Siddhajyoti Interdisciplinary Journal (SIJ)
Vol. VII, January 2026
(A Peer Reviewed Open Access Research Journal)
ISSN: 2645-8381
Published by Research Management Cell, Siddhajyoti Education Campus, Sindhuli, Nepal

Article History: ***Received:*** 30 June 2025; ***Reviewed:*** 30 November 2025; ***Accepted:*** 01 December 2025

Demographic Factors Influencing Skilled Birth Attendance in Sudurpashchim

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DOI: https://doi.org/10.3126/sij.v7i1.92556

Abstract

The maternal mortality is a key challenge to the state of global health as a significant number of women continue to give birth without professional care. Skilled birth attendance (SBA) is an effective program that can be used to curb maternal and neonatal mortality. Inequality within the socio-demographic and economic groups still exists despite advances. The cross-sectional study was based on data on 262 women aged 15-49 years in Sudurpashchim Province, Nepal, and had a live birth within five years before the survey, using data of the 2022 Nepal Demographic and Health Survey (NDHS). Determinants SBA were analyzed through descriptive and binary logistic regression. Findings indicated more SBA use among younger, educated, urban and rich women. Regression analysis indicated that maternal age (30 -49 years), higher education, and lower birth order were some of the important predictors. The women that had three or more births were less likely to access skilled care. The study concludes that education and parity are major factors that determine the use of SBA. Specific measures based on targeting multiparous and less-educated women are required. Development of female education and community outreach should be culturally sensitive on the female health results in the marginalized regions.

Keywords: skilled birth attendance, maternal health, socio-demographic factors, health disparities, NDHS 2022, Sudurpashchim Province

Introduction

The maternal health is among the high priorities of global public health, particularly in low- and middle-income countries (LMICs) where the maternal mortality is still high. World Health Organization (WHO, 2022), access to skilled birth attendance (SBA) such as the availability of trained staff when giving birth is critical to decreased maternal and neonatal morbidity and mortality. Nevertheless, a significant number of women in LMICs, such as Nepal, deliver without professional assistance exposure and endanger themselves to complications that can be avoided.

Nepal has achieved significant improvement due to initiatives such as the Safe Motherhood Program, free delivery services, and transport incentives (MoHP, 2022), which has

led to an increase in institutional deliveries and SBA consumption. However, there are systematic inequalities between the socio-demographic and economic groups, which depend on the age of mothers, their education, parity, caste/ethnicity, residence, and wealth (Neupane et al., 2021; Shrestha and Bhandari, 2019). Women who are marginalized, rural and poor people are still not served. NDHS and MICS, the level of education, urban status, lower birth order, and family wealth enhance SBA usage, whereas cultural values, lack of autonomy, and geographic characteristics decrease it (Acharya et al., 2015; Paudel et al., 2015). But these analyses on the national level tend to ignore the disparities within the regions.

Very little research is narrowed down to provincial level settings especially to Sudurpashchim Province which is affected by poverty, inequality and inadequate health infrastructure. The research paper satisfies that gap by using NDHS 2022 data to explore socio-demographic factors of SBA use by reproductive-age women in this province. It combines descriptive and multivariate analysis to offer localized information regarding the impact of the birth order, education level, and maternal age on the use of skilled care. The results will be applied in adopting culturally sensitive measures and facilitate the attainment of maternal health and equity goals in Nepal.

Methods and Procedures

It is an analytical cross-sectional study, which is grounded in the secondary data received through the Nepal Demographic and Health Survey, 2022, a national representative survey conducted by the MoHP with the assistance of New ERA and ICF. The NDHS offered detailed data on demographic and health indicators (one of them maternal healthcare utilization).

The survey was done on women aged 15-49 years who lived in the Sudurpashchim Province and those who reported having had one or more births within the 5 years before the survey. On these criteria (as the basis of selection), a weighted sample of 262 women was extracted in the NDHS 2022 data.

The result variable was the place of delivery, which was categorized into institutional delivery, coded as 1, implying delivery in a health facility, and non-institutional delivery, coded as 0, meaning home or any other locations.

