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Utilisation of Maternal Health Care Services by Scheduled and Non-Scheduled Caste Women: Evidence from Punjab

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Abstract

The study examines maternal healthcare utilisation in Punjab, focusing on the differences between Scheduled Castes (SCs) and non-Scheduled Castes (Non-SCs), using disaggregated data from the National Family Health Survey-5 (2019-2021). It employs descriptive, bivariate, and multivariate analysis techniques. Non-scheduled caste women have slightly better access to maternal health services than scheduled caste women, who experience more economic, social, and educational challenges. While both groups have similar antenatal care practices, non-scheduled caste women are more likely to use natal and postnatal care. Despite these disparities, overall maternal health care utilisation between SC and non-SC women remains broadly comparable. This parity may be influenced by the egalitarian ethos of Sikhism, which promotes equality and social justice. However, Punjab's maternal mortality rate of 105 remains high compared to Kerala's 19 and Maharashtra's 33. The state government is making efforts to improve access to maternal health for all, particularly for vulnerable populations from the scheduled castes.

Keywords: maternal health, caste disparities, natal care, postnatal care, Punjab

Introduction

The maternal mortality ratio, which is the proportion of maternal deaths per 100,000 live births due to causes related to pregnancy or within 42 days of termination of pregnancy, has declined by 34.3 per cent between 2000 and 2020. India's maternal mortality rate (MMR) was 103 in 2020, a significant improvement from 384 in 2000 (WHO, 2023). The risk of maternal death for a 15-year-old girl in 2020 is estimated to be 1 in 210, which is roughly half of what it was in 2000 (1 in 120).

However, it is disheartening to observe India's estimated 24,000 maternal deaths, which rank second only to Nigeria. India accounted for 8.3 per cent of global maternal deaths.

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The burden of maternal mortality varies significantly across regions and income groups. Generally, maternal deaths at the global level are inversely proportional to a country's economic development. Global experience has shown that quality obstetric care — encompassing efficient antenatal services, the prevention and treatment of anaemia, safe natal care, and postnatal support — has led to a reduction in maternal mortality. Maternal deaths worldwide result from factors such as obstetric haemorrhage, pregnancy-related infections, unsafe abortion, hypertension, delivery complications, and anaesthetic issues (Montgomery et al., 2014). Over half of maternal deaths stem from haemorrhage, hypertensive disorders, and sepsis (Say et al., 2014). Timely access to maternal and reproductive health services could have significantly reduced the number of maternal deaths in these areas (Dunn et al., 2017). The situation in India mirrors this trend. According to UNICEF, two-thirds of maternal deaths in India arise from severe bleeding (mostly postpartum), infections (typically after childbirth), high blood pressure during pregnancy (pre-eclampsia and eclampsia), delivery complications, and unsafe abortions. In India, a significant barrier to care is inadequate infrastructure, high costs involved, and a preference for home births. The increase in maternal deaths is also tied to cultural norms that promote early marriage and childbearing. As a result, women are likely to experience frequent pregnancies, face complications, and are disproportionately affected by these challenges.

India has made significant efforts to reduce maternal mortality and improve access to maternal healthcare. Although progress has been made, it remains uneven and inequitable, with many women still lacking access to these services. The national average maternal mortality ratio (MMR) stands at 103 per 100,000 live births, which is considerably higher than in neighbouring countries such as Thailand (29) and Sri Lanka (29) (WHO, UNICEF, UNFPA, and World Bank, 2023). The Government of India, under the National Health Mission (NHM), is actively pursuing the goal of reducing maternal mortality by focusing on key strategies for essential antenatal, natal, and postnatal care services across various states. However, notable disparities exist among the states of India as revealed in the SRS data (Table 1). The MMR ranges from a low of 19 in Kerala to a high of 195 in Assam. Compared to the national average of 97, Assam (195), Madhya Pradesh (173), Uttar Pradesh (167), and Chhattisgarh (137) exhibit higher maternal mortality ratios. In contrast, Kerala (19), Maharashtra (33), Telangana (43), and Andhra Pradesh (45) show lower maternal mortality ratios. Haryana (110) and Punjab (105) are less favourably positioned compared to the states with the lowest MMRs mentioned above.

There has been a notable decline in maternal mortality rates across all major states. Rajasthan, Jharkhand, Assam, and Bihar experienced the largest drop in MMR in absolute numbers from 2007-09 to 2018-20, with Rajasthan and Jharkhand each seeing a decrease of 205 points. Assam and Bihar experienced

declines of 195 points and 143 points, respectively. During the same period, Punjab fell from 172 to 105, and Haryana decreased from 153 to 110. This persistent decline has enabled India to meet the National Health Policy (NHP) goal of 100 per 100,000 live births by 2020. It is certainly on track to achieve the Sustainable Development Goal (SDG) target of 70 per 100,000 live births by 2030.

Maternal mortality is not only a health disadvantage; it is also a matter of social injustice. Significant disparities exist in this regard between the wealthy and the poor, as well as between rural and urban areas. Furthermore, these disparities vary between the scheduled castes (SCs) and non-scheduled castes (non-SCs). Numerous studies have documented that SCs have traditionally been a disadvantaged group in Indian society. They represent a deprived section of society that typically lacks economic resources, social status, and personal motivation to access reproductive health care services, resulting in higher rates of morbidity and mortality.

