

Knowledge, Perception, and Attitude Towards Caesarean Delivery among Women and Service Providers: Insights from High-Prevalence Regions in India

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ABSTRACT

Background: Cesarean section (C-section) rates in India have risen markedly, especially in private facilities and specific regions, often surpassing WHO recommendations. This trend raises concerns about overuse, informed consent, and maternal autonomy. The study explores knowledge, perceptions, and attitudes toward C-sections among pregnant and recently delivered women.

Methods: A cross-sectional mixed-methods study conducted in 11 districts across five Indian states included interviews with 2,362 women (955 pregnant, 1,407 recently delivered) at public and private facilities. Composite indices assessed knowledge (21 items), perception (27), and attitude (19) toward C-sections. Qualitative insights were drawn from 37 interviews with obstetricians and gynecologists in four states.

Results: While most women were aware of vaginal (99%) and cesarean (86%) deliveries, awareness of assisted deliveries was notably low (9%). Information sources were primarily family and relatives (56.1%), with limited engagement from healthcare providers (16%). Knowledge, perception, and attitude scores varied significantly by religion, caste, income, education, and reproductive history, with higher scores

associated with older age, delayed marriage, prior cesarean experience, and chronic health conditions. These patterns were reinforced by qualitative insights, which highlighted the influence of personal experience and social context on women's understanding and attitudes toward delivery modes.

Conclusion: Despite widespread awareness of C-sections, knowledge and attitudes vary, especially among disadvantaged groups. Limited involvement of health professionals in the delivery of education underscores the need for stronger antenatal and postnatal counselling. Equity-focused interventions are vital to support informed choices and reduce unnecessary C-sections.

Keywords: C-section, maternal health, knowledge, perception, attitude, quantitative, qualitative, India.

INTRODUCTION

Globally, cesarean section (C-section) has emerged as a critical obstetric intervention, with its use rising markedly—from approximately 12% in 2000 to over 21% by 2015—according to World Health Organization (WHO) guidelines cautioning that rates exceeding 10–15% among all births may signal overuse without commensurate health benefits (Boerma et

al., 2018; World Health Organization, 2015). Similarly, in line with the rise of modern obstetric practices, India has experienced a substantial increase in caesarean section deliveries over the past few decades. By 2021, approximately 21.5% of all births were conducted via C-section—almost nine times higher than the 2.5% recorded in 1995 (International Institute for Population Sciences, 1995, 2021). While C-sections serve as lifesaving procedures in cases of fetal distress, obstructed labor, or maternal health complications, increasing evidence underscores potential risks—such as heightened maternal morbidity, surgical site infections, and long-term reproductive consequences—when performed without medical indication (Betrán et al., 2016; Betran et al., 2021; Ezeonu et al., 2017; Golandaj et al., 2024; Sobhy et al., 2019).

In India, institutional deliveries have significantly increased following the introduction of schemes like Janani Suraksha Yojana (JSY) and Janani Shishu Suraksha Karyakram (JSSK), but this public health gain has been accompanied by a surge in C-section rates, now approaching 21.5%, far exceeding WHO's recommended threshold (R. R. Singh et al., 2022). This rise is especially pronounced in the private sector, where rates as high as 38–60% have been documented, compared to just 13–14% in public facilities (Hallad et al., 2025; P. Singh et al., 2018). Such disparities highlight the complex interplay between provider practices, health system incentives, and patient socio-economic profiles.

Socio-demographic factors—including maternal age, education, wealth, residence, and caste—have consistently emerged as major determinants of C-section prevalence in India. Higher rates are observed among older, educated, and urban women, especially when accessing private care (M. Singh et al., 2024). Prior cesarean birth is also a strong predictor, with repeat C-sections frequently occurring (M. Singh et al., 2024). Additionally, qualitative data from Karnataka reveal that pregnant women

and caregivers often perceive C-section as a safer, faster, and more controlled method of delivery, although simultaneous concerns exist regarding pain, recovery time, future pregnancies, and financial burden. Studies further suggest that decisions are often shaped by healthcare providers, with women exercising limited autonomy (Attokaran et al., 2020).