Variables

These variables have been selected from existing literature and based on data availability in the NDHS dataset. These included:

Maternal age, categorized as <20, 20–24, 25–29, 30–49 years
Birth order (first, second, third or higher)
Educational attainment: no education, basic, higher
Caste/Ethnicity: Dalit, Janjati, Brahmin/Chhetri, Others
Place of residence - urban/rural
Wealth quintile, poorest to richest, based on the NDHS asset index

Descriptive statistics were computed to examine the distribution of institutional delivery across socio-demographic groups. Since the dependent variable is dichotomous in nature, a binary logistic regression model was fitted to identify factors which are significantly associated with utilization of institutional delivery. Odds ratios (OR) along with 95% confidence intervals (CI) were reported to assess the strength and direction of associations.

All analyses were weighted for the complex survey design of the NDHS, taking into account sample weights for clustering and stratification to ensure nationally representative estimates. The level of significance was set at below 0.05.

Data from the NDHS 2022 are publicly available and anonymized. Ethical clearance for the data collection was provided to the original survey team by the respective national ethical review boards. This secondary analysis did not require any additional ethical clearances.

Results

Socio-demographic factors are the main drivers of maternal and child health results. In the case of Nepal, factors like mother's age, birth rank, education level, caste/ethnicity, locality, and income all are major determinants of the extent of maternal health care use and the resulting child health.

Maternal Age

Maternal age is a major factor affecting both maternal and child health. The usual method of categorization is into groups: <20 years, 20–24 years, 25–29 years, and 30–49 years. The health of very young mothers (<20 years) is often endangered because of their physical immaturity, lack of information, and difficulty in getting access to health services. However, the pregnancies in older women (30–49 years) might also lead to larger problems such as high blood pressure, diabetes, and unhealthy babies. The age group 20–29 years is usually thought to be the best for having children as there are fewer medical risks and the parents are more prepared for the baby. The use of maternal health care services differs greatly between these age groups in terms of antenatal visits, delivery in hospitals, and postnatal care, etc.

Birth Order

Birth order is one of the most important factors that affect maternal and child health. It is usually divided into three categories: first birth, second birth, and third or higher birth order. First-time mothers often have more anxiety but at the same time, they get more medical attention than others. On the other hand, third and higher births in mothers are often associated with maternal depletion, lack of resources, and less healthcare utilization, especially in disadvantaged areas. In Nepal, certain communities still prefer larger families; hence, high-parity births may increase risks to both mothers and infants.

Educational Attainment

Educational attainment is still considered as one of the most important social determinants of health. It is generally divided into three groups: no education, basic education, and higher education. Women with high education level usually have better awareness of health care services, more power in making decisions, and better health-seeking behavior. Education gives women the ability to get information about safe motherhood practices, identify danger signs, and use the healthcare facilities available to them effectively. On the other hand, lack of education is connected with poor maternal health results, underutilization of skilled care, and limited awareness of modern medical practices.

Caste/Ethnicity

Caste and ethnicity are the major reasons for health inequalities in Nepal. Dalits (the lowest caste), Janjatis (the aborigines of Nepal), and Brahmins/Chhetris (the upper class) are the three main classes/ethnicities. The Dalit and Janjati populations usually face discrimination, poverty, and isolation, which are the main causes of their not getting the best health services. In

contradiction, Brahmin/Chhetri women are almost always the beneficiaries of quality education and health services due to their high social status. These caste-related inequalities are still widespread in Nepalese society and health is no exception.

Place of Residence

Where a person lives - either in a city or a rural area - has a huge impact on their access to healthcare. The urban areas of Nepal are generally very well equipped with their healthcare systems; these areas have specially trained medical staff and come with good infrastructures. Doctors who have received proper training usually do not come to city outskirts and making it difficult to reach health centers leads to delayed or improper treatment. Women in rural areas have to choose between getting help from traditional birth attendants or having home deliveries, which in the end might not be safe for the mother and the infant.

