Original Research Article

Fear of Childbirth Among Nulliparous Women: A Cross-Sectional Exploration of Obstetric and Psycho-Social Risk Factors in Sikkim, India

**ABSTRACT**

**Background & Objective:** Fear of childbirth (FOC) is a prevalent but often overlooked psychological concern, particularly among nulliparous women who lack prior birthing experience. FOC can significantly affect maternal well-being, decision-making, and birth outcomes, contributing to elective caesarean sections, prolonged labor, and increased risk of postpartum depression. Despite increasing recognition of FOC globally, limited data exist from India’s northeastern states, including Sikkim, where cultural, geographical, and health service factors may shape childbirth experiences differently. **Methodology:** A hospital-based cross-sectional study was conducted among 418 nulliparous women in their second or third trimester attending antenatal care at a tertiary care hospital in Sikkim. Participants were selected using purposive sampling. Data collection tools included the Wijma Delivery Expectancy/Experience Questionnaire (W-DEQ A), Edinburgh Postnatal Depression Scale (EPDS), Multidimensional Scale of Perceived Social Support (MSPSS), and a checklist of maternal concerns. Descriptive and inferential statistics, including chi-square tests and Pearson’s correlation, were used for analysis. **Results:** A striking 99.3% of participants reported mild to moderate fear of childbirth. None experienced severe or very intense fear. Common maternal concerns included fear of labor pain (94.5%), insecurity during pregnancy (93.8%), and worry about episiotomy (93.3%). Depression was reported by 99% of women, with a mean EPDS score of 15.81. High perceived social support was noted in 95.9% of participants. Fear of childbirth showed a significant positive correlation with depression (r = 0.323, p < 0.01) and perceived social support (r = 0.306, p < 0.01). Fear levels were significantly associated with maternal age, education level, family type, and gestational age. Disturbed self-image and lack of family support were the only maternal variables significantly associated with heightened fear. **Conclusion:** Fear of childbirth is nearly universal among nulliparous women in Sikkim, despite strong social support and adequate pregnancy-related knowledge. FOC is influenced by psychological and emotional factors more than clinical or informational ones. Routine antenatal care must be expanded to include screening for fear and depression, with targeted interventions such as counselling, birth preparedness classes, and partner involvement to enhance maternal confidence and emotional well-being.

*Keywords: Nulliparity, Prenatal Care, Depression, Social Support, Pregnancy Complications, Psychological, Pregnant Women, Anxiety*

**1. INTRODUCTION**

Childbirth, is a physiological as well as emotional, social, and culture event. Childbirth can produce a mix of feelings for most women, especially the first timer, between happiness, excitement, anxiety and fear. Over the past few decades, more and more focus has been on the psychological and emotional well-being of pregnant women, as fear of childbirth (FOC) is now a major topic in maternal care worldwide. Fear of childbirth (FOC) is a psychological response that includes different degrees of anxiety, fear and phobia associated with the childbirth process. Mild fear is considered as a normal phenomenon during pregnancy, whereas, excessive fear or pathological fear, sometimes referred to as tokophobia, can be detrimental to the mental health of the mother as well as decision-making of the maternal delivery method and the obstetrical outcome. It has been reported that FOC occurs in 5–40% of pregnant women internationally and up to 93% in some populations, especially nulliparous women and those in the third trimester [1,2,3].

FOC is a symptom complex and can present with both psychological and somatic complaints. Women can have interactional nightmares, obsessive focus on complications in childbirth, sleep disturbances, poor concentration and anxiety. The apprehension generally rotates around issues of pain, baby’s wellbeing, loss of control in childbirth, unknown providers, medical procedures, procedures involving invasion of privacy and even fear of death [4]. In the most severe cases, FOC has been associated with avoidance of pregnancy, elective cesarean section without medical indication, postpartum depression, and post‐traumatic stress disorder (PTSD) [5, 6,7].

The concept of fear of childbirth was first empirically investigated in the early 1980s in Sweden when researchers realized that it constituted a significant unique psychological problem for pregnant women [8]. Since then, Nordic research has provided great contributions to our understanding of FOC and emphasized the role of psychosocial, cultural and demographic circumstances in women's childbirth perceptions and experiences. The most frequently reported psychological predictors of FOC were anxiety disorders, symptoms of depression, low self-esteem and limited social support. Women, especially those with a history of trauma such as childhood abuse or sexual assault, are at increased risk for experiencing severe fears of childbirth [9]. Personality factors, including neuroticism, tendency to catastrophize, or fear of a medical environment, may also add a level of complexity to FOC. The antenatal period, particularly the third trimester, is a period of susceptibility during which hormonal changes, fear of childbirth, and social and cultural status may each add up to raise the levels of emotional distress. Nulliparous women (women who have never given birth) are particularly susceptible to FOC. The lack of previous childbirth experience often leads to uncertainty, misinformation, and an over-reliance on anecdotal stories, which may paint childbirth as a traumatic or overwhelmingly painful experience. Cultural narratives, horror stories from peers or family members, and unrealistic portrayals of childbirth in the media can exacerbate this fear [10]. Furthermore, first-time mothers often face a steeper learning curve in terms of pregnancy-related knowledge, navigating healthcare systems, and understanding physiological changes, which collectively increase vulnerability to psychological distress.

It is of utmost importance that there is a significant role of sociodemographic factors in influencing childbirth fear. Several maternal factors including age, education, income, employment as well as marital status have been reported to be associated with FOC. For example, women who have a higher education and income tend to be more knowledgeable and empowered to make health-related choices, which could serve as a buffer for acute fear. On the other hand, low income and low educated women may be more anxious because of limited access to information and healthcare facilities [11]. In India, research on FOC is still scarce, particularly for the northeastern Indian states including Sikkim. Although literature from Western countries has contributed to global knowledge about FOC, its findings might not uniformly translate to the Indian context because of distinct local cultural practices, healthcare facilities, family influence, and the nature of doctor-patient relationships. Healthcare in India is a multi-tier system that provides uneven care based on rural or urban geography. In rural areas, phobia around childbirth can be exacerbated by inadequate facilities and transport, no accessibility to skilled birth attendants, and a continuing risk of social embarrassment [12].