Despite the wealth of research on determinants and outcomes associated with C-section, relatively few studies have examined the interplay of women's knowledge, attitudes, and perceptions alongside provider viewpoints within high-prevalence regions. Existing literature mainly focuses either on quantitative associations or on qualitative explorations in isolated settings but does not integrate both perspectives from multiple geographic zones. Addressing this gap is crucial, particularly given the ongoing policy emphasis on curbing unnecessary C-sections through measures such as provider audits, strengthening public facilities, and improving patient counselling. In this background, the study aims to assess knowledge, perceptions, and attitudes toward cesarean delivery among expectant and recently delivered women across five states with varying C-section prevalence, while capturing provider insights through in-depth interviews.

MATERIALS & METHODS

Study Design and Data Collection

This PAN-India study employed a cross-sectional design to examine knowledge, attitudes, and perceptions related to cesarean deliveries among women and service providers in regions with high C-section prevalence. Data were collected from eleven districts across five geographically diverse states—Jammu & Kashmir (North), Chhattisgarh (Central), Sikkim (Northeast), Maharashtra (West), and Telangana (South). In each state, two to three districts were purposively selected based on the district-level prevalence of cesarean deliveries, with one district drawn from the top three and

another from the bottom three. Within each district, two talukas were chosen: the district headquarters and a taluka with a high delivery caseload. From each taluka, one government hospital and at least two leading private hospitals or nursing homes were included.

Quantitative data were collected through structured interviews with a total of 2,362 respondents, comprising 955 pregnant women and 1,407 recently delivered mothers (871 normal vaginal deliveries and 536 C-sections). Of the total respondents, 1,968 were interviewed in public health facilities and 394 in private facilities. The data collection tool consisted of seven sections covering socioeconomic background, obstetric history, antenatal and delivery care, and knowledge, perceptions, & attitudes about C-section. Trained female investigators conducted the interviews, supervised by senior staff from Population Research Centres (PRCs) in six cities. Each data collection team, comprising four investigators, worked for 15 days per state during the period from January to March 2023. Data entry and processing were conducted using Census and Survey Processing System (CSPro) software version 7.6.0, and statistical analyses were performed using SPSS version 28.0 (IBM Corp., 2021). Additionally, qualitative insights were gathered through 37 in-depth interviews with obstetricians and gynecologists, as well as consultations with state health officials in four states. For further details on the survey design, sampling strategy, and implementation process, refer to the PAN-India C-section study report by the Population Research Centre (Hallad et al., 2023).

Variables description

Outcome variables: The primary outcome variables in this study were the respondents' knowledge, perception, and attitude towards cesarean delivery, measured through composite indices constructed from multiple items.

Explanatory variables: The explanatory variables included a range of socio-demographic and health-related characteristics: religion, caste, place of residence (rural or urban), Below Poverty Line (BPL) status, type of family (nuclear, joint, or extended), monthly household income, age of respondent, educational attainment, employment status, age at marriage, previous C-section, and presence of chronic health conditions. These variables were selected based on their potential influence on maternal healthcare decisions and experiences related to C-section.

STATISTICAL ANALYSIS

Descriptive statistics, including means, standard deviation (SD), frequencies and percentage distributions, were used to profile the study participants and summarize levels of knowledge, perception, and attitudes toward C-section. Composite scores were computed for knowledge, attitude, and perception domains based on predefined scoring criteria.

Construction of Composite Indices

Three composite indices were developed to quantify respondents' knowledge (21 items), perception (27 items), and attitude (19 items) toward cesarean delivery. Each item was structured as a closed-ended question and coded dichotomously—1 for correct, favorable, or informed responses, and 0 for incorrect, unfavorable, or “Don't know” responses. Scores were calculated by summing all responses within each index, yielding score ranges of 0–21 (knowledge), 0–27 (perception), and 0–19 (attitude). Where skip logic was used (i.e., some items were omitted based on earlier answers), a uniform denominator was still applied to all respondents. Skipped items were not imputed and were treated as zero in the analysis.

