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Socio-Demographic Determinants Influencing Institutional Delivery Utilization Among Women Aged 15-49 in Sudurpashchim Province, Nepal

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ABSTRACT

Maternal mortality is a severe health issue of public concern in low- and middle-income countries (LMICs) in which a high percent of women still delivers babies without careful help. The inclusion of institutional delivery is well identified as an important intervention in the reduction of maternal and neonatal morbidity and mortality. This study has discussed socio-demographic factors predicting institutional delivery among women age 15-49 years based on the Nepal Demographic and Health Survey 2022 (NDHS). The sample size of the analysis was 262 women who gave a live birth within five years before the survey was conducted. Patterns of service utilization were described using descriptive statistics, whereas binary logistic regression that takes into account the complex survey design was used to discover significant predictors. Younger women, more educated women, females who lived in urban areas, and those in richer families tended to deliver in an institution more often. But, birth order and maternal education were the only variables that were statistically significant in the multivariate analysis. The birth order had an inverse relationship with institutional delivery but positive correlation with maternal education. There was no significant relationship between residence and household wealth and institutional delivery, perhaps due to the impact of recent health-system interventions. These results imply that the policies need to be more oriented towards female education and community awareness campaigns that support facility-based births, with a special focus on women with higher-order births and those belonging to marginalized groups.

Keywords: Institutional delivery, Socio-demographic factors, Maternal health, and Utilization

INTRODUCTION

Maternal health is still among the most significant public health concerns worldwide, especially in LMICs where maternal death rates remain at unacceptable levels. Institutional delivery refers to births conducted in health institutions with skilled personnel attending them. It is a strategy used to prevent maternal and newborn morbidity and mortality (World Health Organization [WHO], 2022). Despite all the efforts made worldwide to promote institutional delivery, many women still give birth at home without a professional, hence incurring unnecessary risk in countries that are still developing, including Nepal (Thapa et al., 2023).

Substantial progress has been made in Nepal toward better maternal health indicators in the last two decades due to government efforts such as the Safe Motherhood Program and free delivery care (Ministry of Health and Population [MoHP], 2022). Institutional delivery utilization disparities continue to exist by different socio-demographic and economic groups (Bhusal, 2021). Maternal age, education, parity, caste/ethnicity, residence, and household wealth have all been cited several times as factors affecting the decision of women to deliver at a certain place (Neupane et al., 2021; Shrestha & Bhandari, 2019).

Previously, determinants were researched at national levels with the use of data from different rounds of the NNDHS and Multiple Indicator Cluster Surveys (MICS) (Karkee et al., 2014). These studies did gain some consensus that institutional delivery service use is higher among mothers earning higher education levels and possessing better means of livelihood, who live in urban areas, and whose birth order is lower (Singh et al., 2021; Shah & Wang, 2018). In difference, cultural beliefs and limited autonomy are among the causes highlighted as barriers toward institutional delivery access for marginalized communities, whose poverty level is vast and locations are inaccessible (Acharya et al., 2015).

However, most under study has been on national trends, being rarely treated province wise, particularly in disadvantaged areas such as Sudurpashchim Province with respect to both geography and socio-economy. This province is filled with poverty, with its difficult landscape imparting distinct barriers to the accessing of maternal healthcare which may never be considered in other broad national studies (Ghimire et al., 2019). Moreover, despite the fact that prior studies helped in determining some key factors, hardly have any of them, within the context of this province, inculcated both descriptive and multivariate methodologies.

This study started to address this void by exploring some socio-demographic determinants for institutional delivery utilization among women aged 15-49 in Sudurpashchim Province, Nepal. While previous studies have investigated socio-demographic factors behind institutional delivery services utilization at the national level in Nepal, this study attempts to familiarize local sights by focusing more on how birth order interacts with education in this less-explored belt in particular. The effects are directed toward informing targeted policy actions alongside Nepal's efforts to reduce maternal health inequalities. With the highlighted provincial disparities and emerging trends, the study presents its distinct social and policy angles toward carrying in evidence for strategies aimed at working on maternal healthcare utilization in the underprivileged communities.