Wealth Quintile

Economic status, usually represented by wealth quintiles based on asset indices (as was done in the NDHS), is a major factor influencing healthcare consumption. The women in the poorest families face financial problems that restrict their access to quality and timely maternity health care services. Conversely, women who belong to the top quintiles are financially more liberated to afford the services of private health care facilities, transport, and even better foods, which are aspects that enhance maternal and child health results.

Overall, these socio-demographic elements are mutually dependent on each other and jointly influence the maternal health behavior and results in Nepal. To resolve such inequalities, there is a need to have specific interventions that take into account the multifaceted interrelationship of age, parity, education, caste, residence, and economic status.

Table 1

Distribution of Skilled Birth Attendance (SBA) Utilization by Socio-demographic Characteristics

Variable	No		Yes		Total	
	Number	Percent	Number	Percent	Number	Percent
Age						
<20	2	7.5	18	7.9	21	7.9
20-24	14	46.5	100	42.9	114	43.3
25-29	9	29.7	71	30.3	79	30.2
30-49	5	16.4	44	19.0	49	18.7
Birth order						
First	7	22.8	105	45.2	112	42.7
Second	11	36.4	81	34.6	91	34.8
Third or higher	12	40.8	47	20.3	59	22.5
Level of education						
No Education	10	33.9	35	14.8	45	17.0
Basic Education	17	58.6	148	63.5	165	63.0
Higher Education	2	7.6	50	21.6	53	20.1
Religion						
Hindu	29	100.0	226	96.9	255	97.3

Other religion	0	0.0	7	3.1	7	2.7
Caste/Ethnicity						
Dalit	4	14.7	32	13.6	36	13.7
Muslim	1	2.4	0	0.0	1	0.3
Janjati	6	21.2	58	24.7	64	24.3
Other Terai	0	0.0	3	1.1	3	1.0
Brahmin/Chhetri	18	61.7	141	60.6	159	60.8
Place of Residence						
Urban	16	53.0	146	62.5	161	61.4
Rural	14	47.0	87	37.5	101	38.6
Wealth quintile						
Poorest	16	54.6	86	36.9	102	38.8
Poorer	7	25.5	55	23.7	63	23.9
Middle	2	8.0	34	14.7	37	13.9
Richer	3	11.9	34	14.7	38	14.4
Richest	0	0.0	23	10.1	23	8.9
Total	29	100.0	233	100.0	262	100.0

Source: Nepal Demographic and Health Survey, 2022

Table 1 indicates that women in Sudurpashchim Province, Nepal who are aged 15-49 use skilled birth attendance (SBA) disaggregated by age, education, caste, where they live, and the amount of money they possess. Most of the younger women aged 20-24 years old are likely to have an adept attendant during birth (42.9%). It is a positive indicator that they are consulting professional services at the right time. It is also a lot to do with birth order. The rate of first-time moms to skilled care increases the most (45.2%), but with increases in the number of births, third child or more the rate decreases at a rapid rate (up to 20.3%). Education is a difference maker as well. A higher level education implies that women who are better educated use SBA significantly more (21.6%) compared to those who are not educated (14.8%). Religion? There is not a huge difference as majority of respondents are Hindu. However, on closer examination, you see that there are a few intractable gaps in the table. Caste and ethnicity have a role to play, the Brahmin/Chhetri and Janjati women receive more competent care compared to Dalit women. Where you live matters, too. The percent of urban women using SBA is way ahead at 62.5% 37.5% of rural women use it. More than half of the poorest household women (54.6%), have no access to skilled care and women in the wealthiest households all received skilled assistance at birth. The factors that determine whether women receive skilled assistance in childbirth are education, birth order, place of residence, caste and the amount of money possessed. The existence of these differences demonstrates why we should pay particular attention to bridging the gaps among the poor and the rural population specifically to make maternal healthcare a more equal and accessible service to all people.