Ethical Considerations

This study was conducted under the Annual Work Plan of the Population Research

Centre (PRC), approved and funded by the Ministry of Health and Family Welfare (MoHFW), Government of India. Ethical approval was obtained from the Institutional Ethics Committee of SDM College of Medical Sciences and Hospital, Dharwad. Informed consent was obtained from all participants prior to data collection.

RESULT

Profile of the study participants

Table 1 provides the percentage distribution of the study participants by background characteristics. The study included 2,362 women—both expectant and recently delivered mothers—from regions with high cesarean delivery prevalence. Most

participants were Hindu (73.3%), belonged to SC/ST or OBC groups (67.8%), and resided in rural areas (61.2%). Over half (51.4%) held a BPL card, and one-third (33.9%) reported a monthly family income of ₹10,000 or less. The sample was predominantly young (44.9% under 25 years), with modest education levels (32.8% with less than 10 years of schooling) and low workforce participation (73.9% not working). Nearly half were married between 20–24 years, and 35.1% were first-time pregnant. A prior C-section was reported by 19.1% of respondents. Only 11% had experienced an abortion, and 7% reported chronic health problems.

Table 1: Per cent distribution of the expectant and recently delivered mothers by background characteristics (N=2,362).

Background Characteristics	Categories	N	%
Religion	Hindu	1732	73.3
	Muslim	416	17.6
	Others	214	9.1
Caste	SC/ST	820	34.7
	OBC	783	33.1
	General	622	26.3
	No caste/DK/Can not say	137	5.8
Place of residence	Rural	1446	61.2
	Urban	916	38.8
Have BPL card	BPL	1214	51.4
	APL	904	38.3
	Don't know	244	10.3
Type of family	Nuclear	946	40.1
	Extended	308	13.0
	Joint	1108	46.9
Monthly family Income	Up to 10000	801	33.9
	10001 to 20000	573	24.3
	More than 20000	539	22.8
	Do not know	449	19.0
Age of respondent	Less than 25 Years	1061	44.9
	25-29 Years	798	33.8
	30 above Years	503	21.3
Education	No schooling or <10 Years	774	32.8
	10-12 Years	1015	43.0
	>12 Years	573	24.3
Working status	Working	617	26.1
	Not-working	1745	73.9
Age at marriage	Less than 20 Years	742	31.4
	20-24 Years	1081	45.8
	25 and above Years	538	22.8
Had C-section earlier	This is first pregnancy	830	35.1
	Yes	452	19.1
	No	1080	45.7
Experience of abortion	No	2102	89.0

