Research Square

Preprints are preliminary reports that have not undergone peer review.
They should not be considered conclusive, used to inform clinical practice,
or referenced by the media as validated information.

Maternal and child healthcare utilization and associated factors in private health institutions in Nepal

Ramesh Prasad Adhikari

rameshadhikaria@gmail.com

Helen Keller International Nepal

Research Article

Keywords: maternal and child health, healthcare practices, private health institution, Nepal

Posted Date: November 1st, 2026

DOI: https://doi.org/10.21203/rs.3.rs-11249689/v1

License: This work is licensed under a Creative Commons Attribution 4.0 International License.
Read Full License

Additional Declarations: No competing interests reported.

Abstract

Background

Private health institutions play a significant role in providing maternal and child health services globally. This study examines the utilization of maternal and child health services in Nepal and assesses socio-economic factors associated with the choice of private institutions, using data from the 2022 Nepal Demographic and Health Survey (NDHS).

Methods

The study used NDHS 2022 data. Maternal healthcare was assessed by the institution of antenatal care (ANC) and the place of delivery; child healthcare by the institution sought for fever/ARI and diarrhea treatment. Adjusted logistic regression identified socio-demographic determinants of private health-seeking behavior.

Results

Private institutions were used more for childhood illnesses—fever/ARI (81.3%) and diarrhea (77.2%)—than maternal healthcare, with 40% of women receiving ANC and 22.4% receiving delivery services privately. Children in the Terai had higher odds of private care for diarrhea (AOR 7.5; 95% CI: 1.6–35.4) and fever/ARI (AOR 10.1; 95% CI: 4.4–23.2) than those in the Mountain region. Household wealth was positively associated with private care for childhood illnesses, with the richest households showing markedly higher odds for fever/ARI (AOR 18.4; 95% CI: 4.4–76.3). Private maternal healthcare use was associated with ecological region, maternal education, and caste/ethnicity; the wealthiest women had higher odds of private ANC (AOR 9.2; 95% CI: 5.2–16.1), and greater maternal schooling predicted private delivery care.

Conclusions

Private institutions play a major role in Nepal's healthcare, particularly for childhood illnesses, with use shaped by agroecological zone, wealth, and education. Policies should promote equitable access across socioeconomic groups while strengthening both public and private services.

Background

In low and middle income countries, private healthcare institutions play a crucial role in delivering maternal and child healthcare services (1, 2). The World Health Organization (WHO) has emphasized the necessity of involving the private sector in service delivery within mixed health systems. WHO further

emphasizes the importance of collaboration and partnerships between governments and the private sector for achieving the Sustainable Development Goals by 2030 (3).

Within the mixed health system of countries, both the public and private institutions provide maternal and child health services (4, 5). Private institution refers to the involvement of non-governmental actors, either individual or organization, in health services, either for profit or social services (6, 7) whereas the public institutions are mostly governed by the government and its departments(8).

In low- and middle-income countries, private institutions exhibited significantly high coverage in providing maternal and child health services (2, 9). A cross-sectional study of 57 low- and middle-income countries indicated that approximately 44% of antenatal care services and 40% of delivery care services were provided by private institutions (10). Similarly, more than half of the children who experienced diarrhea, fever, or cough received services from private institutions, with the majority coming from urban and wealthier families (2, 11). However, there has been debate about the quality and equity of health services provided by private and public institutions across different settings (12). Some studies suggest that healthcare services from private institutions are often favored by the wealthiest individuals only (10, 13), services are perceived as less efficient (8) and more focused on profit rather than the quality of services (14, 15). On the other hand, some studies claim that market forces drive private institutions to enhance efficacy, responsiveness, transparency, and equity in health services (16–18) and they are seen as less prone to corruption (19).

The healthcare-seeking practices within specific countries are influenced by a combination of physical, economic, and socio-cultural factors (20–23). Furthermore, healthcare-seeking practices are shaped by government investments in the health sector, the educational status of the population, and the overall economic status and opportunities available to individuals (24–28). Additionally, the choice of healthcare seeking practices is influenced by factors such as flexibility in time, sensitivity, confidentiality, service costs, geographical distance, service quality, the behavior of healthcare providers, nature of the illness, and the time required to receive services (29–34). The quality of services offered by the institution is a predominant deciding factor in choosing healthcare services (35–37).

Before 1990, Nepal’s healthcare system was almost entirely run by the government. But after 1991, the country began shifting toward a mixed healthcare model, allowing private investment to play a larger role in health service delivery (38).

Nepal's private health sector spans a broad spectrum of care from large private hospitals and medical colleges down to small nursing homes, retail pharmacies, NGO-run clinics, and informal or traditional practitioners operating outside the formal system. These services generally require patients to pay out of pocket (39). In Nepal, private institutions now offer a variety of services that were historically available only in public institutions(40). Due to the expansion of services, private institutions now account for the majority of hospital infrastructure in the country — roughly two out of every three hospital beds — and employ a comparable majority of the medical workforce, at around 60 percent (41). The available evidence suggests that health-seeking practices in private institutions have increased over the years (4).