Factors association of Demographic and Socio–economic Variable

To know why some individuals, receive better healthcare than others, one must consider such factors as age, income, education, and the location in which the individual

resides. These are what influence the actual users of health services and particularly to mothers and children. Basically, researchers run logistic regression models when they are doing this type of analysis, they test the odds of something occurring, such as a woman receiving maternal health care, depending on these various factors.

Odds ratio (OR) which is what you see indicates the likelihood of something to occur in one group relative to the other. The standard error indicates the reliability of that odds ratio. Then you've got the t-value and P-value if what you're seeing is just random or really means something. The 95% confidence interval gives you a sense of the range.

Table 2

Logistic Regression Analysis: Factors Associated with Skilled Birth Attendance Utilization

Variable	Odds Ratio	Std. Err.	t	P>|t|	95% Conf. Interval	Sig
Age						
20-24	1.367067	0.7932955	0.54	0.592	0.4280605-4.365905	
25-29	2.403448	1.674753	1.26	0.213	0.5960598-9.691247	
30-49	4.731086	2.880909	2.55	0.013	1.398898-16.00057	**
Birth order						
Second	0.4419942	0.2262978	-1.59	0.116	0.158666-1.231258	
Third or higher	0.2359397	0.12874	-2.65	0.01	0.0791811-0.7030412	**
Caste/Ethnicity						
Janjati	0.5662176	0.3379279	-0.95	0.344	0.1715289-1.869086	
Brahmin/Chhetri	0.7515936	0.3242596	-0.66	0.511	0.3170019-1.781986	
Educational attainment						
Basic Education	2.164115	0.789218	2.12	0.038	1.043187-4.489505	**
Higher Education	3.196472	2.147382	1.73	0.089	0.8334211-12.25963	*
Residence						
Rural	1.082033	0.4301614	0.2	0.843	0.4883846-2.397283	
Wealth quintile						
Poorer	1.407395	0.7158056	0.67	0.504	0.5086617-3.894063	
Middle	1.826519	0.9776764	1.13	0.265	0.6258426-5.330686	
Richer	1.271035	0.927737	0.33	0.744	0.2950209-5.475982	
Cons	4.352408	3.550568	1.8	0.077	0.8507604-22.2665	*

Table 2 presents the link between socio-demographic and economic factors as well as the use of skilled birth attendant (SBA) by women of reproductive age in Sudurpashchim Province, Nepal, through logistic regression analysis. The analysis revealed that maternal age, birth order, and educational level are the main factors that promote or hinder the use of SBA. Women's age 30-49 were 4.73 times more likely than younger women (under 20 years) to seek professional birth assistance (p=0.013), which means that older women might have a better understanding of the necessity of medical care in the case of childbirth. On the other hand, higher birth order was related to the less use of SBA, with women of a third or higher birth order being 0.24 times less likely to have SBA (p=0.010), indicating that the tendency to seek professional care decreases with the

increasing number of children. Educational level has proven to be a strong and positive factor of SBA utilization. Women with primary education were more than double the chances of getting the skilled birth-attendant if compared to uneducated ones (OR=2.16, p=0.038), while the married ones showed even higher odds (OR=3.20) but at the borderline of statistical significance (p=0.089). However, characteristics that are related to caste/ethnicity, location of living, and socioeconomic status did not get strong support in this model, though their influence is still acknowledged through descriptive analyses. This implies that even if there are structural and economic barriers, education and birth-related factors determine SBA utilization in a more direct way in this context. The results bring to light the importance of educating girls and encouraging them to have fewer children as the skilled birth attendance rates in impoverished areas like Sudurpashchim Province will primarily depend on these two factors.