	Yes	260	11.0
Chronic health problem	No	2196	93.0
	Yes	166	7.0
	Total	2362	100

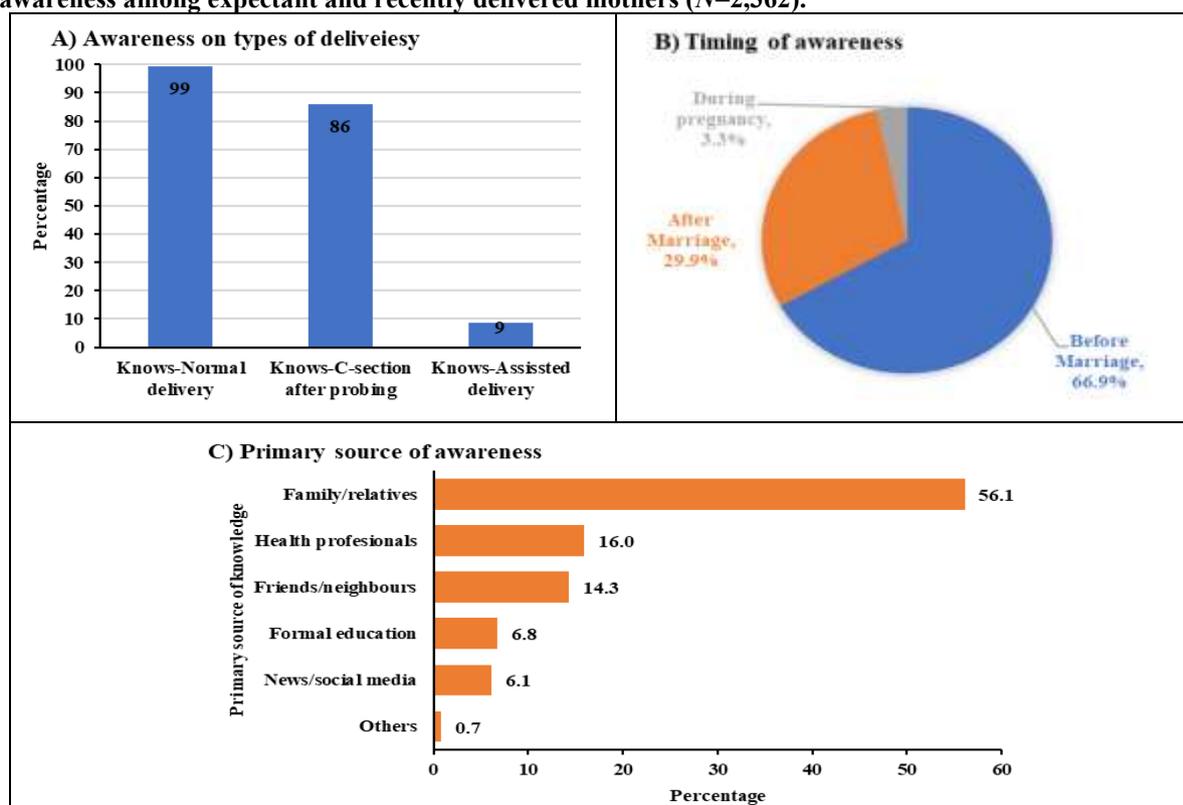
Note: N, number of women, SC, scheduled caste; ST, scheduled tribe; OBC, other backward classes; BPL, below poverty line; APL, above poverty line.

Awareness of delivery types, timing, and primary sources of awareness

Figure 1 explores the level of awareness among expectant and recently delivered mothers about cesarean deliveries, breaking it down into three dimensions: (A) Types of deliveries known, (B) Timing of when awareness was acquired, and (C) Primary sources of that awareness. Most respondents were aware of both vaginal and cesarean deliveries, with 99% and 86% reporting knowledge of normal and cesarean delivery, respectively. However, awareness of assisted delivery was low (9%), indicating

potential gaps in comprehensive understanding (Figure 1-A). In terms of timing, a majority (66.9%) became aware before marriage, suggesting early exposure through family, community, or education. About 29.9% gained awareness after marriage, and only 3.3% during pregnancy, pointing to a limited role of antenatal care in delivering first-time information. This pattern reflects relatively proactive awareness but highlights the need for more structured preconception interventions (Figure 1-B).

Figure 1: Level of awareness regarding types of delivery, timing of awareness, and primary source of awareness among expectant and recently delivered mothers (N=2,362).



Note: The figure illustrates the percentage distribution of mothers' (A) awareness concerning various delivery types, (B) when they became aware, and (C) the main channels through which they received this information. Data reflects responses from both expectant and recently delivered mothers.

Figure 1(C) also shows that family and relatives were the dominant source of knowledge (56.1%), followed by health professionals (16.0%) and friends/neighbours (14.3%). Formal education and media played minimal roles. These findings underscore the strong influence of informal networks in shaping maternal health awareness and the need to strengthen the health system and educational engagement in disseminating accurate delivery-related information.

Women’s Knowledge, Perception, and Attitude towards C-section

Table 2 presents the mean (SD) score of knowledge, perception, and attitude towards cesarean deliveries among expectant and recently delivered mothers, stratified by household characteristics. The results reveal significant variation across religious, caste,

economic, and family-related factors. Muslim women exhibited the highest scores in all three domains—knowledge (9.22 ± 4.29), perception (13.46 ± 8.30), and attitude (8.26 ± 3.83)—suggesting a stronger engagement with cesarean-related information compared to Hindu and other religious groups.