Table 1

Maternal Mortality Ratio and Lifetime Risk in India and Selected States, 2007-09 to 2018-20

Major states	2007-09		2015-17		2018-20	
	MMR	Lifetime risk *	MMR	Lifetime risk *	MMR	Lifetime risk *
Assam	390	1.0	229	0.5	195	0.42
Madhya Pradesh	269	1.0	188	0.6	173	0.53
Uttar Pradesh	194	1.4	216	0.7	167	0.50
Chhattisgarh	269	1.0	141	0.4	137	0.35
Odisha	258	0.7	168	0.4	119	0.25
Bihar	261	1.0	165	0.6	118	0.39
Rajasthan	318	1.2	186	0.6	113	0.33
Haryana	153	0.5	98	0.3	110	0.28
Punjab	172	0.4	122	0.2	105	0.19
Uttarakhand	194	1.4	89	0.2	103	0.22
West Bengal	145	0.3	94	0.2	103	0.18
INDIA	**212**	**0.6**	**122**	**0.3**	**97**	**0.21**
Karnataka	178	0.4	97	0.3	69	0.12
Gujarat	148	0.4	87	0.2	57	0.14
Jharkhand	261	1.0	76	0.2	56	0.15
Tamil Nadu	97	0.2	63	0.2	54	0.09
Andhra Pradesh	134	0.3	74	0.1	45	0.08
Telangana	-	-	76	0.1	43	0.08
Maharashtra	104	0.2	55	0.1	33	0.06
Kerala	81	0.1	42	0.1	19	0.03
Other states	149	0.4	90	0.2	76	0.15

Source: Office of the Registrar General of India, compiled from various volumes of Special Bulletins on Maternal Mortality in India (2007-09, 2015-17, and 2018-20), SRS Bulletins, Vital Statistics Division, Office of the Registrar General, India.

Note: * - Lifetime risk – Here, it is calculated as the probability that at least one woman of reproductive age (15-49) will die due to childbirth or puerperium.

Review of Literature

Caste plays a significant role in Indian society, influencing women's access to healthcare. For women from poorer, marginalised, and disadvantaged groups, accessing healthcare services is more challenging than for those from wealthier, non-marginalised, and advantaged groups. Social structures in India, as in many other contexts, hinder women's access to maternal and reproductive healthcare. The distribution of health inequities results not only from unequal access but also from unjust or insufficient social arrangements (Linda et al., 2013). Mishra et al. (2021) reported significant disparities in access to healthcare benefits within and across socioeconomic groups. Research indicates that women 's socioeconomic status and caste often influence their ability to utilise maternal health care services (Ali et al., 2021). Caste-based exclusion and discrimination are primary determinants of socioeconomic inequities across nearly all aspects of well-being in India, including maternal healthcare (Baru et al., 2010). The two most socially disadvantaged groups in India are the scheduled castes (SCs) and scheduled tribes (STs), both of which experience comparatively poorer health outcomes. Scheduled caste women face discrimination based on their caste when accessing maternal and reproductive health services (Patel et al., 2018). The caste identity of patients plays a crucial role in determining access to maternal health benefit schemes such as Janani Suraksha Yojana (Mishra et al., 2021). Compared to those from lower castes, women from upper castes demonstrate higher utilisation of reproductive health services due to their better socioeconomic status, which influences their reproductive choices. Women from scheduled castes experience more complications as a result of caste influences on healthcare provisions (Raj & Gupta, 2022). Although they represent a small proportion of the general population, women in the vulnerable SC/ST group have a disproportionately high rate of maternal deaths (Tanzin et al., 2013). Among the 1103 identified maternal deaths across Orissa, Rajasthan, Jharkhand, and Bihar, it was discovered that two-thirds occurred within the SC/ST groups. Additionally, 63 per cent of the maternal deaths transpired in families living below the poverty line.

The use of maternal health services helps reduce maternal morbidity and mortality; however, the utilisation of these services is influenced by various factors (Jat et al., 2011). Roy's (2004) analysis of health and nutrition inequities in select states revealed that socio-economic differences between the scheduled and other castes have resulted in disparities. Maternal mortality rates are higher among women living in rural areas and poorer communities, demonstrating significant differences between states and social classes. Despite this, most maternal deaths are preventable, as

healthcare solutions for preventing, diagnosing, and managing complications are well recognised. Basic maternal services, such as antenatal care (ANC), skilled birth attendance, and postnatal care (PNC), are essential for decreasing and managing pregnancy complications and alleviating the burden of these preventable deaths (Adam et al., 2005).

The persistently high rates of maternal mortality and morbidity among historically marginalised social groups, such as adolescent SCs and STs in India, can be partly attributed to the low utilisation of comprehensive antenatal healthcare services. Despite efforts by the Indian government, the uptake of full antenatal care (ANC) remains low among this population (Singh et al., 2023).

In comparison to other population groups, the population of scheduled castes and tribes is more likely to suffer from preventable diseases, have a lower life expectancy, and experience higher maternal and infant mortality rates. Furthermore, women from scheduled castes and tribes are more vulnerable to maternal morbidity and mortality than those from other social groups. Most maternal deaths are preventable through adequate and timely antenatal, delivery, and postpartum care for mothers (Radkar et al., 2007).

According to Keefer (2004), the social process of discrimination systematically excludes disadvantaged groups from accessing public services in India. The evidence indicates a significant disparity in health, access to education, and achievement within villages. The privileged castes in these villages attain higher achievements, while the deprived castes within the same areas experience lower utilisation. Furthermore, it was discovered that districts with a higher proportion of traditionally disadvantaged groups, in terms of caste, had lower public investment in the health and education sectors. Srinivasan (2004) found that instances of abject and moderate deprivation were more prevalent among society's scheduled caste members compared to other castes, despite a noticeable decline in the deprivation index level in both categories. Mishra (2006) noted the ongoing injustices in Indian society and the deprivation resulting from the market economy, which contributes to poor health conditions for disadvantaged social groups. Women from these groups are more likely to experience moderate to severe anaemia as access to resources becomes restricted and purchasing power increasingly dictates their well-being. The poor health status of scheduled caste women is attributed to financial constraints and limited access to healthcare services. Bajpai and Goyal (2004) investigated the extensive disparities in poverty, health, and educational outcomes across various segments of society. They found that caste and class are systematically linked to disparate outcomes in well-being. Even after 50 years of independence, the caste divide persists in the social

landscape, despite the Government of India's affirmative policy in favour of scheduled castes. Poverty is concentrated in areas with a higher proportion of backward castes and low female literacy rates. Caste remains a significant social determinant, with those belonging to the scheduled caste community lagging in access to healthcare services.