Based on this fact, this study explores the socio-economic determinants for selecting private institutions for the treatment of maternal and child healthcare services, using the 2022 Nepal Demographic and Health Survey

Methods

This study draws on the 2022 Nepal Demographic and Health Survey (NDHS), a nationally representative household survey that captures health and population indicators across Nepal's provinces and ecological zones. Sample selection followed a two-stage design: enumeration areas (clusters) were first drawn with probability proportional to their population size, after which a fixed number of households was randomly selected within each chosen cluster (42).

NDHS collected data on antenatal care (ANC) services and place of delivery among women who had given birth in the two years preceding the survey. The information was collected based on the most recent birth. In 2022, ANC-related data were collected from 1,881 women who had a recent live birth in the past two years, and PNC-related data were collected from 1,570 women who had all live births in the past two years. Information on service-seeking for child illnesses was collected from children under 5 years residing in the same household, based on the 2 weeks prior to the survey. Information on services seeking child illness was collected from 5,040 children. Of them, 524 children have had diarrhea in the past two weeks, and only 300 sought treatment. Similarly, 1186 children had fever and ARI symptoms, and 919 sought treatment (See details in Fig. 1).

For analysis, facility type was grouped into a binary public/private classification. The public category comprised government-run facilities: hospitals, primary health care centers, health posts, sub-health posts, and outreach clinics. The private category comprised non-government providers: private hospitals, nursing homes, polyclinics, NGO-operated facilities, and private pharmacies.

Based on prior knowledge, potential socioeconomic and geographic confounders were selected. Possible socio-economic confounders include geographical, household, and socio-demographic confounders. The geographical confounders include urban-rural residence and agro-ecological zone (mountain, hill, plain area called terai). The household’s confounders include caste/ethnicity (Brahman/Chhetri, so-called higher caste, Janajati, Dalit, so-called disadvantaged caste, other), wealth quintile (as per the DHS categories such as poorest, second poorest, middle, second richest, richest), and headship of the households (female or male). The socio-demographic confounders include mothers completed age (less than 20 years, 20–24 years, 25–29 years, 30 and above years), mother's completed years of schooling (no schooling, 1–5 years of schooling, 6–9 years of schooling and 10 and above years of schooling), mother currently working for income generating activities or not, child age in completed months and child sex as a male or female.

Maternal and child health-seeking behavior in private institutions was measured using bivariate analysis. Adjusted logistic regression models and adjusted odds ratios were used to explore potential determinants of maternal and child health-seeking behaviors at private institutions. In addition, an

adjusted Wald test was conducted to assess the overall significance of the categorical variables. A binary variable was constructed, with 0 denoting health-seeking from government institutions or other sources and 1 denoting health-seeking from private institutions. Women who did not obtain ANC services and whose children did not receive treatment for diarrhea and fever/ARI were eliminated from the final analysis. Variance inflation factors were examined prior to model building, and none of the retained covariates showed problematic collinearity. All estimates incorporated the DHS sampling weights and accounted for the survey's clustered, stratified design using survey-adjusted (svy) commands in Stata (43).

Results

The total sample size in this study varied by outcome of interest, comprising 1,881 ANC users, 1,570 women who had facility deliveries, 300 diarrhea care seekers, and 919 fever/ARI care seekers. The distribution of the study population was broadly similar across the four groups. Most respondents lived in the Terai agro-ecological zone and in urban areas. Around one-third of the study population belonged to Janajati caste/ethnic groups. Women aged 20–29 years made up the largest proportion of the maternal healthcare population. The proportion of mothers with at least 10 years of schooling ranged from 27.9% among diarrhea care seekers to 40.1% among facility-delivery users (Table 1).

Table 1
Characteristics of the 2022 NDHS analytical study population

Geographical status	ANC users (n = 1,881), %	Facility deliveries (n = 1,570), %	Diarrhea care seekers (n = 300), %	Fever/ARI care seekers (n = 919), %
Agro-ecological zone				
Mountain	6.8	6.3	3.7	5.0
Hill	32.9	33.7	29.7	34.9
Terai	60.3	60.0	66.6	60.1
Urban-rural residence				
Urban	65.4	66.7	68.6	67.4
Rural	34.6	33.3	31.5	32.6
Household status				
Caste/ethnicity				
Dalit	18.3	16.7	21.7	19.1
Janajati	30.3	32.3	28.0	29.5
Brahmin/Chhetri	26.5	28.4	22.9	28.6
Other	24.9	22.6	27.4	22.9
Wealth status				
Poorest	21.6	18.6	17.8	20.0
Poorer	22.4	20.7	25.5	21.2
Middle	20.0	19.7	23.6	22.9
Richer	20.0	22.0	20.1	22.1
Richest	16.0	19.0	13.0	13.9
Sex of household head				
Male	70.9	71.1	73.1	68.0
Female	29.1	28.9	26.9	32.0