Table 2: Mean (SD) score of knowledge, perception, and attitude towards C-section among expectant and recently delivered mothers by background characteristics (N=2,362).

Background Characteristics	Categories	Knowledge Mean ± SD	Perception Mean ± SD	Attitude Mean ± SD
Religion	Hindu	6.55 ± 4.30	6.38 ± 6.92	5.83 ± 3.77
	Muslim	9.22 ± 4.29	13.46 ± 8.30	8.26 ± 3.83
	Others	6.84 ± 4.83	6.91 ± 7.74	4.96 ± 3.97
Caste	SC/ST	6.05 ± 4.48	5.96 ± 7.11	5.36 ± 3.90
	OBC	7.05 ± 4.51	7.11 ± 7.46	6.08 ± 3.92
	General	8.24 ± 4.08	10.12 ± 8.02	7.36 ± 3.60
	No caste/DK/Can not say	7.59 ± 4.44	10.08 ± 8.18	6.23 ± 4.29
Place of residence	Rural	6.99 ± 4.41	7.58 ± 7.68	6.10 ± 3.95
	Urban	7.14 ± 4.55	7.81 ± 7.81	6.29 ± 3.90
Have BPL card	BPL	6.89 ± 4.46	7.67 ± 7.86	6.06 ± 3.93
	APL	7.36 ± 4.49	7.69 ± 7.55	6.35 ± 3.86
	Don't know	6.69 ± 4.36	7.60 ± 7.78	6.16 ± 4.14
Type of family	Nuclear	7.51 ± 4.67	7.98 ± 7.93	6.35 ± 4.01
	Extended	8.07 ± 4.28	8.57 ± 7.69	7.56 ± 3.36
	Joint	6.37 ± 4.22	7.17 ± 7.54	5.65 ± 3.90
Monthly family Income	Up to 10000	6.43 ± 4.51	7.26 ± 7.99	5.75 ± 4.03
	10001 to 20000	7.57 ± 4.21	8.48 ± 7.54	6.75 ± 3.85
	More than 20000	8.34 ± 4.26	10.08 ± 7.99	7.33 ± 3.92
	Do not know	5.94 ± 4.46	4.49 ± 5.80	4.83 ± 3.28
Age of respondent	Less than 25 Years	6.17 ± 4.30	5.86 ± 6.82	5.56 ± 3.84
	25-29 Years	7.55 ± 4.49	8.32 ± 7.82	6.50 ± 3.91
	30 above Years	8.11 ± 4.40	10.48 ± 8.39	6.98 ± 3.93
Education	No schooling or <10 Years	7.05 ± 4.63	8.57 ± 8.23	6.08 ± 4.22
	10-12 Years	6.88 ± 4.69	7.31 ± 7.90	5.91 ± 3.99
	>12 Years	7.34 ± 3.77	7.11 ± 6.57	6.79 ± 3.29
Working status	Working	7.16 ± 4.81	6.78 ± 7.81	5.62 ± 3.88
	Not-working	7.01 ± 4.33	7.99 ± 7.68	6.38 ± 3.93
Age at marriage	Less than 20 Years	5.99 ± 4.20	5.74 ± 6.62	5.49 ± 3.93
	20-24 Years	6.98 ± 4.53	7.46 ± 7.73	6.10 ± 3.89
	25 and above Years	8.67 ± 4.20	10.79 ± 8.19	7.29 ± 3.76
Experience of C-section earlier	This is first pregnancy	6.58 ± 4.52	6.68 ± 7.10	5.59 ± 3.78
	Yes	8.06 ± 3.75	9.37 ± 8.14	7.98 ± 3.41
	No	6.99 ± 4.63	7.73 ± 7.90	5.88 ± 4.02
Experience of abortion	No	6.95 ± 4.52	7.47 ± 7.70	6.00 ± 3.96
	Yes	7.88 ± 3.88	9.30 ± 7.85	7.62 ± 3.37
Chronic health problem	No	7.01 ± 4.48	7.56 ± 7.70	6.11 ± 3.93
	Yes	7.53 ± 4.29	9.19 ± 8.01	7.04 ± 3.85

Note: SD, standard deviation; SC, scheduled caste; ST, scheduled tribe; OBC, other backward classes; BPL, below poverty line; APL, above poverty line.