Socioeconomic inequalities in mother and child health represent a significant concern for achieving the Millennium Development Goals established by the United Nations (Kruk, Prescott, & de Pinho, 2011). Women and children from SC and ST backgrounds often experience poorer health outcomes compared to those from other castes (Jungari & Bomble, 2013). Numerous studies have highlighted the role of discrimination in limiting access to healthcare; indeed, public healthcare service providers tend to discriminate more than their private counterparts. Poor SC and ST households frequently cannot afford private healthcare, leading to a higher likelihood of discrimination (Selvaraj & Karan, 2009). The utilisation and accessibility of healthcare services are significantly affected by various inequalities, including social, economic, political, and geographical factors (Das et al., 2022). Consequently, social exclusion and deprivation greatly influence healthcare accessibility and overall health.

The WHO recommends that a safe motherhood programme in a country like India should involve three key elements: four or more antenatal care (ANC) visits, delivery assisted by skilled birth attendants (SBAs), and three postnatal check-ups. Based on the existing evidence, Yadav et al. (2020) suggest that utilising maternal healthcare services is strongly related to socioeconomic and demographic factors. To mitigate the health risks associated with maternal healthcare, it is crucial to examine the differences between scheduled and non-scheduled castes. This is particularly critical for scheduled caste women, who have historically faced disadvantages in various aspects of their lives.

Although caste-based inequalities in maternal health care have been extensively studied at the national level, much research still needs to be done to understand the various aspects of caste-based health inequalities at the state level, particularly in Punjab. To address this gap, this study investigates the utilisation of maternal healthcare services by SCs and non-SCs in Punjab, using nationally representative data from NFHS-5.

Objectives

This paper analyses the disparities in maternal health care utilisation in Punjab across two caste groups: scheduled castes and non-scheduled castes. Maternal health care differentials are examined using specific parameters such as ANC (mothers who had antenatal check-ups in the first trimester, mothers who had at least four antenatal care visits, and mothers who received full

antenatal care), natal care (institutional births), and postnatal care services (mothers who received postnatal care from a doctor, nurse, lady health visitor, auxiliary and midwife, or other health personnel within two days of delivery). This study examines the factors influencing maternal healthcare utilisation between the two caste-based groups.

In the health policy context, the use of maternal healthcare services by two communities is likely to lead to a more effective use of evidence, especially if there are significant differences in their usage.

Data and Methods

The study utilised unit-level NFHS-5 data conducted under the auspices of the Ministry of Health and Family Welfare, Government of India, in New Delhi. The nodal agency, the International Institute for Population Sciences, coordinated NFHS-5. This nationally representative survey was carried out between 2019 and 2021. The NFHS provides reliable assessments of national, state, and regional indicators across various parameters, including maternal and child health care services.

The representative sample size for Punjab comprised 18,824 households and 21,771 ever-married women aged 15 to 49. All 22 districts of Punjab were surveyed during the NFHS-5 fieldwork, which took place from January 5 to March 21, 2020, before the lockdown, and from December 6, 2020, to March 31, 2021, after the lockdown due to COVID-19. Among the 4,570 women in Punjab who had given birth in the five years prior to the survey, 49.7% identified as belonging to the Scheduled Caste (SC) category, while the remaining 50.3% were from the non-SC category.

The differences between SCs and non-SCs were identified by analysing their background characteristics using the disaggregated NFHS-5 data. These characteristics included place of residence, mother's educational level, religion, and the household wealth index. Urban and rural categories were employed to classify places of residence. Women's education levels were categorised into four groups: no education, primary, secondary, and higher. Religion was categorised into Hindu, Muslim, Sikh, Christian, and other groups. The wealth index for women's households was divided into five categories: poorest, poor, middle, richer, and richest. Data analysis was conducted using SPSS.

Descriptive statistics, alongside bivariate and multivariate techniques, have been employed for analysis. The disparities in maternal health care utilisation between non-SCs and SCs have been examined using a decomposition technique within multivariate analysis. The independent variables used for this purpose include type of residence, education level, religion, and wealth quintile. The dependent variables comprise first-trimester registration, receipt of four antenatal care visits, two doses of tetanus toxoid injections, institutional births, and postnatal check-ups.

The paper’s discussion is organised into three sections—

antenatal care, natal care, and postnatal care— which represent three successive chronological phases of pregnancy. Access to various preventive and curative services at each stage is crucial for a safe delivery. The parameters discussed in antenatal care include the status of pregnancy registration during the first trimester, a minimum of four antenatal care (ANC) visits, two or more tetanus toxoid (TT) injections, and at least 100 iron-folic-acid (IFA) tablets. For natal care, the key parameter is institutional delivery, differentiated between the public and private sectors. In postnatal care, the focus is on postnatal check-ups following delivery. The parameters related to antenatal, natal, and postnatal care services aim to prevent neonatal and infant deaths, thereby reducing the likelihood of maternal deaths associated with pregnancy exposure.

Results and Discussion

Antenatal Care Differentials

A woman's health condition is influenced by the socio-economic environment in which she lives, her awareness of health facilities, and her willingness to utilise health services. Socioeconomic characteristics, such as locality, religion, education, and wealth index, significantly impact the accessibility, affordability, and awareness of maternal health services, as well as individuals' attitudes towards utilising these services.

The antenatal period, which spans from conception to the onset of labour, consists of three trimesters of pregnancy. During this time, it is essential to identify and manage pre-existing factors that contribute to a high risk of complications to ensure safe delivery. Timely referral to a facility for professional care is crucial. Antenatal care services have been examined regarding (i) first-trimester registration, (ii) four or more ANC visits, (iii) the administration of two doses of tetanus toxoid, and (iv) the provision of at least 100 iron and folic acid tablets.

Table 2 presents the percentage of women who received a first-trimester ANC check-up during their last pregnancy, categorised by background characteristics and caste groups in Punjab. Table 2 displays the percentage of women who received a first-trimester ANC check-up during their last pregnancy, categorised by caste groups in Punjab, based on their background characteristics. The analysis shows that nine out of every ten women in Punjab, regardless of caste, registered themselves in the first trimester. Rural Punjab's first-trimester registration rate was slightly higher among non-SCs (92.9 per cent) than SCs (90.7 per cent). Registration in the first trimester of pregnancy is not significantly affected by women's educational attainment, regardless of whether they belong to the SC or non-SC category. In Punjab, the two main religious groups are Hinduism and Sikhism. The first-trimester registration among non-SC Hindus and Sikhs was slightly above that of their counterparts.