Geographical status	ANC users (n = 1,881), %	Facility deliveries (n = 1,570), %	Diarrhea care seekers (n = 300), %	Fever/ARI care seekers (n = 919), %
Agro-ecological zone				
Socio-demographic status				
Mother's age group				
15–19 years	11.0	11.3	5.9	5.3
20–24 years	40.0	40.1	39.0	32.8
25–29 years	29.3	28.5	30.2	34.9
30–49 years	19.7	20.1	24.9	27.0
Mother's years of schooling				
No schooling	18.5	14.4	25.5	20.4
1–5 years	16.3	14.4	17.4	16.5
6–9 years	29.9	31.2	29.2	30.2
≥ 10 years	35.3	40.1	27.9	32.9
Mother currently working				
No	56.9	57.5	50.8	48.1
Yes	43.1	42.5	49.2	51.9
Child age in months			25.4 (SD = 16.5)	28.8 (SD = 16.1)
Child sex				
Male			54.9	54.0
Female			45.1	45.0

Maternal and child healthcare-seeking practices varied between private and non-private institutions. For ANC services, around 40% of women received care from private institutions, whereas only 22% sought delivery care from private facilities. In contrast, private institutions were the predominant source of care for childhood illnesses, with 77.2% seeking care for diarrhea and 81.3% for fever/ARI (Table 2).

Table 2
Private-sector healthcare utilization for maternal and child health services, Nepal DHS 2022

Healthcare service	Private sector, %	Non-private sector, %	Weighted N
Antenatal care	39.9	60.1	1,881
Delivery care	22.4	77.6	1,570
Diarrhea care	77.2	22.8	300
Fever/ARI care	81.3	18.7	919

Women living in the Terai region were nearly four times more likely to seek ANC services from private health institutions than women living in other regions (Adj. OR = 4.0; CI: 1.7–9.3). In addition, the adjusted logistic regression analysis showed a strong association between household wealth and the use of private health institutions for ANC services. Women from the wealthiest households were about nine times more likely to seek ANC services from private health institutions than those from the poorest wealth quintile (Adj. OR = 9.2; CI: 5.2–16.1) (Table 3).

Similarly, the adjusted logistic regression analysis showed a strong association between agro-ecological zone and the use of private health institutions for delivery services. Women living in the Terai region were more than five times more likely to give birth in a private health institution than women from other agro-ecological zones. A woman's level of education was also significantly associated with the use of private health institutions for delivery services. Women with higher levels of education were more likely to seek delivery services from private health institutions (Adj. OR = 2.3; CI: 1.4–3.9) (Table 3).

Table 3
Factors associated with private-sector maternal healthcare utilization, Nepal DHS 2022

Characteristic	Private ANC (n = 1881) AOR (95% CI)	Overall p-value	Private delivery (n = 1570) AOR (95% CI)	Overall p-value
Geographical confounders				
Ecological region		< 0.001		< 0.05
Mountain	Ref.		Ref.	
Hill	2.4 (1.1–5.5)		2.4 (0.5–11.9)	
Terai	4.0 (1.7–9.3)		4.5 (0.9–23.5)	
Place of residence (urban ref.)	1.3 (0.9–1.7)	0.121	0.9 (0.6–1.3)	0.557
Household confounders				
Caste/ethnicity		< 0.001		< 0.05
Dalit	Ref.		Ref.	
Janajati	0.8 (0.6–1.1)		1.6 (1.0–2.7)	
Brahmin/Chhetri	0.7 (0.5–1.1)		1.2 (0.7–2.2)	
Other	2.6 (1.8–3.8)		2.2 (1.3–3.8)	
Household wealth quintile		< 0.001		0.401
Poorest	Ref.		Ref.	
Poorer	1.9 (1.3–2.9)		1.1 (0.6–2.2)	
Middle	3.1 (1.8–4.8)		1.5 (0.8–2.9)	
Richer	3.2 (2.1–5.1)		1.4 (0.7–2.9)	
Richest	9.2 (5.2–16.1)		1.8 (0.4–3.8)	
Sex of household head (male ref.)	1.0 (0.8–1.3)	0.94	1.3 (0.9–1.8)	0.144
Socio-demographic confounders				
Maternal age, years		0.202		0.294
15–19	Ref.		Ref.	
20–24	0.8 (0.5–1.1)		0.9 (0.5–1.5)	
25–29	0.7 (0.5–1.1)		0.9 (0.5–1.5)	

Characteristic	Private ANC (n = 1881) AOR (95% CI)	Overall p-value	Private delivery (n = 1570) AOR (95% CI)	Overall p-value
30–49	0.6 (0.4–1.0)		1.3 (0.7–2.3)	
Maternal education		< 0.05		< 0.01
No schooling	Ref.		Ref.	
1–5 years	0.7 (0.5–1.1)		1.6 (0.95–2.7)	
6–9 years	0.6 (0.4–1.0)		1.4 (0.82–2.3)	
≥ 10 years	1.0 (0.6–1.6)		2.3 (1.36–3.9)	
Currently working (no ref.)	0.9 (0.7–1.1)	0.188	0.9 (0.62–1.2)	0.456

In the adjusted analyses, healthcare-seeking practices for diarrhea at private institutions were significantly associated with ecological region ($p < 0.001$) and household wealth ($p = 0.007$). Children living in the Terai region were 7.5 times more likely to receive care for diarrhea from private institutions than those living in the Mountain region (AOR 7.50; CI: 1.59–35.36). Similarly, children from households in the middle, richer, and richest wealth quintiles had higher adjusted odds of receiving care for diarrhea from private institutions (Table 4).

