida women during the active phase of labor. The demographic distribution highlighted a varied sample, with a predominant representation of women in the 20-29 age group,

married, and possessing a bachelor's degree. The diverse family structures, employment statuses, and income levels underscore the heterogeneity of the participant cohort, emphasizing the importance of tailored maternal healthcare interventions.<sup>21</sup>

Significant associations emerged between demographic factors such as age, marital status, educational level, employment status, and place of residence with the varying levels of labor pain. These associations underscore the need for healthcare professionals to consider individual circumstances when designing support strategies. The study's meticulous exploration of predictors, including gestational age, mode of delivery, prenatal check-ups, coping techniques, and anxiety history, provides a comprehensive understanding of the myriad factors influencing labor pain.

Emphasis on non-pharmacological pain management strategies, such as breathing exercises and meditation, aligns with a growing recognition of holistic approaches in maternal care. While the study acknowledges its cross-sectional nature as a limitation, the identified associations pave the way for future longitudinal research to delve deeper into the evolving nature of pain perception throughout pregnancy. Ultimately, these findings contribute significantly to the discourse on enhancing maternal well-being and optimizing childbirth experiences through personalized and holistic healthcare interventions. <sup>22</sup>

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