METHODS

The present study had a cross-sectional analytic design based on secondary data in 2022 NDHS, which is a nationally representative survey conducted by the ministry of health and population, New ERA, and ICF, which collects both population-level and health-related indicators, including a detailed use of maternal health-care services. The sample analyzed was women aged 15-49 years and those living in Sudurpashchim Province who had given at least one live birth within 5 years' survey time, with the weighted sample of 262 respondents obtained under the NDHS 2022 survey. The dependent variable was institutional delivery and it was coded in a dichotomous manner as:

1 = delivery in a health facility;

0 = delivery at home or elsewhere

The independent variables were based on the existing literature and the availability of data and were based as:

i. Age of the mother (<20, 20-24, 25-29, 30-49 years),
ii. Birth order (first, second, third or higher),
iii. Education (no education, basic and higher),
iv. Caste/ethnicity (Dalit, Janjati, Brahmin/Chhetri, and others)
v. Place of residence (urban or rural), and
vi. Household wealth quintile (poorest to richest, as indicated by the NDHS asset.

The distribution of institutional delivery between socio-demographic groups was analyzed by descriptive statistics and binary logistic regression was used to estimate the factors to determine the relationship, which was presented in odds ratios and 95 percent confidence intervals (Devkota, 2025). Any analysis of the survey took into consideration the complex survey design by using proper weighting, clustering and stratification methods to obtain representative estimates and statistical significance was tested using the 5 percent level.

RESULTS

Distribution of institutional as well as non-institutional deliveries in women of 15-49 years by different socio-demographic characteristics, Sudurpashchim Province, Nepal. The results show that the majority of deliveries occurred at health facilities among young women, and younger women (20-24 years) are more probable to have an ID (42.6%) which is a good sign for using health facility services by the young women. Birth order is highly significant and a first-time mother is more likely to have an institutional delivery (45.9%), while the greater the birth order the more the likelihood of having a non-institutional delivery (Table 1). Level of education is also an important determinant; the proportion of women with secondary or higher education who have an institutional delivery (21.8%) is significantly higher than that for women with no education. There is not much difference of religious association, and most of the respondents are Hindus. The analysis of caste/ethnicity shows that Janjati and B/C women access the institutional services and, Dalit women have a higher proportion of non-institutional deliveries.

Residence and wealth quintile also show inequality in the utilization of institutional delivery. Table 1 shows that urban women utilize more institutional childbirth services (63.0%) while the proportion of rural women who use these services is 37.0 percent. The urban and rural gaps remaining urban-rural gaps in access to health services. The wealth quintile analysis highlights the divide that exists in economic access as those in the poorest families experience the highest proportion of non-institutional facilities (57.3%) and those in the richest wealth quintile use the most institutional services (9.9%). The conclusions underscore the importance of targeted interventions to alleviate the burden of social and geographic disparities in access to maternity care.

Table 1: Distribution intuitional delivery of the study populations

Variable	Non-institutional		Institutional		Total	
	Number	Percent	Number	Percent	Number	Percent
Age						
<20	2	6.7	18	8.0	21	7.9
20-24	16	48.2	98	42.6	114	43.3
25-29	9	27.2	70	30.6	79	30.2
30-49	6	17.8	43	18.8	49	18.7
Birth order						
First	7	20.1	105	45.9	112	42.7
Second	14	42.1	78	33.8	91	34.8
Third or higher	12	37.9	47	20.4	59	22.5
Level of education						
No Education	10	29.5	35	15.2	45	17.0
Basic Education	21	62.8	145	63.0	165	63.0
Higher Education	3	7.7	50	21.8	53	20.1
Religion						
Hindu	33	100.0	223	96.9	255	97.3
Other religion	0	0.0	7	3.1	7	2.7
Caste/Ethnicity						
Dalit	7	21.1	29	12.7	36	13.7
Muslim	0	0.0	1	0.3	1	0.3
Janjati	5	15.4	59	25.5	64	24.3
Other Terai	1	1.8	2	0.9	3	1.0
Brahmin/Chhetri	20	61.7	139	60.6	159	60.8

Place of residence						
Urban	16	50.4	145	63.0	161	61.4
Rural	16	49.6	85	37.0	101	38.6
Wealth quintile						
Poorest	19	57.3	83	36.2	102	38.8
Poorer	7	20.6	56	24.4	63	23.9
Middle	2	6.5	34	15.0	37	13.9
Richer	4	13.7	33	14.5	38	14.4
Richest	1	1.8	23	9.9	23	8.9
Total	33	100.0	230	100.0	262	100.0