The use of first-trimester registration among both population segments yields intriguing results based on wealth status. As wealth status increases, the differences in first-trimester registration between SC and non-SC women have narrowed.

Substantial differences were observed in first-trimester registration for women with the lowest wealth status, with SC women being more inclined to register. In Punjab, nearly 94 per cent of SC women registered during the first trimester, compared to 83 per cent of non-SC women. This difference of about 10 per cent or more between the two segments of the population decreased to less than one per cent among women in the richest categories.

The sociocultural practices in some areas of the state influenced the timing of women's access to ANC services. Religious leaders affiliated with *Deras* have been observed to exert influence on families by instilling fear and discouraging them from disclosing pregnancy to other family members or healthcare personnel in some communities. Subsequently, these religious leaders suggested a suitable time for utilising the ANC facilities. As a result, ANC services were typically accessed after the first trimester. This challenge can be addressed by focusing on community-based health education to raise awareness, especially among adolescents, and prevent traditional beliefs from negatively affecting the community's access to ANC services.

Table 2

Pregnancies Registered in First Trimester among SCs and Non-SCs in Punjab, 2019-21

Background characteristics	SC (%)	Non-SC (%)	Total (%)
Type of residence			
Urban	91.6	90.1	90.8
Rural	90.7	92.9	91.7
Schooling			
No education	91.6	90.7	91.4
Primary	90.0	89.5	89.9
Secondary	90.8	93.1	91.9
Higher Secondary	92.1	90.3	90.7
Religion			
Hindu	89.2	91.0	90.2
Muslim	100.0	80.0	86.7
Christian	92.9	83.8	87.7
Sikh	91.8	93.2	92.5
Others	80.0	100.0	85.7
Wealth quintile			
Poorest	93.3	83.3	90.5
Poorer	86.6	90.0	87.4
Middle	87.4	91.9	88.5
Richer	90.8	90.1	90.6
Richest	93.2	92.4	92.7

Source: Computed from NFHS-5 disaggregated data.

Table 3

Women who Received Four or More ANC Visits during Pregnancy for their Most Recent Live Birth among SCs and Non-SCs in Punjab, 2019-21

Background characteristics	SC (%)	Non-SC (%)	Total (%)
Type of residence			
Urban	58.2	62.5	60.7
Rural	57.4	59.8	58.5
Schooling			
No education	53.6	43.2	50.6
Primary	54.2	56.0	54.6
Secondary	58.7	61.1	59.8
Higher Secondary	63.5	64.9	64.6
Religion			
Hindu	56.9	61.0	59.1
Muslim	29.2	40.0	36.5
Christian	57.1	61.0	59.4
Sikh	58.5	61.7	60.0
Others	100.0	100.0	100.0
Wealth quintile			
Poorest	44.7	28.6	39.0
Poorer	55.1	56.2	55.4
Middle	50.3	54.7	51.4
Richer	56.4	52.7	55.1
Richest	62.5	63.7	63.3

Source: Computed from NFHS-5 disaggregated data.

However, the Government of India's strategy to reach out to vulnerable SC groups and register them as soon as possible is yielding the desired outcomes.

The percentage of women who received four or more antenatal care (ANC) visits during their most recent pregnancy among Scheduled Castes (SCs) and non-Scheduled Castes (non-SCs) in Punjab is presented in Table 3. In this regard, it is evident that Scheduled Castes lag behind their counterparts in both urban and rural areas of Punjab. Women from Scheduled Castes were 4.3 per cent less likely to attend four or more ANC visits compared to their non-SC counterparts in urban Punjab and 2.4 per cent less likely in rural Punjab.

Women from SC and non-SC backgrounds are influenced by their educational attainments regarding the number of four or more ANC visits. The increase in educational attainment has resulted in a higher proportion of SC and non-SC women receiving four or more ANC visits. The rate of ANC visits for SC women in Punjab without education was 53.6 per cent, while 63.5 per cent of those with higher secondary education received four or more ANC visits. Non-SCs had corresponding figures of 43.2% and 65%, respectively. Within the same group of women with the same educational backgrounds, differences emerged in how SC and non-SC segments in the state utilised these services. A greater proportion of SC women with no education received four or more ANC visits compared to

illiterate non-SC women. Approximately 54 per cent of SC women with no education in Punjab received four or more ANC visits, compared to nearly 44 per cent of non-SC women. The distinction between SC and non-SC women diminished with higher educational attainment. The disparity between SC and non-SC women holding secondary school education in Punjab was 1.4 per cent.

The level of wealth influenced how women from both SC and non-SC communities utilised these services. In simple terms, the proportion of SC and non-SC women in the state who received four or more ANC visits increased with their wealth status. In Punjab, 44.7 per cent of SC women in the lowest wealth category received these services, compared to 62.5 per cent of women in the highest wealth category. The corresponding figures for non-SC women were 28.6% and 63.7%, respectively. Notably, non-SC women in the state with the poorest wealth status fell behind SC women with the same level of wealth. The difference between these two segments of the population narrowed as wealth status increased to the richest categories. The non-SC women outnumbered SC women when receiving four or more ANC visits in the richest category. Overall, non-SC women outperformed SC women in the state by 1.2 percentage points.

Pregnant women in both communities within the state are receiving nearly equal treatment regarding full doses of TT. Table 4 clearly shows that only marginal disparities existed between SC and non-SC women in Punjab concerning those fully vaccinated with tetanus toxoid. The percentage of non-SC women (84.7%) was slightly higher than that of SC women (82.2%) who had received full vaccination against tetanus toxoid. In rural Punjab, SC women had a 3.1 per cent higher vaccination rate for TT compared to non-SC women. Additionally, non-SC women in urban areas of Punjab were in a more favourable position than SC women concerning access to vaccines for TT.

Vaccination against TT is influenced by women's educational attainment, regardless of their SC or non-SC backgrounds. The proportion of women vaccinated against TT in the state increased due to higher educational attainments among SC and non-SC women. In Punjab, 79.7 per cent of illiterate SC women received TT, compared to 81.3 per cent of those with higher secondary education. The corresponding figures for non-SCs were 76.6% to 87.3%, respectively.