Similarly, women from General caste backgrounds reported higher mean scores than those from SC/ST groups, reflecting

persistent caste-based disparities in health awareness and attitudes. Urban respondents showed marginally higher scores than rural

counterparts, indicating a potential narrowing of the rural-urban gap, possibly due to improved outreach. Socioeconomic indicators also revealed consistent patterns: women from extended families and higher-income households demonstrated greater awareness and more favorable attitudes, whereas those uncertain of their income level scored lowest across all domains. Although women with APL status performed slightly better than BPL respondents, differences were modest. Overall, the findings emphasize the influence of socio-cultural and economic contexts on maternal health awareness, highlighting the need for targeted educational interventions among disadvantaged populations.

Further, the results illustrate the influence of individual characteristics on knowledge, perception, and attitudes toward cesarean delivery. Age emerged as a strong determinant, with women aged 30 years and above reporting the highest scores across all domains, suggesting that increased age and reproductive experience contribute to greater awareness and favorable attitudes. Educational differences were less consistent; while women with more than 12 years of schooling showed a more positive attitude, those with less than 10 years of education reported higher perception scores, indicating variability in how education translates to cesarean-related understanding. Employment status showed marginal effects, with non-working women slightly more positive in their perceptions and attitudes, potentially reflecting greater reliance on familial or institutional sources for health information. A significant association was observed with age at marriage: women who married at 25 years or older had notably higher scores, indicating a possible link between delayed marriage and health literacy. Reproductive history further influenced responses. Prior cesarean experience and a history of abortion were both associated with substantially higher knowledge, perception, and attitude scores, highlighting the role of

experiential learning. Similarly, women with chronic health conditions reported higher awareness, likely due to increased engagement with healthcare services. Collectively, these findings emphasize the role of life stage, reproductive experience, and health status in shaping maternal perspectives on cesarean delivery (Table 2).

Qualitative Insights into Provider Perceptions and Attitudes Toward C-section

In-depth interviews with obstetricians, gynecologists, and maternal health officials offered valuable context to interpret the quantitative trends in women's knowledge, perceptions, and attitudes toward cesarean delivery. Providers identified a range of systemic, clinical, and behavioral drivers influencing both their own practices and women's preferences, particularly in high-prevalence districts.

Many obstetricians emphasized that the decision to perform a cesarean section is primarily driven by clinical factors such as fetal distress, maternal complications, or labor progression. However, several acknowledged that non-clinical considerations, including concerns over medico-legal liability, institutional convenience, and financial incentives—also play a growing role, especially in private-sector settings. As one provider noted, *“In private hospitals, a cesarean costs three or four times more than a normal delivery. Round-the-clock staff isn't always available, so a planned C-section becomes easier and more profitable.”*

Doctors also observed geographical and economic disparities in C-section prevalence. Districts with higher income levels and urban infrastructure were reported to have disproportionately elevated C-section rates, often attributed to greater access to private care and a cultural shift toward surgical deliveries. *“Wherever there's more money, there are more C-sections being done,”* stated one physician, citing examples from Telangana. These insights align with the quantitative findings,

which showed higher knowledge and attitude scores among urban, wealthier, and more educated women.

In terms of provider attitudes, a notable theme was the growing normalization and acceptability of cesarean delivery, both within medical practice and among women themselves. Providers frequently encountered patients who expressed either preference for C-section due to fear of pain or resigned acceptance stemming from low confidence in vaginal birth. As one doctor reflected, *“Women today—especially those in their 30s or with prior C-sections—often see surgery as the safer, faster option. Pain tolerance has changed, and the trust they place in us makes them less likely to question the recommendation.”*

This dynamic has shifted the burden of decision-making onto the provider, particularly in high-pressure private environments where delays or complications may attract scrutiny. Several doctors remarked on the emotional pressure from patients and families to avoid perceived risks, leading to more defensive clinical behavior. *“Even when labor is progressing well, we often face pressure—if anything goes wrong, it’s the doctor who’s blamed,”* shared one provider, highlighting how patient psychology and institutional constraints coalesce to shape clinical choices.