Source: Nepal Demographic and Health Survey, 2022

The logistic regression analysis to examine how factors like age, income, and education impact women's use of hospital delivery services in Sudurpashchim Province. The study focused on women aged 15-49. A key discovery was that the birth order significantly influences these decisions. Women expecting their second child (OR=0.35, p=0.041) and more children (OR=0.25, p=0.019) are much less likely to choose hospital services compared to first-time mothers (Table 2). This suggests that as women have more children, they often do not seek professional care in hospitals or clinics during childbirth. The women with greater education levels are similar to optional for hospital deliveries (OR=3.08, p=0.085), although this result is only somewhat significant. This shows that education equips women with the knowledge-3-to make informed. In this study, such determining factors of delivery location as the family status of experience, the location of living, income, and wealth failed to show a definite influence of the women giving birth in the healthcare institutions. For example, the women of 30-49 years and those from the top 3/5 of the wealth share were more likely to have their baby at the hospital but it did not represent a strong correlation. Women in the rural area were not so motivated to get a hospital labor that was their less likely position, the factor was not significant, however. Table 2 is carrying the information that well-educated women with fewer kids prefer the hospital as the delivery place. This explains how vital it is to give importance to women's education and the encouragement of hospital births not only for the first birth, but to expand maternal health in the area.

Table 2: Factors association of demographic and socio –economic variable

Variable	Odds Ratio	Std. Err.	t	P>|t|	95% Conf. Interval	Sig
Age						
20-24	1.103496	0.7343536	0.15	0.883	0.2913772-4.179133	
25-29	1.959399	1.551659	0.85	0.399	0.4017355-9.55665	
30-49	3.21824	2.403406	1.57	0.123	0.722149-14.34201	
Birth order						
Second	0.3500765	0.1762461	-2.08	0.041	0.1278362-0.9586764	**
Third or higher	0.2506483	0.1437526	-2.41	0.019	0.0795538-0.7897115	**
Other religion						
Caste/Ethnicity						
Janjati	1.361414	0.918202	0.46	0.649	0.3530863-5.249275	
Other Terai	0.4767499	0.7094509	-0.5	0.62	0.0242718-9.364397	
Brahmin/Chhetri	1.334439	0.4973731	0.77	0.442	0.6329893-2.813202	
Educational attainment						
Basic Education	1.721414	0.6362716	1.47	0.147	0.8216305-3.606569	
Higher Education	3.081552	1.980667	1.75	0.085	0.851542-11.15149	*
Residence						
Rural	0.9099838	0.3866021	-0.22	0.825	0.3888967-2.129281	
Wealth quintile						
Poorer	1.510579	0.7566114	0.82	0.414	0.5544626-4.115424	
Middle	2.341352	1.436099	1.39	0.171	0.6861847-7.988999	
Richer	1.071165	0.6974288	0.11	0.916	0.2911001-3.941583	
Richest	3.542122	3.278055	1.37	0.177	0.5559404-22.5683	
Constant	3.82259	3.053056	1.68	0.098	0.7731809-18.8988	

Source: Nepal Demographic and Health Survey, 2022

DISCUSSION

This study provides a clear insight into the demographic and economic factors that are instrumental in the utilization of ID services among 15-49 age at Sudurpashchim Province, Nepal. Through its results, it highlights the influence of maternal education and birth order as the key drivers of the kind of delivery method that a woman would choose to undertake. The data analysis that was based on demographics showed that younger women, particularly those

between 20-24 years, first-time mothers, those with higher education, urban dwellers and wealthy households are more likely to get access to the facility of delivery. Such disparities in behaviors are the consequence of both individual-level factors and the socio-economic environment, which either facilitate or restrict the availability of maternal health services in this province that is a challenge geographically and economically. What is more, the regression analysis has also verified that apart from other determinants, birth order and educational levels were dominant in institutional delivery usage. The study found that women of the second and higher order of birth turned to use hospital services much less than the first-time mothers did. The negative relationship between birth order and institutional delivery implies that in the process of going through childbirth again, women can feel less urgency to be attended by a skilled worker and therefore end up choosing home births due to their self-reliance and traditional beliefs that they follow. This result is the same as the one seen in the previous studies that were carried out not only in Nepal but also in other LMICs, where the commenting on how higher parity is always equal to lower delivery rates.