Further, maternal health status in India demonstrates continuing problems, such as high prevalence of anaemia, maternal mortality and low antenatal coverage in some states. These aspects combine with psychological aspects contributing to maternal experiences. For instance, fear of death during birth, fear of living with complications originating from pre-existing health conditions, and no trust in health institutions are common concerns among women residing in marginalized areas [13].

The state of Sikkim, in the northeastern Indian Himalayas, is challenged by geographical isolation, sparse infrastructure and cultural diversity in terms of maternal care services. Even as Government of India has achieved better institutional delivery rates and made advancing in maternal health awareness, there is insufficient work in handling the emotional and psychological needs of the pregnant mothers-to-be [14,15]. None of the studies have focussed on FOC among nulliparous women in its widest form among population of Sikkim in the set-up of tertiary care hospitals serving rural as well urban population. This is a notable research void. There are a number of reasons why the prevalence and relevant factors of FOC in this population is important. The first is that it allows them to target women who are at high risk of experiencing psychological distress in pregnancy. Second, it guides policy level interventions to include screening and counselling services on mental health as part of routine ANC care. Finally, it supports women's agency, legitimizes their fears and offers evidence-based information to promote a more positive childbirth experience [16].

The current research was undertaken to evaluate the fear of childbirth, and to determine its related psychological and maternal factors among primigravid antenatal attending women in a tertiary care teaching Sikkimese hospital. By targeting this neglected and vulnerable group, the study will add to an emerging body of literature on maternal mental health in India and generate knowledge that can be applied in culturally specific interventions [17].

Lastly, decreasing fear of birth has wider implications than at the personal level. It is associated with reduced rates of excessive medical interventions (e.g. elective caesarean), better maternal-child bonding, greater satisfaction with maternity care, and better maternal and neonatal health. Indeed, FOC is not only an academic question: it is a necessary step in the protection of women’s rights to be treated with regard, safely, and in a holistic way during their maternity care.

**2. MATERIAL AND METHODS**

A hospital-based cross-sectional study were done to determine the prevalence of fear of childbirth (FOC) and its associated factors among nulliparous women attending antenatal care services at a tertiary care hospital from the East district of Sikkim. The research was conducted at the antenatal OPD of Central Referral Hospital, a tertiary care hospital, attached to Sikkim Manipal University. The study obtained ethical clearance from the Institutional Ethics Committee (IEC) and the participates consented in writing prior to data collection.

Nulliparous women, 19 to 45years of age, in the second or third trimester of pregnancy and preparing for a vaginal delivery were included in the target population. Only those with a single intrauterine pregnancy and attending routine antenatal checkups during the study period were included. Women who were unwilling to participate, unable to communicate in English, Hindi, or Nepali, or who had high-risk pregnancies were excluded from the study.

The sample size was calculated using Cochrane’s formula, based on an assumed prevalence of FOC among primigravid women as 45%, with a 5% margin of error and a 95% confidence interval. The minimum required sample size was estimated to be 380, and with a 10% addition for potential non-responses, the final sample size was set at 418 participants. A consecutive sampling technique was used to recruit eligible participants attending the antenatal OPD during the study period.

Data were collected using a structured interview schedule that included four tools. Tool I comprised two sections: Section A captured socio-demographic information, including age, education, occupation, income, type of family, and other relevant background variables. Section B recorded obstetric characteristics such as gestational age, planned or unplanned pregnancy, preferred delivery method, history of abortion, and antenatal care utilization. Tool II was the Wijma Delivery Expectancy/Experience Questionnaire Version A (W-DEQ A), a validated instrument consisting of 33 items designed to measure the level of fear related to childbirth. Each item was scored on a 6-point Likert scale ranging from 0 (not at all) to 5 (extremely). The total score ranged from 0 to 165, with higher scores indicating greater fear. Scores were interpreted as follows: low fear (0–37), moderate fear (38–64), high fear (65–84), and severe fear (≥85). Tool III included the Edinburgh Postnatal Depression Scale (EPDS), a 10-item self-report measure used to assess depressive symptoms during the antenatal period. Each item was rated from 0 to 3, with higher total scores reflecting more severe depressive symptoms. Tool IV was the Multidimensional Scale of Perceived Social Support (MSPSS), which evaluated support from family, friends, and significant others using a 7-point Likert scale. Additionally, a researcher-developed checklist was used to assess maternal factors contributing to FOC, including concerns about labor pain, duration, privacy, and support systems.

All data were collected through face-to-face interviews in a private setting to ensure confidentiality and accuracy. The research tools were reviewed by subject matter experts from the departments of psychiatry, obstetrics and gynecology, and nursing to ensure content validity. A pilot study was conducted on 10% of the sample size to assess feasibility and refine the tools. The reliability of the standardized tools was confirmed using Cronbach’s alpha for internal consistency, and intra-rater reliability was tested for the structured questionnaire.

Data were analyzed using SPSS version 21.0. Descriptive statistics such as frequencies, percentages, means, and standard deviations were used to summarize the demographic, obstetric, and psychological variables. Pearson’s correlation coefficient was applied to assess relationships between continuous variables, while Chi-square and Fisher’s exact tests were used to determine associations between FOC and categorical socio-demographic or obstetric variables. A p-value of less than 0.05 was considered statistically significant for all analyses.

3. results and discussion

**Section I: Findings related to Socio-demographic profile of nulliparous women**

Table 1: Frequency and Percentage Distribution of Demographic Variables of nulliparous women.