Complementing these views, state-level maternal and child health (MCH) officials pointed to structural and contextual factors underlying inter-district variation in C-section rates. Districts with a higher density of private hospitals, single-obstetrician-led facilities, urbanization, and greater availability of specialists were associated with elevated C-section levels. In contrast, remote or tribal areas with limited access to skilled personnel and surgical infrastructure exhibited lower rates. Officials also noted that late marriages, lower fertility, and elective scheduling—particularly in private practice—contribute to attitudinal shifts favoring surgical births. Importantly, they emphasized that public facilities generally

adhere more closely to clinical indications, while private institutions may perform cesareans even in non-indicated cases, partly to manage time and minimize risk.

These qualitative narratives collectively corroborate the quantitative patterns observed in the present study—where higher attitude scores were concentrated among women with prior cesareans, chronic health conditions, greater age, and higher socioeconomic status. The findings underscore that perceptions and attitudes toward cesarean delivery are shaped by an intricate interplay of medical necessity, institutional practices, socio-economic context, and evolving patient expectations.

DISCUSSION

This study offers important insights into the knowledge, perceptions, and attitudes toward cesarean delivery among expectant and recently delivered mothers in regions with high cesarean prevalence across India. The findings underscore substantial socio-demographic and experiential disparities that influence maternal understanding and preferences regarding C-section, with implications for both policy and practice.

The demographic profile of the respondents—predominantly rural, socioeconomically disadvantaged, and young—reflects the typical maternal population targeted by India’s public health programs. More than half of the women belonged to the SC/ST or OBC categories, and over 51% reported holding a Below Poverty Line (BPL) card. These indicators are critical because prior research shows that marginalized caste and economic groups often face systemic barriers to quality maternal healthcare and health literacy (Goli et al., 2016; Mohanty & Kastor, 2017; Mohanty & Srivastava, 2013). Indeed, our findings reveal significant disparities in C-section-related knowledge and attitudes across caste, income, and family type. Women from General caste backgrounds, higher-income households, and extended families consistently reported higher scores across all indices,

underscoring the compounded effect of social capital and economic security on health awareness.

Notably, the level of awareness regarding delivery types was generally high for normal (99%) and cesarean (86%) deliveries, indicating widespread familiarity with these methods. However, assisted vaginal delivery remained poorly understood, with only 9% of women reporting awareness. This limited understanding likely contributes to a binary perception of delivery options (normal vs. C-section). It may shape maternal preferences or acquiescence to surgical intervention in situations where assisted vaginal delivery could be appropriate. The limited exposure to such alternatives suggests a critical gap in comprehensive obstetric education at both community and health system levels.

Timing and sources of awareness further highlight the role of informal networks. A majority of women (66.9%) reported learning about delivery modes before marriage, with family and relatives being the primary source (56.1%). The role of healthcare professionals was surprisingly limited (16%), suggesting that antenatal care (ANC) services may not be fully utilized to educate women about their delivery options. This is consistent with existing literature showing that while ANC coverage has improved, the quality and comprehensiveness of counselling services remain inconsistent, particularly in rural and low-resource settings (Morón-Duarte et al., 2021). Strengthening the informational role of frontline health workers and integrating structured counselling on delivery options into routine ANC may be a critical step forward.

Our analysis also indicates that individual attributes such as age, education, and reproductive history significantly influence knowledge, perception, and attitude toward C-sections. Women aged 30 and above consistently demonstrated higher scores, which may be attributed to cumulative reproductive experience and more frequent

interactions with the health system. Similarly, those with a history of C-section or abortion reported substantially higher scores, affirming the role of experiential learning in shaping maternal health literacy. These findings align with previous studies emphasizing that direct exposure to medical procedures increases knowledge and alters health-seeking behavior (Hug et al., 2008).