There was hardly any disparity among women belonging to SC Hindus in Punjab regarding the incidence of getting vaccinated against TT. However, the vaccination rate for TT among SC Sikh women was 3.4 percentage points lower than that among non-SC Sikh women. Women in both the SC and non-SC communities received TT vaccines differently based on their level of wealth. In brief, the proportion of SC and non-SC women in the state who received the TT vaccine increases with their wealth status.

Notably, women from non-SC backgrounds in Punjab with the

lowest wealth status were behind those from SC backgrounds with the same wealth status. Non-SC women in Punjab with the lowest wealth status trailed SC women by 15.9 % points. Interestingly, SC women with poorer and middle-wealth status were ahead of non-SCs with varying degrees. As wealth status advanced to the richest categories, the difference between these two population segments narrowed.

The consumption of IFA can help prevent anaemia during pregnancy. The administration of IFA tablets to the women in both communities is depicted in Table 5. In this regard, non-SC women in Punjab were found to be better off than SC women. In Punjab, the non-SCs (58.2 per cent) had a 5.5 percentage point advantage over the SCs (52.7 per cent) in administering IFA tablets. In urban areas, 53.0% of SC women were administered IFA tablets, compared to 59.2% of non-SC women. The administration of IFA tablets among non-SC women in rural areas was slightly more effective for non-SC women than for SC women.

The proportion of women receiving 100 IFA tablets increased consistently due to increased educational attainment among both communities. IFA tablets were administered to 34.9 per cent of illiterate SC women in Punjab, compared to 66.8 with higher secondary education levels.

Table 4

Women who Received Two or More TT injections during Pregnancy for their Most Recent Live Birth among SCs and Non-SCs in Punjab, 2019-21

Background characteristics	SC (%)	Non-SC (%)	Total (%)
Type of residence			
Urban	81.8	83.7	82.9
Rural	82.4	85.5	83.8
Schooling			
No education	79.7	76.6	78.8
Primary	80.3	76.7	79.4
Secondary	83.4	85.1	84.2
Higher Secondary	81.3	87.3	86
Religion			
Hindu	84.5	85.2	84.8
Muslim	66.7	82.0	77.0
Christian	82.8	92.5	88.4
Sikh	81.0	84.4	82.7
Others	100.0	100.0	100.0
Wealth quintile			
Poorest	77.8	61.9	71.9
Poorer	80.1	71.9	78.0
Middle	80.4	75.4	79.0
Richer	81.5	84.3	82.5
Richest	83.9	86.3	85.4

Source: Computed from NFHS-5 disaggregated data.

Table 5

Women Who Received at Least 100 IFA Tablets during Pregnancy for their Most Recent Live Birth among SCs and Non-SCs in Punjab, 2019-21

Background characteristics	SC (%)	Non-SC (%)	Total (%)
Type of residence			
Urban	53.0	59.2	56.6
Rural	52.5	57.4	54.8
Schooling			
No education	34.9	39.7	36.3
Primary	48.1	39.7	45.9
Secondary	56.4	56.4	56.4
Higher Secondary	66.8	67.6	67.5
Religion			
Hindu	51.2	56.1	53.9
Muslim	26.1	54.9	45.9
Christian	31.0	46.3	40.0
Sikh	54.6	60.5	57.3
Others	0.0	100.0	28.6
Wealth quintile			
Poorest	33.3	9.1	24.1
Poorer	40.0	40.6	40.2
Middle	43.3	51.8	45.6
Richer	52.6	42.7	49.2
Richest	59.6	63.2	61.9

Source: Computed from NFHS-5 disaggregated data.

Non-SCs in the state saw an increase from 39.7% to 67.6%. This difference is 10% among women from SC and non-SC backgrounds with secondary and higher levels of education. The administration of IFA tablets was better among non-SC Hindu and Sikh women compared to SC Hindu and Sikh women in the state. Wealth influenced how women from the Scheduled Caste (SC) and non-SC communities utilised these services. IFA tablets were administered more efficiently among SC women in the poorest category than non-SC women in the same category. The poorest SC women in Punjab received IFA tablets at a rate of 33.3 per cent, compared to 9.1 per cent of non-SC women. The difference between the two population segments narrowed as wealth advanced to the relatively richer categories.

To narrow the gap in the utilisation of ANC services between the two groups, health staff need to be flexible in scheduling services to accommodate the work schedules of SC women who do not want to lose their daily wages, particularly in areas with a floating population of SC women.

Generally, the use of antenatal care services has created a solid foundation for safe deliveries among non-SC women. However, women from both castes exhibited a fair degree of equity, especially regarding first-trimester registration. Let us

examine the situation concerning natal care services.

Natal Care Differentials

In clinical terms, the natal period is defined as the duration from the onset of labour until delivery is complete. Home deliveries were a traditional practice in Punjab, and the prevailing belief was that this was a natural process that did not require medical intervention. The presence of family members made women feel more comfortable. However, several risks are associated with giving birth to a child. Deliveries conducted in a hospital are safer. Over the past two decades, there has been a dramatic rise in the proportion of institutional deliveries.

In Punjab, institutional deliveries increased significantly from 25% in 1992-93 to 94.3% in 2019-21, representing a 69.3 percentage point increase. Among Scheduled Castes (SCs) in Punjab, the proportion of institutional deliveries increased from 21.8% in 1998-99 to 93.1% in 2019-21. For non-Scheduled Castes, this increased from 43.4% to 96.1% during the same period. Overall, the percentage increased from 26.6% to 94.6% during this period.

Approximately 95% of deliveries in Punjab took place in health facilities (Table 6). Institutional deliveries were more common among non-SCs in Punjab compared to SC women. Additionally, evidence indicated variations between rural and urban areas in this regard. SC women in urban regions lagged behind their counterparts by 6.5 percentage points in terms of institutional delivery rates. In contrast, this difference was relatively minimal in rural areas.

Also, institutional deliveries were more common among women in SC categories with varying levels of literacy compared to their peers, including those with primary school education and illiterate women. However, this difference decreased as women's educational attainment increased.