 **N=418**

|  |  |  |  |
| --- | --- | --- | --- |
| **S. No** | **Demographic Variables** | **Frequency** | **Percentage** |
| 1 | Age in years 1. 21-25 years
2. 26-30 years
3. 31-35 years
4. 36-40 years
 | 196210120 | 46.950.22.90 |
| 2 | Religion 1. Hindu.
2. Christian.
3. Muslim
4. Buddhist
 | 26065984 | 62.215.62.220 |
| 3 | Marital status 1. Married
2. Unmarried
3. Widow
4. Separated
 | 410008 | 98.1001.9 |
| 4 |  Education1. No formal education
2. Primary to high school
3. Higher secondary
4. Graduate
5. Postgraduate and above
 | 74127186292 | 17.730.444.56.90.5 |
| 5 | Education of husband 1. No formal education
2. Primary to high school
3. Higher secondary
4. Graduate
5. Postgraduate and above
 | 78137164318 | 18.732.839.27.41.9 |
| 6 | Occupation of women1. Government employee
2. Private employee
3. Self employed
4. Housewife
5. Daily wage
 | 12683161930 | 30.119.93.846.20 |
| 7 | Occupation of husband 1. Government employee
2. Private employee
3. Self employed
4. Daily wage
 | 151178890 | 36.142.621.30 |
| 8 | Income per month (in rupees): 1. ≤10,000
2. 10,001 -20,000
3. 20,001 -30,000
4. 30,001- 40,000
5. ≥ 40,001
 | 16711358764 | 402713.918.21 |
| 9 | Type of family1. Joint
2. Extended
3. Nuclear
 | 25421143 | 60.8534.2 |
| 10 | Habitat 1. Urban
2. Rural
 | 197221 | 47.152.9 |
| 11 | Received any information/education related to pregnancy1. Yes
2. No
 | 38731 | 91.67.4 |
| 12 | Past / Present history of mental illness1. Yes
2. No
 | 0418 | 0100 |
| 13 | Family History of mental illness (both in family and in-laws)1. Yes
2. No
 | 3415 | 0.799.3 |
| 14 | Presence or availability of supportive persons during pregnancy:1. Yes
2. No
 | 38731 | 92.67.4 |

Table 1 presents the socio-demographic characteristics of 418 nulliparous women attending antenatal care services at a tertiary care hospital in Sikkim. The majority of participants (50.2%) were between the ages of 26 and 30 years, followed by 46.9% aged 21 to 25 years. A small proportion (2.9%) were in the 31–35-year age group, and none were above 35 years. The predominant religion was Hinduism, accounting for 62.2% of respondents, followed by Buddhist (20%), Christian (15.6%), and Muslim (2.2%). Nearly all the women were married (98.1%), with only a small percentage (1.9%) being separated, and none were unmarried or widowed.

In terms of education, the highest proportion of women (44.5%) had completed higher secondary education, followed by 30.4% who studied up to high school level. A relatively smaller group had no formal education (17.7%), and only 0.5% had completed postgraduate education. A similar trend was observed in the education level of their husbands, with the majority (39.2%) having completed higher secondary education. Regarding occupation, nearly half of the women (46.2%) were housewives, while 30.1% were employed in government jobs and 19.9% in private sectors. None of the respondents were daily wage workers.

For their husbands’ occupation, the majority were private employees (42.6%), followed by government employees (36.1%) and self-employed individuals (21.3%). In terms of family income, 40% of participants reported a monthly income of ₹10,000 or less, while 27% earned between ₹10,001 and ₹20,000. Only 1% reported an income exceeding ₹40,000. Most women (60.8%) belonged to joint families, followed by 34.2% from nuclear families. The participants were fairly equally distributed between rural (52.9%) and urban (47.1%) areas.

Notably, a vast majority (91.6%) reported receiving pregnancy-related education or information, and all participants (100%) had no past or present history of mental illness. Almost all (99.3%) had no family history of mental illness. Furthermore, 92.6% of participants confirmed the presence of supportive persons during pregnancy. These socio-demographic findings highlight a population that is largely educated at a secondary level, primarily married, with relatively low income, but with good social and familial support and access to antenatal education.

**Section II: Findings related to obstetric characteristics of nulliparous women**

Table 2: Frequency and Percentage Distribution of Obstetric Characteristics of nulliparous women

 **N=418**

|  |  |  |  |
| --- | --- | --- | --- |
| **S. No** | **Obstetric Characteristics** | **Frequency** | **Percentage** |
| 1 | Gestational age at the time of data collection1. >14 weeks to 18 weeks
2. 19 weeks to 23 weeks
3. 24 weeks to 28 weeks
4. 29 weeks to 33 weeks
5. 34 weeks to 38 weeks
6. 39 weeks to <41weeks
 | 13111117140370 | 3.126.62833.58.90 |
| 2 | Trimester 1. 2nd Trimester
2. 3rd Trimester
 | 243175 | 58.141.9 |
| 3 | Type of pregnancy 1. Planned
2. Unplanned
 | 37543 | 89.710.3 |
| 4 | Preferable delivery method 1. Vaginal birth
2. Caesarean birth
 | 230188 | 5545 |
| 5 | Experienced any complications of pregnancy during the pregnancy period 1. Yes
2. No
 | 88330 | 21.178.9 |
| 6 | Relationship with partner1. Close
2. Good
3. Moderate
4. Occasional conflicts
 | 652256860 | 15.653.816.214.4 |
| 7 | Relationship with in law1. Close
2. Good
3. Moderate
 | 388300 | 92.87.20 |
| 8 | Previous history of abortion or miscarriage1. Yes
2. No
 | 62356 | 14.885.2 |
| 9 | Do you have childbirth fear1. Yes
2. No
 | 39523 | 94.55.5 |

Table 2 summarizes the obstetric profiles of the same group of 418 nulliparous women. The largest group of participants (33.5%) were in the gestational age range of 29 to 33 weeks, followed by 28% who were between 24 to 28 weeks, and 26.6% between 19 to 23 weeks. Very few women (3.1%) were between 14 to 18 weeks of gestation, and none had reached 39 weeks or beyond at the time of data collection. Regarding trimesters, more than half (58.1%) were in their second trimester, while 41.9% were in the third trimester.

Most pregnancies (89.7%) were reported as planned, while 10.3% were unplanned. When asked about their preferred mode of delivery, 55% of women expressed a preference for vaginal birth, whereas 45% preferred cesarean delivery. About one-fifth (21.1%) had experienced complications during their pregnancy, indicating a significant subset that may be at higher risk for adverse outcomes or increased anxiety.

The quality of interpersonal relationships also appeared to be largely positive. Over half (53.8%) described their relationship with their partner as "good," while 15.6% reported it as "close." A smaller portion experienced moderate relationships (16.2%) or occasional conflicts (14.4%). Relationships with in-laws were overwhelmingly positive, with 92.8% reporting a "close" relationship, and only 7.2% describing them as "good," with no reports of moderate or poor relationships.