The use of formal education was found to be positively associated with the prevalence of institutional delivery services, which is in line with the widely accepted notion that education has a very important role in the improvement of maternal health. Women with more education were more likely to choose institutional delivery services, which was most likely a result of their increased health awareness, greater independence in deciding, and better access to information about the benefits of skilled birth attendance. This study is in line with the study of Shrestha and Bhandari (2019) and Khanal et al. (2014) who claimed that the educated woman is the one who can fight cultural obstacles and is also the one who is the most accomplished to take care of herself in the health system. Women's education not only better informs them but also changes their attitude toward modern healthcare practice which is an important factor for the improvement of maternal health service utilization. In a surprising manner and more importantly in contradiction with all assumptions and the results of the literature, none of the socio-economic factors such as residence and income revealed any statistically significant correlations with the use of institutional delivery services in the multivariate analysis, although descriptive statistics had shown such plain differences.

Different studies, i.e., Acharya et al. (2015), Paudel et al. (2015), and Bhusal (2021), have always highlighted the fact that rural women and women from poorer families are the ones who continue to face immense barriers to access institutional delivery services, a fact that was later confirmed by this study thanks to problems like travel distances to healthcare centers, transportation troubles, and the financial situation of those individuals. The non-existence of the correlations in this study might be due to the recent policy actions that have been taken place at the Sudurpashchim Province such as the organization of free delivery care services, transport encouragements, and the implementation of health programs that are community-based and aim at overcoming both the financial and the geographic burden. These programs being a part of Nepal's Safe Motherhood Program may highlight the gradual leveling off of disparities across the country, which was also mentioned in the national studies conducted by Shah and Wang (2018) and Ghimire et al. (2019).

These results indicate a bigger picture of evolving dynamics of access to maternal healthcare in Nepal, especially in disadvantaged provinces such as Sudurpashchim. While education and birth order still matter, the decline of wealth status and rural residence as statistically relevant variables could be attributed to the roll-down effects of structural health interventions. Similar patterns were observed by Karkee et al. (2014) and Wagle et al. (2004) in their claims that policy-driven efforts have a role to reduce socio-economic inequities in maternal health service utilization through measures such as financial incentives and expanded healthcare infrastructure. Mekonnen et al. (2015), however, disproved that despite changes being brought on, deep-set cultural beliefs and practices related to childbirth, mainly concerning higher-order births, have in fact continued to form serious barriers towards institutional delivery. Such cultural precepts traditionally discourage women far more from institutional care, especially if previous home delivery was considered to have been successful.

A major strength of this study is attained from the NDHS 2022 data which are nationally representative and hence provide reliability and generalizability to the findings within the provincial contexts. The study utilized both descriptive and multivariate approaches to adequately expound on the complicated factors affecting the utilization of institutional delivery service. However, like most cross-sectional studies, this one has its limitations. The primary limitation is the inability to draw any causal relationships from the study; a constraint pointed out by Neupane et al. (2021) occurring in similar analyses as well. Besides, we were limited to only those variables available in the NDHS datasets. Some important variables such as women's autonomy, household decision-making processes, perceptions of quality care, availability of skilled personnel, and geographic access to health facilities could not be included and are an important influence on maternal health service utilization as documented by Khanal et al. (2014) and Acharya et al. (2015).

It is confirmed that maternal education and birth order remain important factors influencing institutional delivery utilization in Sudurpashchim Province, Nepal. Hence, the finding underscores the ongoing need to promote female education as a long-term measure toward enhancing maternal health outcomes in that area. Moreover, issues surrounding cultural beliefs about childbirth would have to be addressed to ensure institutional delivery service use on an equal footing for all pregnancies, especially among multiparous women. In addition, recent policy interventions seem to have addressed some economic and geographic barriers, but dedicated efforts remain necessary to fill other gaps. Therefore, policymaking stakeholders and health workers should look into programs that enhance educational opportunities for women and organize common awareness activities with the aim of imparting culturally appropriate knowledge and interventions that encourage institutional deliveries, irrespective of parity, socio-economic status, or place of residence.

CONCLUSION

The study highlights educational attainment and birth order as crucial socio-demographic determinants of institutional delivery services in 15-49 years in Sudurpashchim Province. Women with the highest educational attainment reported a higher likelihood of institutional delivery utilization, while birth order also appeared to affect the situation, as women of higher

birth orders tend to go for non-institutional births, a sign that there exist strong norms and cultural perceptions surrounding childbirth. The absence of a significant association of wealth status and place of residence at the multivariate level could insinuate that current times policies such as free settlements and transportation incentives may be working against traditional barriers to access. But changing attitudes toward births beyond the first order and enhancing women's educational opportunities remains paramount. Hence, the policies would simultaneously target improving female education, sustaining community-based awareness programs, and culturally sensitive interventions encouraging institutional deliveries for all socio-economic and parity groups.

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