The SC women belonging to the Hindu religion were left behind their counterparts in Punjab in terms of the prevalence of institutional deliveries. However, among Sikh women, there was a fair degree of equity among SC and non-SC women regarding the prevalence of institutional deliveries.

Interestingly, poverty was not a significant factor affecting the prevalence of institutional deliveries. Women in the lowest socioeconomic stratum performed well in both states regarding institutional deliveries. In Punjab, 91.2 per cent of SC women from the poorest wealth quintile delivered a baby at a health facility, compared to 54.4 per cent of non-SC women from the same category. Welfare programmes designed to uplift the vulnerable group of SCs are achieving their intended outcomes. The increase in wealth status has narrowed the gap between scheduled caste (SC) and non-scheduled caste (non-SC) women.

Table 6

Births in the Five Years Preceding the Survey Delivered in a Health Facility among SCs and Non-SCs in Punjab, 2019-21

Background characteristics	SC (%)	Non-SC (%)	Total (%)
Type of residence			
Urban	88.4	94.9	92.0
Rural	95.3	96.2	95.7
Schooling			
No education	82.2	75.0	80.2
Primary	94.0	91.4	93.4
Secondary	95.5	97.1	96.2
Higher Secondary	99.5	98.7	98.2
Religion			
Hindu	89.6	94.6	92.2
Muslim	50.0	97.1	80.4
Christian	100.0	91.8	95.1
Sikh	96.1	96.6	96.3
Others	75.0	100.0	80.0
Wealth quintile			
Poorest	91.2	54.5	77.8
Poorer	89.0	77.1	86.2
Middle	89.2	93.8	90.4
Richer	92.8	91.3	92.3
Richest	96.5	98.3	97.6

Source: Computed from NFHS-5 disaggregated data.

SC women used public health facilities more often to give birth than their counterparts in the state. This is apparent from the fact that 62.7 per cent of the SC women had delivered a baby in public health facilities as compared to 43.7 per cent of non-SC women. The delivery event at private health facilities was costly, particularly for SC women, as it exceeded their financial capacity. The government has comprehended this situation and provided financial incentives for delivery in a health facility. The Scheduled Castes (SCs) in Punjab had a slight advantage over the non-SCs in terms of government incentives received. The implementation of various schemes to uplift SCs and incentives for delivering services in public health facilities have positively influenced their uptake of natal care services, as evidenced by this.

The expected population hypothesis suggests that non-SC women utilised private health facilities more for giving birth than their counterparts. The proportion of deliveries in private health facilities among non-SC women was 21.4 percentage points higher than that of SC women in Punjab. A similar pattern was observed in urban and rural areas. As the educational level and wealth status of non-SC women increase, their deliveries in private

health facilities tend to rise. However, the proportion of deliveries among SC women in private health facilities was slightly higher among those with relatively lower education and wealth status than their counterparts in Punjab. However, this gap increased in favour of non-SC women as the level of education and wealth increased.

Regarding the place for delivering a baby, it is typical for non-SC women in Punjab to prefer private health facilities over public health institutions. Even though a higher proportion of deliveries among the SC and non-SC women were being conducted under hygienic conditions in health facilities, the fact that a lower status of living conditions among the SCs exposed them to post-delivery infections could add to the seriousness of the situation. This has made the SC women more susceptible to infection and subsequent ailments for both mother and child.

Postnatal Care Differentials

Technically, the postnatal period begins with the delivery of the placenta and lasts for 42 days thereafter. Once a baby is born, the primary concern is providing postnatal care services to both the mother and child to ensure their well-being and survival. In addition to being responsible for their children, mothers face a new set of health risks during this period. To recognise danger signs, women must undergo regular check-ups. Erstwhile Punjab (including Punjab and Haryana) followed the practice of seclusion, not allowing the woman and her child to go out of the house for the first 42 days after childbirth for fear of infection and the evil eye. This inhibits complete health care of both mother and child, as their requirements are not met, and underlying health problems are not being personally communicated to the health staff, which may remain undiagnosed and untreated.

A larger proportion of maternal and neonatal deaths occur within 48 hours after delivery. Safe motherhood programmes have increasingly emphasised the importance of postnatal care, recommending that all women receive a health check-up within two days of delivery. Contrary to popular belief, there is no disparity between SC and non-SC women regarding postnatal check-ups within 42 days of birth in the state. Approximately 91 per cent of women from both SC and non-SC categories had a postnatal check-up within 42 days of giving birth. The proportion of women who had a postnatal check-up within two days of birth did not differ between women in SC and non-SC categories in Punjab. Approximately 88% of women from both SC and non-SC categories have received these services.

Table 7 illustrates the proportion of women with SC and non-SC backgrounds who received a postnatal check-up for their most

recent live birth in Punjab. The differences between SC and non-SC women in this context were insignificant, yet slightly favoured SC women in the state. This is evident from the fact that 90.8 per cent of SC women in the state received this postnatal check-up, compared to 89.5 per cent of non-SC women. A similar pattern was evident in rural areas. Likewise, these disparities in urban and rural areas were nearly insignificant.

Women from scheduled castes (SC) with lower status were more likely to have postnatal check-ups compared to their counterparts. Non-SC women with higher secondary education showed a greater prevalence of postnatal check-ups than SC women. The utilisation rate of postnatal check-ups was higher among SC women belonging to the Hindu religion than among non-SC women. The disparity was minimal among Sikh SC and non-SC women in the state.

As wealth status increases, the prevalence of postnatal check-ups among SC and non-SC women becomes more similar. In Punjab, 86 per cent of the SC women with the lowest status had a postnatal check-up compared to 71.4 per cent of non-SC women, a difference of 14.7 percentage points. This difference decreases as one progresses from the lowest to the highest category of wealth status.