In terms of reproductive history, 14.8% reported having a previous miscarriage or abortion, while the vast majority (85.2%) did not. Importantly, a very high percentage (94.5%) acknowledged experiencing fear of childbirth. This underscores the central concern of the study and emphasizes the widespread nature of this psychological response among first-time mothers, which may be influenced by a combination of personal, relational, and clinical factors as explored in further sections of the analysis.

**Section III: Findings related to assessment of overall score for fear of childbirth among nulliparous women**

N=418

Figure 1: Frequency Distribution of level of fear of childbirth among nulliparous women

Figure 1 illustrates the distribution of levels of fear of childbirth among the 418 nulliparous women included in the study. The data strikingly reveal that nearly all participants 99.3% (n = 415) experienced mild to moderate fear of childbirth. Only 0.7% (n = 3) of the participants reported no fear at all, while none of the women reported experiencing severe or very intense fear. This distribution highlights that while extreme fear is not commonly reported, fear of childbirth in some form is nearly universal among first-time mothers in this population. The near absence of participants in the severe or very intense fear categories may reflect a supportive antenatal environment, cultural normalization of childbirth-related anxiety, or underreporting of intense psychological distress. Nonetheless, the overwhelming prevalence of mild to moderate fear indicates a significant area of concern for maternity care providers and points to the need for targeted antenatal education and psychological support interventions.

Table 3: Frequency Distribution of fear of childbirth among nulliparous women.

 **N=418**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Fear of childbirth** | ***f*** | ***%*** | **Score** **range** | **Median** | **Mean** | **SD** |
| No fear | 3 | 0.7 | 80-119 | 106 | 105.60 | 5.18 |
| Mild to moderate | 415 | 99.3 |
| Severe fear | 0 | 0 |
| Very intense fear | 0 | 0 |

Table 3 presents the frequency distribution and descriptive statistics related to the levels of fear of childbirth experienced by the nulliparous women. Out of the total sample of 418 women, only 3 women (0.7%) reported no fear, while 415 women (99.3%) reported mild to moderate fear. Notably, none of the participants fell into the categories of severe fear or very intense fear, reinforcing the earlier finding that most participants experience fear at a manageable level rather than a debilitating one.

The range of scores for fear of childbirth was between 80 to 119, with a mean score of 105.60, a median score of 106, and a standard deviation (SD) of 5.18**.** The relatively small standard deviation suggests a narrow dispersion of fear levels around the mean, implying consistency in how the majority of women perceive and experience fear related to childbirth. The findings suggest that while fear is prevalent, its intensity does not vary widely among the population. This consistency may be influenced by shared socio-cultural, informational, and healthcare system factors, and suggests that a generalized antenatal intervention strategy to reduce fear may be both practical and effective in this setting.

Table 4: Domain wise fear of childbirth among nulliparous women.

 **N=418**

| **Test** | **Domain of fear of Child birth** |
| --- | --- |
| **Fear** | **Negative appraisal** | **Loneliness** | **Lack of self-efficacy** | **Lack of positive anticipation** | **Concerns for the child** |
| Mean | 6.26 | 51.33 | 19.32 | 9.55 | 12.86 | 6.24 |
| Median | 6 | 52 | 19 | 10 | 13 | 6 |
| Mode | 6 | 52 | 20 | 9 | 13 | 7 |
| Std. Deviation | 1.04 | 3.34 | 1.95 | 1.34 | 1.55 | 1.20 |

Table 4 presents the domain-wise analysis of fear of childbirth (FOC) among 418 nulliparous women, using the Wijma Delivery Expectancy Questionnaire (W-DEQ A). The fear domains analyzed include negative appraisal, loneliness, lack of self-efficacy, lack of positive anticipation, concerns for the child, and general fear. The highest mean score was observed in the domain of negative appraisal (mean = 51.33, SD =3.34), indicating that many women held distressing and anxiety-laden thoughts about the childbirth process. This reflects a tendency to view labor as threatening, uncontrollable, and overwhelmingly painful. The next highest fear was seen in the lack of positive anticipation domain (mean=12.86, SD =1.55), suggesting that many women were unable to look forward to childbirth positively, likely due to fear of complications, pain, or uncertainty. Loneliness (mean=19.32, SD=1.95) was also a notable concern, indicating that women feared being emotionally or physically unsupported during labor.

Lack of self-efficacy (mean=9.55, SD=1.34) reflects doubts in women’s ability to cope with labor or make informed decisions during childbirth. Meanwhile, the domain concerns for the child (mean= 6.24, SD=1.20) reveals that while worry about the baby’s well-being was present, it was relatively lower than other psychological fears. The general fear score (mean=6.26, SD=1.04) provides an overall indication of anxiety, but is moderate compared to the domain-specific fears. Overall, the domain-wise findings suggest that the main psychological burden of childbirth fear lies not only in physical pain but in anticipatory anxiety, negative mental framing, and emotional vulnerabilities such as feeling unprepared or unsupported. These insights highlight the importance of incorporating emotional resilience training, reassurance, and individualized support into antenatal care, especially for nulliparous women.

**Section IV: Findings related to assessment of maternal factors contributing to fear of childbirth among nulliparous women**

Table 5: Distribution of level of Maternal Factors contributing to fear of childbirth

 **N=418**

|  |  |  |  |
| --- | --- | --- | --- |
| **S. No** | **Maternal factors** | **Frequency** | **Percentage** |
| 1 | Uncertainty of duration of labor a. Yes b. No  | 312106 | 74.625.4 |
| 2 | Fear of labour pain a. Yes b. No | 39523 | 94.55.5 |
| 3 | Being alone in labour room a. Yes b. No | 174244 | 41.658.4 |
| 4 | Fear of procedures performed in labor room  a. Yes b. No | 301117 | 7228 |
| 5 | Fear of invasion of privacy a. Yes b. No | 242176 | 57.942.1 |
| 6 | Disturbed self-image a. Yes b. No | 76342 | 18.281.8 |
| 7 | Knowledge about the childbirth procedure a. Yes b. No | 34177 | 81.618.4 |
| 8 | Family support during pregnancy a. Yes b. No | 40810 | 97.62.4 |
| 9 | Bad obstetric history of family members a. Yes b. No | 53365 | 12.787.3 |
| 10 | Knowledge related to care of child a. Yes b. No | 312106 | 74.625.4 |
| 11 | Apprehension regarding birth defect in child a. Yes b. No | 47371 | 11.288.8 |
| 12 | Planned pregnancy  a. Yes b. No | 252166 | 60.339.7 |
| 13 | Feeling of insecurity a. Yes b. No | 39226 | 93.86.2 |
| 14 | Stressful life event during pregnancy a. Yes b. No | 25393 | 694 |
| 15 | Worries about episiotomy a. Yes b. No | 39028 | 93.36.7 |