Similarly, healthcare-seeking practices for fever/ARI at private institutions were significantly associated with ecological region ($p < 0.001$), household wealth ($p < 0.001$), maternal employment ($p < 0.05$), and child age ($p < 0.05$). Children residing in the Terai region had approximately ten times higher odds of receiving healthcare for fever/ARI from private institutions compared with children living in the Mountain region (AOR 10.1; CI: 4.39–23.23). Likewise, children from the richest households had substantially higher odds of receiving fever/ARI care from private institutions than those from the poorest households (AOR 18.4; CI: 4.41–76.28) (Table 4).

Table 4
Factors associated with private-sector healthcare utilization for childhood diarrhea and fever/ARI, Nepal DHS 2022

Characteristic	Private diarrhea care (n = 300) AOR (95% CI)	Overall p-value	Private fever/ARI care (n = 919) AOR (95% CI)	Overall p-value
Geographical confounders				
Ecological region		< 0.001		< 0.001
Mountain	Ref.		Ref.	
Hill	1.1 (0.3–4.8)		1.7 (1.0–3.0)	
Terai	7.5 (1.6–35.4)		10.1 (4.4–23.2)	
Place of residence (urban ref.)	1.0 (0.4–2.4)	0.974	1.0 (0.6–1.6)	0.97
Household confounders				
Caste/ethnicity		0.783		0.81
Dalit	Ref.		Ref.	
Janajati	1.4 (0.5–3.8)		1.1 (0.6–2.2)	
Brahmin/Chhetri	0.8 (0.3–2.5)		1.3 (0.7–2.5)	
Other	1.0 (0.3–3.5)		1.2 (0.4–3.4)	
Household wealth quintile		< 0.01		< 0.001
Poorest	Ref.		Ref.	
Poorer	1.9 (0.7–5.1)		1.6 (0.9–2.6)	
Middle	4.1 (1.4–11.9)		2.7 (1.3–5.6)	
Richer	14.4 (2.7–75.4)		4.2 (2.0–8.7)	
Richest	5.4 (1.3–22.7)		18.4 (4.4–76.3)	
Sex of household head (male ref.)	1.8 (0.7–4.4)	0.207	1.6 (1.0–2.5)	0.062
Socio-demographic confounders				
Mother's age, years		0.452		0.592
15–19	Ref.		Ref.	

Characteristic	Private diarrhea care (n = 300)	Overall p-value	Private fever/ARI care (n = 919)	Overall p-value
	AOR (95% CI)		AOR (95% CI)	
20–24	2.7 (0.7–10.06)		1.0 (0.5–2.0)	
25–29	3.2 (0.8–13.65)		0.9 (0.4–1.9)	
30–49	3.0 (0.5–17.10)		1.3 (0.6–3.0)	
Mother's education		0.818		0.409
No schooling	Ref.		Ref.	
1–5 years	0.7 (0.2–2.28)		1.8 (0.8–3.9)	
6–9 years	0.6 (0.2–1.87)		1.2 (0.6–2.4)	
≥ 10 years	0.8 (0.2–2.55)		1.0 (0.5–2.1)	
Currently working (no ref.)	1.2 (0.6–2.63)	0.596	0.6 (0.4–0.9)	< 0.05
Child age, months	1.0 (1.0–1.00)	0.094	1.0 (1.0–1.0)	< 0.05
Child sex (male ref.)	0.9 (0.4–1.83)	0.722	0.8 (0.5–1.2)	0.333

Discussion

The study findings provide insights into Nepal's evolving picture of where mothers and children actually go for care and point to which household and geographic factors continue to steer people toward private institutions. The results suggest that maternal and child health service-seeking practices shift from public institutions to private institutions. The findings indicated that the agroecological zone, households' wealth status, and mothers' years of schooling were significantly associated with maternal and child health-seeking practices at private health institutions.

The findings showed that healthcare-seeking practices in private health institutions varied according to the types of maternal and child health care services. Health care seeking in private institutions was particularly higher for childhood illness, including both diarrhea and fever/ARI treatment, compared with maternal ANC and delivery care services. It indicated that families are more likely to rely on private institutions for childhood illness, whereas for maternal health care services, particularly in delivery services, people still trust and visit public health facilities. The increasing reliance on private institutions is consistent with findings from many studies in low- and middle-income countries. For example, a study by Thakur and colleagues, based on three rounds of district-level household surveys from 1989 to 2008, indicated an increasing trend in maternal health care-seeking practices in private health institutions in India (44). A scoping review conducted by Awor and Kinengyere, based on both published and unpublished grey literature from 2000 to 2023, also clearly indicated that private health institutions are

the dominant providers of maternal and child health services in low- and middle-income countries (2). Similarly, a study by Grépin covering 70 low- and middle-income countries between 1990 and 2013 found an increasing trend in maternal and child health-seeking practices at private health institutions (45). Following the adoption of a mixed health system after 1990, Nepal increasingly emphasized public–private partnerships in healthcare delivery. The subsequent expansion of private health facilities, particularly in urban areas, may have contributed to their growing role in the provision and utilization of maternal and child health services (46–48).