Table 7

Percentage of Women who Received a Postnatal Check for their Most Recent Live Birth among SCs and Non-SCs in Punjab, 2019-21

Background characteristics	SC	Non-SC	Total
Type of residence			
Urban	88.2	87.3	87.7
Rural	92.0	91.0	96.5
Schooling			
No education	84.4	75.0	81.6
Primary	86.2	81.2	84.8
Secondary	93.6	90.1	91.9
Higher Secondary	90.6	92.5	92.2
Religion			
Hindu	90.8	88.3	89.5
Muslim	-	100.0	100.0
Christian	80.4	87.2	88.3
Sikh	90.9	90.5	90.7
Others	100.0	100.0	100.0
Wealth quintile			
Poorest	86.1	71.4	80.7
Poorer	82.8	67.2	79.1
Middle	89.0	82.0	86.9
Richer	90.8	86.4	89.3
Richest	93.3	91.7	92.3

Source: Computed from NFHS-5 disaggregated data.

Decomposition Analysis

The Blinder–Oaxaca decomposition technique is commonly used to identify and quantify factors associated with inter-group differences in mean outcome levels.

The Oaxaca decomposition breaks down variations in outcomes into two components. This technique explains intergroup differences in outcome variables by employing a set of predictors. Maternal healthcare utilisation services differ between SCs and non-SCs due to their distinct background characteristics, which impact their healthcare utilisation (Bansod, Salve, & Jungari, 2022).

Table 8 illustrates the significance of the effects in analysing the disparity in the average z-score of first-trimester registration for SCs and non-SCs in Punjab. The average natural log of first-trimester pregnancy registration was 0.919 for non-SC women and 0.910 for SC women. Thus, it is evident from this that there is hardly any difference between these two population segments regarding first-trimester pregnancy registration.

Table 8

Decomposition of Pregnancies Registered in the First Trimester among Non-SCs and SCs in Punjab, 2019-21

Contributing factors	Coef.	Level of significance	[95% confidence interval]	% contribution
Differentials				
Prediction_Non-SC	0.919	***	(0.904, 0.933)	
Prediction_SC	0.910	***	(0.894, 0.925)	
Difference (Non-SCs - SCs)	0.009	***	(-0.011, 0.030)	
Explained				
Type of residence	-0.001	***	(-0.003, 0.000)	-15.40
Wealth index	0.014	***	(0.006, 0.021)	152.08
Schooling	-0.008	***	(-0.014, -0.000)	-81.71
Religion	0.000	***	(-0.000, 0.001)	-1.19
Total	0.005			53.77
Unexplained				
Total	0.004			46.23

*** P < 0.01, ** P < 0.05, * P < 0.10

However, wealth played the most significant role in explaining this marginal difference in first-trimester pregnancy registration between non-SC and SC women.

The z-score contribution in first-trimester pregnancy registration by wealth quintile was 152.08%. A negative z-score contribution was observed for the place of residence (-15.40%), schooling (-81.71%), and religion (-1.19%). This difference between these two segments of the population in Punjab state is narrowing due to the negative impact of factors such as type of residence, schooling and religion. These four socio-economic and demographic factors have the potential to account for up to 53.77% of the overall variation in first-trimester pregnancy registration.

The mean predicted value for women who received four ANC visits during pregnancy is 0.610 for non-SC women and 0.577 for SC women, resulting in a disparity of 0.033 (Table 9). This disparity of 101.59 arose from the different distribution of socio-economic and demographic predictors, including type of residence, wealth quintile, education, and religion. Among these factors, the wealth quintile had the largest impact (56.47%), followed by education (44.95%) and type of residence (4.86%). In other words, reducing the education gap between non-SCs and SCs could decrease the disparity by nearly 45%. The difference in the average predicted value for women who received two or more TT injections was 0.026, as illustrated in Table 10. The likelihood of receiving at least two doses of tetanus toxoid for non-SC women compared to their counterparts is obvious. The differences in the observed covariates (the explained component) between the two population segments accounted for approximately 65.03% of the total disparity. The wealth quintile was the most significant predictor of its contribution, at 47.24 per cent, followed by schooling at 26.23 per cent. The disparity can be reduced by approximately 47 per cent by reducing the difference in their wealth status.

The mean predicted value for women who received at least 100 IFA tablets during pregnancy is 0.582 for non-SC women and 0.527 for SC women, yielding a disparity of 0.055 (Table 11). The disparity (121.74) was due to the different distribution of socio-economic and demographic predictors, including the type of residence, wealth quintile, schooling and religion. Among them, schooling contributed the most (74.04%), followed by the wealth quintile (48.36%). By reducing the educational attainment gap between women from non-SCs and SCs, a 75% reduction in the disparity is expected.

Table 9

Decomposition of Women who Received Four ANC Visits during Pregnancy among Non-SCs and SCs in Punjab, 2019-21

Contributing factors	Coef.	Level of significance	[95% confidence interval]	% contribution
Differentials				
Prediction_non-SC	0.610	***	[0.583, 0.633]	
Prediction_SC	0.577	***	[0.552, 0.601]	
Difference (non-SCs - SCs)	0.033	***	[-0.002, 0.067]	
Explained				
Type of residence	0.002	***	[-0.003, 0.006]	4.86
Wealth index	0.018	***	[0.007, 0.030]	56.47
Schooling	0.015	***	[0.002, 0.0276]	44.95
Religion	-.002	***	[-0.003, -0.000]	-4.69
Total	0.033			101.59
Unexplained				
Total	-.001			-1.59

*** P < 0.01, ** P < 0.05, * P < 0.10

Table 10

Decomposition of Women who Received Two or More TT Injections during Pregnancy among Non-SCs and SCs in Punjab, 2019-21

Contributing factors	Coef.	Level of significance	[95% confidence interval]	% contribution
Differentials				
Prediction_non-SC	0.848	***	[0.829, 0.866]	
Prediction_SC	0.822	***	[0.802, 0.841]	
Difference (non-SCs - SCs)	0.026	***	[-0.001, 0.052]	
Explained				
Type of residence	-0.002	***	[-0.005, 0.001]	-7.89
Wealth index	0.012	***	[0.003, 0.021]	47.24
Schooling	0.007	***	[-0.003, 0.017]	26.23
Religion	0.000	***	[-0.001, 0.000]	-0.56
Total	0.017			65.03
Unexplained				
Total	0.009			34.97

*** P < 0.01, ** P < 0.05, * P < 0.10

Table 11

Decomposition of Women Who Received at Least 100 IFA Tablets During Pregnancy Among Non-SCs and SCs in Punjab, 2019-21