Table 5 provides valuable insight into the maternal factors contributing to fear of childbirth among 418 nulliparous women. The findings reveal that multiple emotional, psychological, informational, and experiential variables significantly influence a woman's perception and anxiety about childbirth. Among all listed factors, fear of labour pain emerged as the most dominant concern, reported by 94.5% of the participants. This reflects a nearly universal apprehension about the physical suffering associated with childbirth, which is a well-documented trigger for antenatal anxiety and fear in first-time mothers. After this came insecurity during pregnancy (with 93.8%) and fear of the episiotomy (with 93.3%), evidence of emotional fragility and fear when they faced bodily harm or surgical intervention during delivery. Another major factor was not knowing how long the labour would last, which affected 74.6% of the women. This fear is a manifestation of the inability to anticipate and know the labour process how long it will take, how much it will hurt, and how well they will manage. Similarly, 72% of the women feared things done to them in the labour room, which is reflective of unclear or problematic experiences with medical interventions, perhaps caused by poor communication or antenatal education.

Fear of staying alone in the labour room was reported by 41.6% suggesting the need to have someone for Nick of time as emotional support and company while giving birth. Immunity to invasion of privacy was expressed by 57.9%, raising issues of cultural sensitivity and professional detachment which can get overshadowed in a busy clinic. Nevertheless, most of the women felt well informed about delivery (81.6%) and baby care (74.6%), and 97.6% said they received support from family during pregnancy.This suggests that while knowledge and support are important, they do not fully eliminate fear, pointing to the complex interplay of cognitive, emotional, and physiological factors.

Other concerns included disturbed self-image (18.2%), apprehension about birth defects in the child (11.2%), bad obstetric history in family members (12.7%), and stressful life events during pregnancy (6%) factors which, although reported by fewer women, still reflect deep-seated anxieties tied to body image, responsibility, and uncertainty. Finally, the data show that 60.3% of pregnancies were planned, and yet fear remained prevalent, indicating that fear of childbirth is not limited to unplanned pregnancies alone.

**Section V: Findings related to assessment of psychological factors (depression) contributing to fear of childbirth among nulliparous women**

Table 6: Distribution of depression among nulliparous women.

 **N=418**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Depression** | ***f*** | ***%*** | **Score****range** | **Median** | **Mean** | **SD** |
| No depression  | 4 | 1 | 10-2010 | 16 | 15.81 | 1.67 |
| Possible depression  | 414 | 99 |

Table 6 presents the distribution of depression levels among the study participants, revealing that 99% (n = 414) of the women were identified as having possible depression, while only 1% (n=4) exhibited no depression. The depression scores ranged from 10 to 20, with a mean score of 15.81, a median of 16, and a relatively low standard deviation of 1.67, suggesting that the scores were tightly clustered around the mean. These findings indicate a widespread presence of depressive symptoms among first-time pregnant women.

**Section VI: Findings related to assessment of psychological factors (perceived social support) contributing to fear of childbirth among nulliparous women**

Table 7: Distribution of perceived social support among nulliparous women.

 **N=418**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Perceived social support** | **f** | **%** | **Score****range** | **Median** | **Mean** | **SD** |
| Low support  | 0 | 0 | 50-7525 | 68 | 66.90 | 3.59 |
| Moderate support  | 17 | 4.1 |
| High support  | 401 | 95.9 |

Table 7 complements figure 2 by providing detailed statistics on the perceived social support scores among the participants. The support scores ranged from 50 to 75, with a mean score of 66.90, a median of 68, and a standard deviation of 3.59. These values confirm a generally high level of perceived social support, which aligns with the categorical data in Figure 2. Importantly, none of theparticipants scored in the low-support category, affirming that the majority of women in this setting experience a positive and supportive environment during pregnancy. This strong social backing could potentially serve as a buffer against psychological distress such as depression and fear of childbirth. However, the moderate variation indicated by the SD also suggests that perceived support, though generally high, is not uniformly experienced and may depend on factors like family structure, spousal involvement, and community norms.

**N=418**

Figure 2: Distribution of level of perceived social support among nulliparous women.

Figure 2 illustrates the level of perceived social support among the 418 nulliparous women included in the study. The data show that a vast majority of participants (95.9%) perceived a high level of social support during their pregnancy. A smaller segment (4.1%) reported moderate support, while none of the women reported experiencing low support. This finding is encouraging as social support whether from family, spouse, friends, or healthcare providers plays a crucial protective role in maternal mental health and overall birth experience. The predominance of high perceived support indicates a culturally or structurally embedded support system for pregnant women in this setting. However, the presence of even a small group with only moderate support signals a need for ongoing vigilance and possibly targeted outreach to ensure no woman feels isolated during her pregnancy journey.