The results further indicated that the agroecological zone, households' wealth status, and the mother's years of schooling were significant determinants of maternal and child health-seeking practices in private health institutions. These findings align with a recent study by Purbey and colleagues, which used data from India's National Family Health Survey (NFHS) between 2005 and 2021. This study found that women from wealthier households were significantly more likely to use maternal and child health services at private health institutions than those from poorer households (49). Similarly, a scoping review by Awar and Kinengyere highlighted that private institutions are the predominant providers of maternal and child health services in many low- and middle-income countries (50). A randomized controlled trial conducted between 2005 and 2011 across Nepal, India, and Bangladesh also found that the use of private health institutions for delivery services increased over time, with clear differences by household socio-economic status. (51). A study covering 16 countries across Latin America, sub-Saharan Africa, and Asia found that the use of private health institutions for delivery services has increased over time. However, the factors driving this trend varied by region. In sub-Saharan Africa, socio-demographic factors played a key role, while in Asian and Latin American countries, economic status—particularly household wealth—was the primary determinant (52). The study, based on the findings of three successive Nepal Demographic and Health Surveys from 2006 to 2016, found that the wealth status of households, the mother's years of schooling, and the agroecological zone were key predictors for maternal and child health-seeking practices from private health institutions in Nepal (4). Cost sensitivity cuts in both ways: free or low-cost public services keep poorer households anchored there, while wealthier households have the financial headroom to choose private care (53, 54).

The selection of health institutions for maternal and child care services is determined by various factors, including the quality of services, time required to receive services, service costs, the behavior of healthcare providers, and the nature of the illness (32, 33, 36, 55). Many studies conducted in low- and middle-income countries, such as Nepal, India, Pakistan, Nigeria, and Malawi, indicated that the quality of services was a key determinant for selecting private health institutions for healthcare services (4, 56–60).

The findings indicated that delivery care stood out as the one service where public institutions still hold the advantage over private ones, plausibly a reflection of Nepal's cash incentive scheme, which rewards women financially for giving birth in a government facility (61).

The study has several limitations. Firstly, because the NDHS captures a single point in time, the associations reported here should be read as statistical patterns. Secondly, because information collected from DHS surveys is self-reported, there may be some misclassification in identifying service sources. Thirdly, the illness episodes were captured only if they occurred in the two weeks before the interview, so children with less frequent or seasonal illness may be under-represented, and caregivers' recall of where care was sought may be less precise toward the end of that window. Fourthly, the influence of non-governmental organizations (NGOs) that run health facilities and charge nominal fees may affect the selection of private health institutions for maternal and child health care services. Furthermore, Nepal's social health insurance scheme has expanded unevenly across districts since its rollout, so women in covered areas may face different cost incentives when choosing a facility than those where the scheme has not yet reached — a variation this analysis could not account for. Additionally, the study did not focus on the quality of services provided by health institutions, a significant factor in selecting health facilities. Despite these constraints, the study's strength lies in the use of four rounds of nationally representative survey data, enhancing the generalizability of its findings to the national level.

Conclusions

In Nepal, private institutions play a substantial role in maternal and child health care-seeking, particularly for childhood illnesses. The ecological zone, households' wealth status, and the mother's years of schooling are significant predictors of the selection of private institutions for services. The preference for maternal and child health care practices in private health institutions may result from Nepal's public-private partnership model for healthcare services. With a significant proportion of the population receiving services from private institutions, the government of Nepal needs to develop effective policies and programs to regulate the quality of services provided by these private health institutions through an equity lens.

Declarations

Ethical Approval and Accordance: This study is based on secondary analysis of publicly available data, so separate ethical approval was not required. However, permission to use the data was obtained by the first author from the DHS Program (dhsprogram.com). The study was conducted in accordance with the guidelines and regulations of the DHS Program and the ethical principles of the Declaration of Helsinki.

Consent to Participate: As this study involved only secondary analysis of de-identified, publicly available data, no additional informed consent was required from participants for the present analysis.

Consent for publication: Not applicable

Availability of data and materials: The datasets, cleaning, and analysis files used in this study are available from the corresponding author upon request.

Competing interests: The author declares no competing interests.

Funding: Not applicable

Authors' contributions: RPA designed the study, analyzed the data, and prepared the full manuscript. RPA conceptualized the study, conducted the analysis, and wrote the manuscript; an AI-based language tool was used only to assist with language editing

Acknowledgments: I would like to thank the DHS program for allowing us to use the data from the 2022 NDHS for this study.