Contrary to expectations, educational attainment showed a more nuanced association. While women with higher education levels (>12 years) reported more positive attitudes, perception scores were higher among those with less than 10 years of schooling. This discrepancy may be due to differential exposure to informal knowledge systems versus formal medical narratives, or it may reflect contextual factors such as family influence or prior health experiences. Employment status also had only a marginal effect, with non-working women slightly outperforming working women in perception and attitude scores. This may reflect the greater influence of domestic social networks or greater time availability for health engagement among non-working women.

Age at marriage emerged as another important determinant, with women who married at age 25 or older reporting the highest knowledge and attitude scores. Delayed marriage has been linked with improved maternal autonomy and access to education, both of which likely contribute to higher health awareness. The higher scores among women with chronic health problems also suggest that health system engagement, whether preventive or curative, creates pathways for increased maternal knowledge. Importantly, while urban women scored slightly higher than rural women, the narrow gap suggests some success in rural health outreach and diffusion of health information. However, given the dominance of informal sources, the health system must play a stronger role in ensuring that women across geographic and social strata receive accurate, evidence-based information about

delivery options, including the risks and benefits of C-sections.

These quantitative patterns are further illuminated by qualitative insights from service providers and health officials, who highlighted the role of institutional practices, medico-legal concerns, and evolving patient expectations in shaping both provider behavior and maternal attitudes toward C-sections. Such narratives help explain the observed socioeconomic and geographic disparities in knowledge and preference scores.

Overall, these findings illustrate that knowledge, perception, and attitudes toward C-sections are not shaped by singular factors but are embedded in a complex matrix of social identity, economic resources, prior reproductive experiences, and access to information. While awareness of C-sections is widespread, it is unevenly distributed, and often mediated by informal networks rather than professional counselling. This poses a significant challenge in contexts where the over-medicalization of childbirth—particularly in private health settings—is driven in part by patient demand or acquiescence without fully informed choice (World Health Organization, 2021).

Policy Implications

The findings of this study highlight the need for targeted, equity-driven policy interventions to address the growing normalization of cesarean deliveries in India. First, antenatal care (ANC) services must be strengthened to include structured, evidence-based counselling on delivery options, risks, and indications for C-section. The current reliance on informal sources such as family and peers underscores the urgent need to improve the health system's role as the primary disseminator of delivery-related knowledge. Second, policies should prioritize disadvantaged populations—including women from lower-income households, SC/ST groups, and those with limited education—by integrating culturally

sensitive and accessible communication strategies within maternal health programs.

Further, efforts to delay the age at marriage and enhance female education may have long-term benefits in increasing maternal autonomy and informed decision-making. Given the influence of prior reproductive experience on knowledge and perception, postnatal counselling should also be institutionalized as a standard component of care. Finally, regulating private sector practices and ensuring transparent, evidence-based indications for caesarean delivery are critical to curbing unnecessary surgical interventions, particularly in high-prevalence districts.

CONCLUSION

This study underscores the multifaceted nature of knowledge, perceptions, and attitudes toward C-section among Indian women, shaped by socio-economic status, caste, education, reproductive history, and healthcare access. While awareness of C-section is widespread, disparities persist, particularly among younger, rural, and socioeconomically disadvantaged women. Informal networks remain the dominant source of information, pointing to missed opportunities within formal health services to provide accurate and timely education. Integrating provider perspectives revealed that clinical decisions and maternal attitudes toward C-sections are shaped not only by medical need but also by systemic incentives, fear of complications, and patient-provider dynamics—factors critical to consider in efforts to reduce unnecessary cesarean births.

Improving maternal health literacy requires integrated strategies that strengthen ANC and postnatal counselling, engage community influencers, and regulate provider practices—especially in private facilities. By addressing these gaps, policy efforts can move beyond increasing institutional delivery rates to ensuring that every childbirth is informed, safe, and appropriate.

Declaration by Authors

Ethical Approval: Approved; the ethical approval to conduct the study was obtained from the Institutional Ethics Committee of SDM College of Medical Sciences and Hospital in Dharwad City. More importantly, individual informed consent was obtained from all the study participants before the interviews were conducted.

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Conflict of Interest: The authors declare no conflict of interest.

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