**Section VII: Findings related to correlation between fear of child birth with psychological factors (Depression and perceived social support) among nulliparous women with demographic variables**

Table 8: Distribution of fear of childbirth and its associated factors among nulliparous women

 **N=418**

|  |  |  |  |
| --- | --- | --- | --- |
| **Correlation**  | **Mean** | **r value**  | **P value**  |
| **Fear of child**  | 105.60±5.18 | 0.323 | **0.001\*** |
| **Depression** | 15.81±1.67 |
| **Fear of child** | 105.60±5.18 | 0.306 | **0.001\*** |
| **Perceived Social support** | 66.90±3.59 |

**\*p value < 0.05 level of significance NS-Non-Significant**

Table 8 examines the statistical correlation between fear of childbirth and two important psychological variables, depression and perceived social support. The findings show a moderate positive correlation between fear of childbirth and depression (r=0.323, p=0.001), indicating that as fear levels increase, depressive symptoms tend to increase as well. Similarly, a positive correlation was observed between fear of childbirth and perceived social support (r=0.306, p=0.001). Interestingly, the positive correlation with social support may seem counterintuitive at first glance, but it might reflect a complex psychological process: women with heightened fear may seek or recognize more support, or those who are more expressive of fear might receive more attention and care from their surroundings. These statistically significant relationships underscore the intertwined nature of emotional well-being and childbirth-related anxiety. The findings reinforce the importance of a holistic antenatal approach that includes psychological assessment and emotional support as integral components of maternal care.

**Section VIII: Findings related to association between fear of child birth among nulliparous women with demographic variables**

Table 9. Association between fear of childbirth among nulliparous women with selected demographic variables

 **N=418**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **S.****No** | **Demographic Variables** | **Fear of childbirth** | **χ2 value** | **df** | **p value** |
| **Mild to moderate** | **Severe fear** |
| 1 | Age in years 1. 21-25 year
2. 26-30 year
3. 31-35 year
4. 36-40 years
 | 102-- | 19521010-- | 24.47 | 2 | **0.001\*** |
| 2 | Religion 1. Hindu.
2. Christian.
3. Muslim
4. Buddhist
 | 3000 | 25765984 | 1.836 | 3 | 0.607NS |
| 3 | Marital status 1. Married
2. Unmarried
3. Widow
4. Separated
 | 3----0 | 407----8 | 0.059 | 1 | 0.808NS |
| 4 |  Education1. No formal education
2. Primary to high school
3. Higher secondary
4. Graduate
5. Postgraduate and above
 | 03020 | 74126186272 | 17.44 | 4 | **0.001\*** |
| 5 | Education of husband 1. No formal education
2. Primary to high school
3. Higher secondary
4. Graduate
5. Postgraduate and above
 | 03000 | 78134164318 | 6.198 | 4 | 0.185NS |
| 6 | Occupation of women1. Government employee
2. Private employee
3. Self employed
4. Housewife
5. Daily wage
 | 0003-- | 1268316190-- | 3.523 | 3 | 0.318NS |
| 7 | Occupation of husband 1. Government employee
2. Private employee
3. Self employed
4. Daily wage
 | 111-- | 15017788-- | 0.273 | 2 | 0.872NS |
| 8 | Income per month (in rupees): 1. ≤10,000
2. 10,001 -20,000
3. 20,001 -30,000
4. ≥ 30,001
 | 3000 | 1641135880 | 4.542 | 3 | 0.338NS |
| 9 | Type of family1. Joint
2. Extended
3. Nuclear
 | 210 | 25220143 | 6.871 | 2 | **0.033\*** |
| 10 | Habitat 1. Urban
2. Rural
 | 12 | 196219 | 0.231 | 1 | 0.631NS |
| 11 | Received any information/education related to pregnancy1. Yes
2. No
 | 30 | 38431 | 0.242 | 1 | 0.623NS |
| 12 | Past / Present history of mental illness1. Yes
2. No
 | --3 | --415 | NA | NA | NA |
| 13 | Family History of mental illness (both in family andi n-laws)1. Yes
2. No
 | 03 | 3412 | 0.022 | 1 | 0.883NS |
| 14 | Presence or availability of supportive persons during pregnancy:1. Yes
2. No
 | 30 | 38431 | 0.242 | 1 | 0.623NS |

**\*p value < 0.05 level of significance NS-Non-Significant**

Table 9 explores the association between the level of fear of childbirth and various socio-demographic variables among the 418 nulliparous women using chi-square analysis. The table reveals that age and educational status of the women, as well as type of family, were significantly associated with the level of fear of childbirth, with p-values less than 0.05.

Age was strongly associated with fear levels (χ² = 24.47, p = 0.001). Most of the women experiencing mild to moderate fear were aged between 21–30 years, but a few women aged 31–35 years were found to experience more severe levels. This suggests that maternal age may influence perceptions and emotional responses toward childbirth. Education of the women also showed a significant association (χ² = 17.44, p = 0.001), indicating that lower levels of education may be linked to higher levels of fear. Those with no formal education or only up to high school appeared more likely to report elevated childbirth fear. Type of family was another factor significantly associated with fear levels (χ² = 6.871, p = 0.033). Women living in joint families may receive more emotional support compared to those in nuclear or extended families, possibly influencing their perception of childbirth.

On the other hand, religion, marital status, education of husband, occupation of both women and their husbands, monthly income, habitat (urban/rural), receipt of pregnancy-related education, and history of mental illness or support during pregnancy showed no statistically significant association with fear levels (p > 0.05). These findings suggest that while certain social variables particularly age, education, and family structure can shape childbirth-related fears, other socio-economic or demographic variables may not independently influence such fears in a significant way.

**Section IX: Findings related to association between fear of child birth among nulliparous women with obstetrics variables**

Table 10. Association between fear of childbirth and obstetric characteristics of nulliparous women

 **N=418**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **S.****No** | **Obstetric Characteristics** | **Fear of child birth** | **χ2 value** | **df** | **p value** |
| **Mild to moderate** | **Severe fear** |
| 1 | Gestational age at the time of data collection1. >14 weeks to 18 weeks
2. 19 weeks to 23 weeks
3. 24 weeks to 28 weeks
4. 29 weeks to 33 weeks
5. 34 weeks to 38 weeks
6. 39 weeks to <41weeks
 | 20100-- | 1111111614037-- | 41.36 | 4 | **0.001\*** |
| 2 | Trimester 1. 2nd Trimester
2. 3rd Trimester
 | 21 | 241174 | 0.090 | 1 | 0.764NS |
| 3 | Type of pregnancy 1. Planned
2. Unplanned
 | 30 | 37243 | 0.346 | 1 | 0.556NS |
| 4 | Preferable delivery method 1. Vaginal birth
2. Caesarean birth
 | 12 | 229186 | 0.574 | 1 | 0.448NS |
| 5 | Experienced any complications of pregnancy during the pregnancy period 1. Yes
2. No
 | 12 | 87328 | 0.274 | 1 | 0.601NS |
| 6 | Relationship with partner1. Close
2. Good
3. Moderate
4. Occasional conflicts
 | 0201 | 652236859 | 1.812 | 3 | 0.612NS |
| 7 | Relationship with in law1. Close
2. Good
3. Moderate
4. Occasional conflicts
 | 21---- | 38629---- | 3.103 | 1 | 0.078NS |
| 8 | Previous history of abortion or miscarriage1. Yes
2. No
 | 12 | 61354 | 0.819 | 1 | 0.366NS |
| 9 | Do you have childbirth fear1. Yes
2. No
 | 30 | 38223 | 0.176 | 1 | 0.675NS |