Contributing factors	Coef.	Level of significance	[95% confidence interval]	% contribution
Differentials				
Prediction_non-SC	0.582	***	[0.558, 0.606]	
Prediction_SC	0.527	***	[0.502, 0.551]	
Difference (non-SCs - SCs)	0.056	***	[0.021, 0.099]	
Explained				
Type of residence	-0.001	***	[-0.005, 0.004]	-0.83
Wealth index	0.027	***	[0.015, 0.038]	48.36
Schooling	0.041	***	[0.027, 0.054]	74.04
Religion	0.000	***	[-0.001, 0.001]	0.17
Total	0.067			121.74
Unexplained				
Total	-0.012			-21.74

*** P < 0.01, ** P < 0.05, * P < 0.10

The difference of 0.026 in the mean predicted value for institutional births among the non-SC (0.965) and SC women (0.939) demonstrates that its prevalence was almost equitable (Table 12). The socio-economic and demographic predictors could explain up to 115.32% of the total variation in institutional births. Among these predictors, schooling contributed the most (82.51%), followed by wealth quintile (52.20%). By reducing the educational attainment gap between women from non-SCs and SCs, the disparity is expected to decrease by 82.5%.

The difference in the average predicted value for women who

received a postnatal check-up for the most recent birth was 0.014, as illustrated in Table 13. It is evident that non-SC women have a slightly higher chance of receiving this check-up than their counterparts, although the margin is very small. The differences in the observed covariates (the explained component) between the two population segments accounted for approximately 191.88% of the total disparity. In this particular case, the type of residence emerged as the most significant predictor of its contribution, accounting for 38.6%. The negative contributions from the wealth quintile (- 121.58%) and schooling (- 108.90%) tend to narrow the difference in receiving a postnatal check-up.

Table 12

Decomposition of Births Delivered in a Health Facility Among Non-SCs and SCs in Punjab, 2019-21

Contributing factors	Coef.	Level of significance	[95% confidence interval]	% contribution
Differentials				
Prediction_non-SC	0.965	***	[0.955, 0.974]	
Prediction_SC	0.939	***	[0.926, 0.951]	
Difference (non-SCs - SCs)	0.026	***	[0.010, 0.042]	
Explained				
Type of residence	-0.005	***	[-0.008, -0.002]	-19.68
Wealth index	0.0137	***	[0.007, 0.020]	52.20
Schooling	0.0216	***	[0.013, 0.299]	82.51
Religion	0.0001	***	[-0.001, 0.001]	0.30
Total	0.0301			115.32
Unexplained				
Total	-0.004			-15.32

*** P < 0.01, ** P < 0.05, * P < 0.10

Table 13

Decomposition of Women who Received a Postnatal Check-up for their Most Recent Live Birth among Non-SCs and SCs in Punjab, 2019-21

Contributing factors	Coef.	Level of significance	[95% confidence interval]	% contribution
Differentials				
Prediction_Non-SC	0.908	***	[0.894, 0.922]	
Prediction_SC	0.894	***	[0.878, 0.910]	
Difference (Non-SCs - SCs)	0.014	***	[-0.007, 0.035]	
Explained				
Type of residence	0.005	***	[0.002. 0.008]	38.60
Wealth index	-0.017	***	[-0.025, -0.008]	-121.58
Schooling	-0.015	***	[-0.024, -0.006]	-108.90
Religion	0.000	***	[-0.001, 0.001]	-0.01
Total	-0.027			-191.88
Unexplained				
Total	0.041			291.88

*** P < 0.01, ** P < 0.05, * P < 0.1

Conclusions

Maternal health care services for non-scheduled castes in Punjab are slightly more accessible than scheduled castes, who are relatively less advanced economically, socially and educationally. Non-scheduled caste women had a slight advantage when it came to using natal care and postnatal services, but they still had the same level of antenatal care practices. This was a case of a fair degree of equity in Punjab. It is apparent that there has been a noticeable improvement in access to maternal health services among both segments of the state population.

What is the rationale behind the relative equality between these two segments of the population in Punjab? It is worth noting that there is no significant social divide between these two segments of the population in Punjab. This can be attributed to Sikhism's egalitarian influence, as there is no strong adherence to caste hierarchy. Due to the higher literacy rates among the scheduled castes compared to their counterparts in other states, they are becoming increasingly aware of their health status and rights. Lastly, the scheduled castes, which constitute over one-third of the state's population, continue to be a political force to be reckoned with. Their presence cannot be overlooked.

Socio-economic factors, such as wealth and educational attainment, were found to be the primary drivers of this small disparity between non-scheduled caste and scheduled caste women. To address these disparities, the government should ensure that educational attainment for SC women is equal to that of non-SC women. The state has lacked the impetus to support private sector healthcare facilities for scheduled caste women. The government is already offering financial incentives for deliveries in healthcare facilities to tackle this situation.

Key measures to improve maternal healthcare, particularly among SCs, include targeted outreach programmes that address socioeconomic barriers, implementing government schemes specifically designed for the SC community, offering flexible appointment timings, and dispelling myths related to access to maternal healthcare. To ensure adequate maternal healthcare, medical and paramedical staff should receive training on cultural sensitivities and practices prevalent in both communities. Enhancing maternal healthcare in the state necessitates ensuring the geographical reach of healthcare facilities and transportation support for women, particularly in remote areas. In other instances, despite being easily accessible in most locations, the higher utilisation of maternal healthcare services in the state was impeded by the mindset of women

and their family members, regardless of caste.

The government's efforts to improve the welfare of SC women through various schemes have been effective. To enhance the effectiveness of reaching the target group, it is essential to strengthen these initiatives further. It becomes crucial that community leaders and influencers are encouraged to motivate women to access maternal healthcare services by addressing the specific needs of women from SC.

Punjab has a maternal mortality ratio of 105, significantly higher than Kerala's 19 and Maharashtra's 33. The state government is grappling with this challenge. By addressing barriers, the government must ensure that all segments of the population, including the vulnerable group of scheduled castes, have access to maternal health care, resulting in healthier mothers and fewer maternal deaths.

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