Discussion

This study has investigated the socio-demographic and economic factors that either positively or negatively affect the use of skilled birth attendance (SBA) among women of reproductive age in Sudurpashchim Province, Nepal. Generally, the descriptive statistics showed that younger women, first time mothers, high educated women, urban residents, and women in high socioeconomic families are the ones that use SBA services more. The significance of maternal age, birth order and educational level as determinants of SBA utilization was not only affirmed but kept on accumulating with logistic regression. In particular, it was found that older women (30-49) and highly educated women were more prone to skilled care whereas higher birth order was negatively connected to the usage of SBA. These findings are consistent with the ones of other studies conducted in the same environment. Indicatively, the findings obtained by Wang et al. (2021) and Adde et al. (2022) have shown that the education of the mother was an inseparable factor in boosting the five attendance at birth with the help of skilled personnel because it resulted in improved awareness of the woman, his improved social status and increased decision-making ability. Similarly, another study by Yaya et al. (2019) was also indicating the same notion because it was discovered that women with high parity were less likely to use SBA as they were also under the influence of their previous childbirth experience that they did not need professional care as it was the same as our result of declining SBA with high birth order. The findings also show that the relationship between maternal age and SBA use is positive, which is contrary to Tessema et al. (2020) who claimed that the younger women were able to access skilled care more because health promotion activities had recently been carried out for adolescent and young mothers.

Unexpectedly and against the existing literature, caste/ethnicity, place of residence, and household wealth were not significant factors in the multivariate analysis. In Nepal and other low-resource regions, previous works like Khatri et al. (2019) and Fekadu et al. (2021) always pointed out rural residence and lower economic status as barriers to midwife delivery service use. The insignificance in this paper could suggest the good changes of recent policies in Sudurpashchim Province like free delivery and transport rewards that have lessened the old geographic and economic inequalities. On the flip side, the descriptive data still indicated that disparities existed, which means that even though financial and logistical barriers are still being addressed, socio-cultural barriers are still strong. I think these results point to a changing pattern in mother and baby health care access in Nepal. The government is reducing the structural barriers little by little and the women's birth customs and perceptions particularly those of multiparous women—are still adversely limiting the use of SBAs. Yirsaw et al. (2019) observed the same and stated that women

with bigger birth orders might rely on past experience or tradition and, therefore, underestimate potential complications. This highlights the necessity of community-based awareness campaigns that aim specifically at women with multiple births and stress that each delivery has its own risks, regardless of the past experiences.

In conclusion, the research strongly points out the significance of girls' and women's education as the major cause of the improvement in maternal health. It further shows that even though the better health system is lessening the economic and geographical gaps, the culturally related beliefs and views concerning parity still need specific interventions. The future plans should not only rely on educational empowerment but also on culturally sensitive communication to ensure widespread acceptance of SBA among all demographic and socio-economic groups in underprivileged areas like Sudurpashchim Province.

One of the major advantages of this research is that it has been able to make use of the latest and nationally representative NDHS 2022 data, thereby ensuring that the insights drawn are both strong and generalizable to Sudurpashchim Province. The researchers also employed both descriptive and multivariate analyses to give a thorough comprehension of the factors determining SBA. On the downside, the cross-sectional design prohibits the drawing of causal inferences and the study could not include unmeasured variables such as attitudes towards culture, healthcare quality perception, or distance from health facilities. Furthermore, there might be recall bias due to the use of self-reported data. Notwithstanding these limitations, the research findings have been able to provide considerable evidence that can be used to guide targeted maternal health interventions.

Conclusion

These three variables, maternal age, birth order, and education of the woman, appeared as the most important predictors of utilization of SBA services. The chances of seeking skilled care were higher among older and more educated women but lower among those with higher birth orders. While disparities by caste, residence, and economic status appeared from descriptive results, these did not attain statistical significance in multivariate analysis, possibly indicating the effect of policies like free delivery care and transport incentives in reducing the more traditional access barriers to care. However, relatively lower utilization of SBAs among multiparous and less-educated women indicates the necessity for targeted community-level interventions. Maternal health is significantly improved, when female education and cultural beliefs about higher-order births are changed positively.

To sum up, even though there have been advancements in economic and geographic access, the inequalities related to social, culture and education are still affecting maternal health in Sudurpashchim Province. This would take an integrated strategy that incorporates education empowerment, cultural sensitivity outreach and effective policy advocacy to offer skilled birth care in marginalized regions of Nepal.

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