References

1. WHO. Role and contribution of the private sector in moving towards universal health coverage. 2016.
2. Awor P, Kinengyere AA. Delivering maternal and child health interventions through the private sector in LMIC: a scoping review of strategies and effective approaches. BMJ Public Health. 2023;1(1).
3. WHO. Engaging the private health service delivery sector through governance in mixed health systems: strategy report of the WHO Advisory Group on the Governance of the Private Sector for Universal Health Coverage. 2020.
4. Adhikari RP, Shrestha ML, Satinsky EN, Upadhaya N. Trends in and determinants of visiting private health facilities for maternal and child health care in Nepal: comparison of three Nepal demographic health surveys, 2006, 2011, and 2016. BMC Pregnancy Childbirth. 2021;21(1):1–10.
5. Organization WH. Private sector landscape in mixed health systems. Private sector landscape in mixed health systems2020.
6. Clarke D, Doerr S, Hunter M, Schmets G, Soucat A, Paviza A. The private sector and universal health coverage. Bull World Health Organ. 2019;97(6):434.
7. Klinton J. The Private Health Sector: An Operational Definition [Internet]. Geneva: World Health Organization; 2020.
8. Kaabi SA, Varughese B, Singh R. Public and Private Healthcare System in Terms of both Quality and Cost: A Review. J Clin Diagn Res. 2022;16(8).
9. Montagu DD, Anglemyer A, Tiwari M, Drasser K, Rutherford GW, Horvath T, et al. Private versus public strategies for health service provision for improving health outcomes in resource-limited settings. San Francisco.: San Francisco, CA: Global Health Sciences;: University of California; 2011.
10. Campbell OM, Benova L, MacLeod D, Baggaley RF, Rodrigues LC, Hanson K, et al. Family planning, antenatal and delivery care: cross-sectional survey evidence on levels of coverage and inequalities by public and private sector in 57 low-and middle-income countries. Tropical Med Int Health. 2016;21(4):486–503.
11. Grépin KA. Private sector an important but not dominant provider of key health services in low- and middle-income countries. Health Affairs (Millwood). 2016;35:1214–21.

12. Makinen M, Waters H, Rauch M, Almagambetova N, Bitran R, Gilson L, et al. Inequalities in health care use and expenditures: empirical data from eight developing countries and countries in transition. Bull World Health Organ. 2000;78:55–65.
13. Gwatkin DR, Bhuiya A, Victora CG. Mak health more equitable Lancet. 2004;364:1273–80.
14. Gray BH. Ethical issues in for-profit health care. For-Profit Enterprise in Health Care. National Academies Press (US); 1986.
15. Khatri RB, Durham J, Karkee R, Assefa Y. High coverage but low quality of maternal and newborn health services in the coverage cascade: who is benefitted and left behind in accessing better quality health services in Nepal? Reproductive Health. 2022;19(1):163.
16. Liu X, Hotchkiss DR, Bose S. The effectiveness of contracting-out primary health care services in developing countries: a review of the evidence. Health Policy Plan. 2008;23:1–13.
17. Hotchkiss DR, Godha D, Do M. Effect of an expansion in private sector provision of contraceptive supplies on horizontal inequity in modern contraceptive use: evidence from Africa and Asia International. J Equity Health. 2011;10(33).
18. Morris G, Maliqi B, Lattof SR, Strong J, Yaqub N. Private sector quality of care for maternal, newborn, and child health in low-and-middle-income countries: a secondary review. Front global women's health. 2024;5:1369792.
19. Rosenthal G, Newbrander W. Public policy and private sector provision of health services. Int J Health Plann Manag. 1996;11(3):203–16.
20. Shaikh BT, Hatcher J. Health seeking behaviour and health service utilization in Pakistan: challenging the policy makers. J Public Health. 2005;27(1):49–54.
21. Short SE, Mollborn S. Social determinants and health behaviors: conceptual frames and empirical advances. Curr Opin Psychol. 2015;5:78–84.
22. Barkley GS. Factors influencing health behaviors in the National Health and Nutritional Examination Survey, III (NHANES III). Soc Work Health Care. 2008;46(4):57–79.
23. Baculu EP. Cultural and Economic Influences on Healthcare Choices: A Narrative Review. Jurnal Riset Kualitatif dan Promosi Kesehatan. 2024;3(2):113–26.
24. DeWalt DA, Berkman ND, Sheridan S, Lohr KN, Pignone MP. Literacy and health outcomes. J Gen Intern Med. 2004;19(12):1228–39.
25. Kroeger A. Anthropological and socio-medical health care research in developing countries. Soc Sci Med. 1983;17(3):147–61.
26. Ogunlesi TA, Olanrewaju DM. Socio-demographic factors and appropriate health care-seeking behavior for childhood illnesses. J Trop Pediatr. 2010;56(6):379–85.
27. Katung P. Socio-economic factors responsible for poor utilisation of the primary health care services in a rural community in Nigeria. Nigerian J medicine: J Natl Association Resident Doctors Nigeria. 2001;10(1):28–9.