**\*p value < 0.05 level of significance NS-Non-Significant**

Table 10 analyzes the relationship between fear of childbirth and obstetric characteristics of the nulliparous women. The only variable that showed a statistically significant association with fear level was gestational age at the time of data collection (χ² = 41.36, p = 0.001). This suggests that the timing within pregnancy may impact how fear is experienced. For instance, as pregnancy progresses and women approach labor, their fear levels might increase due to anticipation, anxiety about labor pain, and uncertainty about outcomes.

Other obstetric factors including trimester, type of pregnancy (planned or unplanned), preferred delivery method, complications during pregnancy, relationships with partner and in-laws, previous history of miscarriage or abortion, and even direct self-reported childbirth fear did not show a statistically significant association with the actual levels of fear reported (p > 0.05).

This indicates that while fear of childbirth is nearly universal in this group, its intensity may fluctuate with gestational age but is not necessarily dictated by obstetric experiences or relationship dynamics alone. These findings highlight the importance of timely psychosocial support during key stages of pregnancy, especially in the third trimester, when fear may peak.

**Section X: Findings related to association between fear of child birth among nulliparous women with maternal factors**

Table 11. Association between fear of childbirth and maternal factors of nulliparous women

 **N=418**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **S.****No** | **Maternal factors** | **Fear of child birth** | **χ2 value** | **df** | **p value** |
| **Mild to moderate** | **Severe fear** |
| 1 | Uncertainty of duration of labor a.Yes b.No  | 21 | 310105 | 0.102 | 1 | 0.750NS |
| 2 | Fear of labour pain a.Yes b.. No | 30 | 39323 | 0.176 | 1 | 0.675NS |
| 3 | Being alone in labour room a.Yes b.No | 03 | 174241 | 2.155 | 1 | 0.142NS |
| 4 | Fear of procedures performed in labor room  a.Yes b.No | 12 | 300115 | 2.243 | 1 | 0.134NS |
| 5 | Fear of invasion of privacy a.Yes b.No | 12 | 241174 | 0.748 | 1 | 0.387NS |
| 6 | Disturbed self-image a.Yes b.No | 21 | 74341 | 4.775 | 1 | **0.029\*** |
| 7 | knowledge about the childbirth procedure a.Yes b.No | 21 | 33976 | 0.447 | 1 | 0.504NS |
| 8 | Family support during pregnancy a.Yes b.No | 21 | 4069 | 12.38 | 1 | **0.001\*** |
| 9 | Bad obstetric history of family members a.Yes b.No | 03 | 53362 | 0.439 | 1 | 0.508NS |
| 10 | Knowledge related to care of child a.Yes b.No | 21 | 310105 | 0.102 | 1 | 0.750NS |
| 11 | Apprehension regarding birth defect in child a.Yes b.No | 03 | 47368 | 0.383 | 1 | 0.536NS |
| 12 | Planned pregnancy  a.Yes b.No | 03 | 252163 | 1.951 | 2 | 0.377NS |
| 13 | Feeling of insecurity a.Yes b.No | 30 | 38926 | 0.200 | 1 | 0.654NS |
| 14 | Stressful life event during pregnancy a.Yes b.No | 03 | 25390 | 0.192 | 1 | 0.661NS |
| 15 | Worries about episiotomy a.Yes b.No | 30 | 38728 | 0.217 | 1 | 0.641NS |

**\*p value < 0.05 level of significance NS-Non-Significant**

Table 11 explores how specific maternal factors are associated with levels of fear of childbirth. Two maternal factors showed statistically significant associations:

Disturbed self-image (χ² = 4.775, *p* = 0.029) Women concerned about changes to their physical appearance or body image during pregnancy and childbirth reported significantly higher levels of fear. This suggests that concerns over personal identity and physical alteration play a role in childbirth anxiety.

Family support during pregnancy (χ² = 12.38, *p* = 0.001), A lack of family support was significantly associated with higher levels of fear. Women with strong family support were more likely to report only mild or moderate fear, whereas those with limited or no support experienced greater psychological distress.

Other maternal concerns including fear of labour pain, uncertainty of labour duration, fear of medical procedures, fear of privacy invasion, knowledge levels, worries about episiotomy, insecurity, stressful life events, and family history of poor obstetric outcomes did not show statistically significant associations with the level of fear (*p* > 0.05), although many were reported at high frequencies.

These findings imply that while many women share similar concerns about labor and delivery, the presence of strong emotional support and a positive self-image are particularly protective against severe childbirth fear. Interventions focusing on body image, emotional reassurance, and enhancing family involvement could therefore be highly beneficial.

The present study aimed to assess the fear of childbirth and identify its associated socio-demographic, obstetric, maternal, and psychological factors among nulliparous women. The findings revealed that fear of childbirth is a widespread experience, with 99.3% of first-time pregnant women reporting mild to moderate levels of fear. Although none experienced severe or very intense fear.

The socio-demographic analysis revealed that the majority of women were aged 21–30 years, married, and had completed higher secondary education. Most were housewives from joint families residing in rural areas. These findings are consistent with studies conducted in similar low- to middle-income settings where younger, first-time mothers often reside in extended families and may have limited income or employment opportunities [18]. Interestingly, the high rate of pregnancy-related information (91.6%) and universal absence of personal or family history of mental illness suggest that while mental health conditions may not be overtly recognized or reported, underlying psychological concerns such as fear of childbirth may still be present. This highlights the need for routine psychological screening, even among seemingly low-risk populations.