28. Raghupathi V, Raghupathi W. The influence of education on health: an empirical assessment of OECD countries for the period 1995–2015. Archives public health. 2020;78:1–18.
29. Hunte PA, Sultana F. Health-seeking behavior and the meaning of medications in Balochistan, Pakistan. Soc Sci Med. 1992;34(12):1385–97.
30. Thuan NTB, Lofgren C, Lindholm L, Chuc NTK. Choice of healthcare provider following reform in Vietnam. BMC Health Serv Res. 2008;8(1):162.
31. Castro-Leal F, Dayton J, Demery L. Public spending on health care in Africa: do the poor benefit? Bull World Health Organ. 2000;78(1):66–74.
32. Zwi AB, Brugha R, Smith E. Private health care in developing countries: If it is to work, it must start from what users need. British Medical Journal Publishing Group; 2001. pp. 463–4.
33. Hanson K, Gilson L, Goodman C, Mills A, Smith R, Feachem R, et al. Is private health care the answer to the health problems of the world's poor? PLoS Med. 2008;5(11):e233.
34. Dave R, Parmar PC, Singh P, Desai M, Pandit N. A study to understand the health seeking behaviour pattern and healthcare utilisation of peri-urban people in Vadodara district, Gujarat. J Family Med Prim Care. 2025;14(4):1225–30.
35. Ager A, Pepper K. Patterns of health service utilizaton and perceptions of needs and services in rural orissa. Health Policy Plan. 2005;20:176–84.
36. Wellay T, Gebreslassie M, Mesele M, Gebretinsae H, Ayele B, Tewelde A, et al. Demand for health care service and associated factors among patients in the community of Tsegedie District, Northern Ethiopia. BMC Health Serv Res. 2018;18(1):1–9.
37. Li L, Fu L, Li H, Liu T, Sun J. Emerging trends and patterns in healthcare-seeking behavior: A systematic review. Medicine. 2024;103(8):e37272.
38. Citrin D, Bista H, Mahat A. NGOs, partnerships, and public-private discontent in Nepal’s health care sector. Med Anthropol Theory. 2018;5(2):100–26.
39. Karkee R, Kadariya J. Choice of health-care facility after introduction of free essential health services in Nepal. WHO South-East Asia J Public Health. 2013;2(2):96–100.
40. Marasini B. Health system development in Nepal. JNMA: J Nepal Med Association. 2020;58(221):65.
41. MOHP. Nepal Country Profile, Human Resource for Health 2013. Nepal: Kathmandu; Nepal Health Sector Support Programme (NHSSP), Ministry of Health and Population 2013.
42. New MOHP. ERA, Inc. II. Nepal Demographic and Health Survey 2022. Nepal: Ministry of Health and Population, New ERA, and ICF International, Calverton, Maryland;: Kathmandu; 2022.
43. StataCorp L. Stata Statistical Software: Release 14. 2015. Stata Corporation College Station, TX; 2015.
44. Thakur B, Kar S, Pathak M, Thakur N. Public-private share in maternal health care services utilization in India: a multinomial logistic regression analysis from three consecutive survey data. Clin Epidemiol Global Health. 2019;7(1):22–8.

45. Grépin KA. Private sector an important but not dominant provider of key health services in low-and middle-income countries. Health Aff. 2016;35(7):1214–21.
46. Parker LA, Zaragoza GA, Hernández-Aguado I. Promoting population health with public-private partnerships: Where's the evidence? BMC Public Health. 2019;19(1):1438.
47. Mishra SR, Acharya P. What is fuelling privatization in health care in Nepal? Health All. 2013;1(1):7–11.
48. Citrin D, Bista H, Mahat A. NGOs, partnerships, and public-private discontent in Nepal's health care sector. global health. 2018.
49. Purbey A, Kumar A, Mozumdar A, Mishra P, Acharya R, Saggurti N. Trends in the utilisation of maternal and child healthcare services from the public and private health sectors in India, 2005–2021: an analysis of cross-sectional survey data. BMJ open. 2025;15(2):e082241.
50. He Q, Cheng G, He S, Tian G, Xie X, Jiang N, et al. Association between maternal postpartum depression and children's physical growth in early childhood: a birth cohort study. Front Pead. 2023;11:1135876.
51. Das S, Alcock G, Azad K, Kuddus A, Manandhar DS, Shrestha BP, et al. Institutional delivery in public and private sectors in South Asia: a comparative analysis of prospective data from four demographic surveillance sites. BMC Pregnancy Childbirth. 2016;16(1):273.
52. Pomeroy A, Koblinsky M, Alva S. Private delivery care in developing countries: trends and determinants. Calverton, MD: ICF Macro. 2010:24.
53. Saksena P, Xu K, Elovainio R, Perrot J. Health services utilization and out-of-pocket expenditure at public and private facilities in low-income countries. World health Rep. 2010;20:20.
54. Rout SK, Sahu KS, Mahapatra S. Utilization of health care services in public and private healthcare in India: Causes and determinants. Int J Healthc Manag. 2019:1–8.
55. Akhtar S, Ahmed Z, Mehmood A. Factors affecting the choice of public vs private healthcare institutions for delivery and postnatal care—a study in a rural district of Pakistan. J Pharm Res Int. 2021;33(60B):3724–36.
56. Rout SK, Sahu KS, Mahapatra S. Utilization of health care services in public and private healthcare in India: causes and determinants. Int J Healthc Manag. 2021;14(2):509–16.
57. Amaghionyeodiwe LA. Determinants of the choice of health care provider in Nigeria. Health Care Manag Sci. 2008;11:215–27.
58. Machira K, Palamuleni M. Factors influencing women's utilization of public health care services during childbirth in Malawi public health facility utilization. Afr Health Sci. 2017;17(2):400–8.
59. Mohsin M. Why people prefer private hospital over government hospital in Pakistan. Int J Curr Res. 2018;10(5):69304–8.
60. Oladipo JA. Utilization of health care services in rural and urban areas: a determinant factor in planning and managing health care delivery systems. Afr Health Sci. 2014;14(2):322–33.

61. Bhatt H, Tiwari S, Ensor T, Ghimire DR, Gavidia T. Contribution of Nepal's free delivery care policies in improving utilisation of maternal health services. Int J health policy Manage. 2018;7(7):645.

Figures

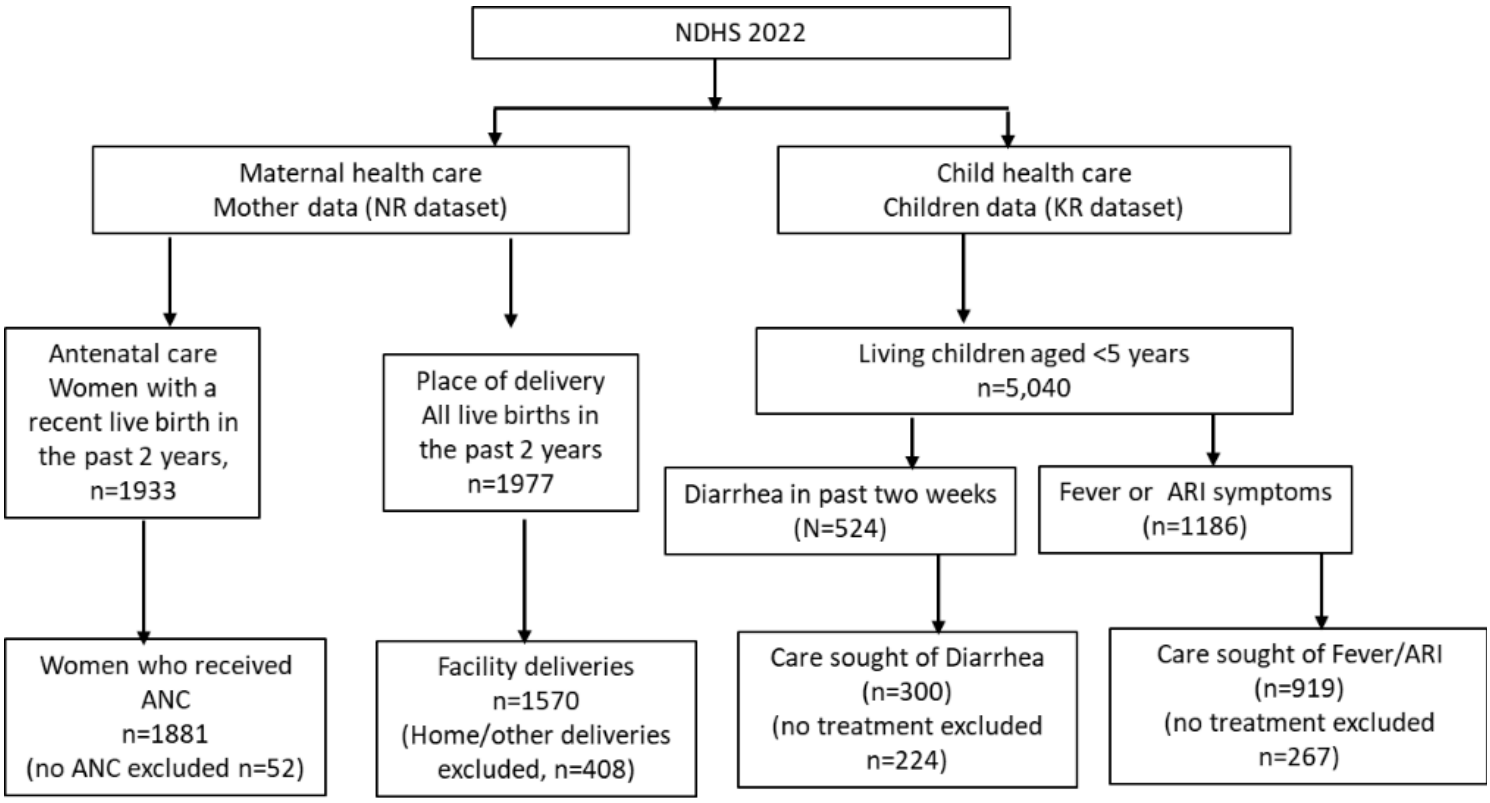


Figure 1

Study sample selection flow chart