In terms of obstetrics characteristics, it showed that most women were in their second or third trimester, with the majority having planned pregnancies and preferring vaginal births. However, a notable 21.1% reported complications during pregnancy. The preference for vaginal delivery despite high rates of childbirth fear suggests cultural or health system influences, where cesarean sections may be less encouraged unless medically indicated. The findings align with previous research that links complications, lack of partner support, and prior adverse reproductive experiences (like miscarriage) with heightened fear [19]. Strong partner and in-law relationships reported in this study may have a protective effect, although fear still persisted suggesting the complexity of childbirth anxiety.

The majority (99.3%) of the women reported mild to moderate fear of childbirth, with a mean score of 105.6 (SD=5.18). This aligns with global findings showing fear of childbirth is especially prevalent among nulliparous women due to lack of personal birthing experience [20]. No severe or intense fear was reported, which may reflect normalization of childbirth anxiety, underreporting due to stigma, or trust in the healthcare system. However, domain-wise analysis showed high scores in areas like negative appraisal and lack of self-efficacy indicating internal psychological conflicts despite outward social support. These results emphasize the need for interventions that enhance women's confidence, self-control, and emotional readiness for delivery.

Maternal concerns such as fear of labor pain (94.5%), worries about episiotomy (93.3%), insecurity (93.8%), and uncertainty about labor duration (74.6%) were prominent. These fears are consistent with global research that identifies pain and procedural fears as leading causes of childbirth anxiety [21]. Despite high levels of knowledge and family support, these internal fears persisted, highlighting that emotional preparedness is equally critical. The fact that disturbed self-image and lack of support were significantly associated with higher fear indicates that individual perceptions of bodily change and emotional security are key components in managing childbirth anxiety.

Depression was alarmingly common, with 99% of women showing signs of possible depression. The mean possible depression score was 15.81, which indicates low to moderate depressive symptoms, commonly seen in antenatal populations [22]. The overlap between fear of childbirth and possible depression has been well documented and may reflect a bidirectional relationship fear contributing to depressive mood, and depression amplifying childbirth anxiety. This highlights an urgent need for integrated mental health screening during routine antenatal care to address hidden psychological burdens before they escalate into postpartum complications.

Despite the high prevalence of childbirth fear and possible depression, nearly all women (95.9%) reported high social support, and none reported low support. This may reflect cultural norms in joint families or strong community networks in rural areas. However, the presence of fear and depression despite strong support suggests that emotional support alone may not resolve childbirth anxiety unless accompanied by professional counselling and childbirth preparation. The data support the idea that perceived support is a protective factor, but not always sufficient to eliminate psychological distress [23].

Statistical analysis revealed that age, education level, and family type were significantly associated with fear of childbirth. Younger women and those with less education had higher fear levels, aligning with studies that show inadequate coping skills and limited understanding of childbirth can lead to greater anxiety [24]. The association with joint family settings may reflect increased exposure to others’ negative birth stories or traditional expectations, although these families may also offer emotional protection. Among obstetric variables, only gestational age showed a significant association with childbirth fear, with fear increasing in later trimesters. This is consistent with previous studies where anxiety commonly increases with progression in pregnancy caused by expectation, rising physical discomfort and emotional unrest [25]. No other obstetric and pregnancy planning related variables added significantly to fear in the multivariate model, indicating that internal psychological responses are more powerful to influence than external obstetric experiences in explained fear. Only body disturbance in self-image, as well as being unsupported by the family, were related to higher degrees of fear. Although many of maternal factors (such as fear of the procedures and concerns about the labor pain) were common, but they were not significantly associated with fear severity. This suggests that emotional body perception and degree of social support may be more important than written and procedural apprehension in shaping fear. These insights implicate the necessity of a broad antenatal counselling, not restricted to education, regarding not only body perception but also self-efficacy and emotional reassurance [26].

**4. CONCLUSION**

The most frequently mentioned maternal factors were fear of the pain of labor, lack of security, fear of an episiotomy, and uncertainty of the labor process, reflecting a blend of physical and psychological concerns. Although most women were well-informed about childbearing and had strong family and social support, these factors alone did not alleviate their fears. This recurring theme suggests that addressing fear of childbirth requires going beyond knowledge provision to deeper psychological, experiential, and emotional dimensions.

A striking finding was the high rate of possible depression (99%) and its strong association with fear of childbirth, highlighting the close emotional relationship between antenatal anxiety and depressive symptoms. Notably, even women with good perceived social support reported childbirth-related fears, underscoring that psychosocial factors interact in complex ways. Statistical analysis further revealed that age, education level, and family type were significantly associated with fear levels, while among obstetric variables, only gestational age showed a significant relationship indicating that fear may intensify as delivery approaches. Disturbed self-image and lack of family support emerged as key maternal factors associated with higher fear levels, reinforcing the need for integrated psychosocial and emotional care.

**Implications:** These findings demonstrate that fear of childbirth is a multifactorial issue that cannot be addressed solely through routine antenatal education. Holistic, woman-centered approaches are essential, incorporating antenatal counselling, psychological screening, birth preparedness classes, and opportunities for continuous emotional support during labor. Integrating mental health interventions into routine antenatal care such as early identification of depressive symptoms, targeted counselling for women with negative self-perceptions, and strengthening supportive networks can help reduce fear, improve maternal well-being, and enhance overall birth experiences. The study’s cross-sectional design restricts causal interpretations, and reliance on self-reported data may have introduced reporting bias. Furthermore, as the study was conducted in a specific cultural and geographical setting in Sikkim, the findings may not be fully generalizable to other regions. Future longitudinal and interventional studies are recommended to better understand causal pathways and evaluate the effectiveness of tailored psychosocial interventions.

COMPETING INTERESTS DISCLAIMER:

Authors have declared that they have no known competing financial interests OR non-financial interests OR personal relationships that could have appeared to influence the work reported in this paper.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

The AI tool was not used for data generation, statistical analysis, or interpretation of findings. All intellectual content, research design, data collection, analysis, and conclusions are the sole responsibility of the authors. The authors have thoroughly reviewed and verified the content to ensure accuracy and integrity.

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