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.

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Abstract

Background: Maternal and child health care services are available in both public and private facilities in Nepal. No study has yet looked at trends in maternal and child health service use over time in Nepal. This paper assesses trends in and determinants of visiting private health facilities for maternal and child health needs using nationally representative data from the last three successive Nepal Demographic Health Surveys (NDHS).

Methods: Data from the NDHS conducted in 2006, 2011, and 2016 were used. Maternal and child health-seeking was established using data on place of antenatal care (ANC), place of delivery, and place of treatment for child diarrhoea and fever/cough. Logistic regression models were fitted to identify trends in and determinants of health-seeking at private facilities.

Results: The results indicate an increase in the use of private facilities for maternal and child health care over time. Across the three survey waves, women from the highest wealth quintile had the highest odds of accessing ANC services at private health facilities (AOR=6.0, CI= 3.78 -9.52 in 2006; AOR=5.6, CI= 3.51 – 8.81 in 2011; AOR=3.0, CI= 1.53 -5.91 in 2016). Women from the highest wealth quintile (AOR=8.3 CI= 3.97 – 17.42 in 2006; AOR=7.3, CI= 3.91 – 13.54 in 2011; AOR=3.3, CI= 1.54 – 7.09 in 2016) and women with more years of schooling (AOR=1.1, CI= 1.07 – 1.16 in 2006; AOR=1.1, CI= 1.04 – 1.14 in 2011; AOR=1.2, CI= 1.17 -1.27 in 2016) were more likely to deliver in private health facilities. Likewise, children belonging to the highest wealth quintile (AOR=6.4, CI= 1.59 – 25.85 in 2006; AOR=8.0, CI= 2.43 – 26.54 in 2016) were more likely to receive diarrhoea treatment in private health facilities.

Conclusions: Women are increasingly visiting private health facilities for maternal and child health care in Nepal. Household wealth quintile, and the mother's years of schooling were the major determinants for selecting private health facilities for these services. These trends indicate the importance of collaboration between private and public health facilities in Nepal to foster a public private partnership approach in the Nepalese health care sector.

Background

Health-seeking behaviour has been defined as a series of actions undertaken to remedy perceived health problems (1). Several proposed conceptual models illustrate the determinants of health care utilisation; of these, the behavioural model (2), the health belief model (3), and the economic model (4) are widely accepted. Andersen's Behavioural Model envisages three major components of health care utilisation: predisposing factors (e.g. age, sex, family size, education, employment), enabling factors (e.g. income, insurance, residence), and need factors (e.g. perceived health status, symptoms, days disabled due to illness). These factors combine to determine the use or non-use of health care services (2); this model has been used extensively in studies investigating health service utilisation (5). The health belief model centers individual perception, which is largely influenced by the individual's perception of a particular health threat and the need to take appropriate action. This model has primarily been used to examine the
utilisation of preventive care (3). In contrast, the economic model assumes that economic determinants, including price, income, and other sociodemographic factors determine health care service utilisation (4, 6).

Health care service utilisation depends on physical, socio-economic, demographic, cultural, and political factors. These factors, including cultural beliefs and practices around health care utilisation, are closely associated with and determined by the health care system in specific countries (7-9). In many low- and middle-income countries (LMICs), illiteracy, poverty, and under-funding of the health sector influence health-seeking behaviours (10-13). Additionally, cost, service quality, service providers’ behaviours, patient education level, knowledge of illness and wellbeing, and cultural beliefs influence where an individual seeks health services (14, 15).

Maternal health services, including antenatal care (ANC), delivery, and postnatal care (PNC), as well as child health services such as immunisation and treatment for diarrhoea, pneumonia, and malaria, are available at both public and private facilities. Providers at private facilities deliver a significant portion of health care services in LMICs, including in both rural and urban areas and for different socioeconomic groups and ethnicities (16). Research on the equity of private health care, however, is inconclusive, with wide variation in provision of services across settings (17). While some analyses have shown that provision of care in the private sector is inherently inequitable, with wealthy individuals accessing more services (18), other studies have shown that the private sector can improve equity in health services (19, 20).

Quality of care, and in particular, perceived quality based on patient evaluations, is an important deciding factor in choosing health care services (21). The quality of services offered at health facilities significantly impacts the demand for and use of these services, even in LMICs (22). Globally, over half of all care for children with diarrhoea, fever, and cough is provided in the private sector, with more people from urban and wealthier backgrounds using these services than people from rural and poorer backgrounds (23). While governments and policymakers invest more in public sector service delivery, there is growing interest in how the private sector can complement the public sector in health care delivery (24). Throughout Nepal, guaranteeing access to high-quality health care has been a continual struggle in the public sector. Therefore, Nepal has developed a health sector strategy that states the importance of aligning the private sector with public services along four specific areas of operation: sustainable financing, integrated health care delivery, quality assurance, and technological innovation (25).

In Nepal, available data indicate that the number and share of private services in health provision has increased in recent decades, particularly for ambulatory care. For instance, of the total health expenditure in Nepal, private facilities share 70%, of which about 85% comes from out-of-pocket payments; this indicates a shift in the role of private facilities in health provision in Nepal (26). However, no research has yet estimated trends in and determinants of utilisation of private health facilities using nationally representative survey data in Nepal. Hence, our study aimed to explore trends in and determinants of
maternal and child health service utilisation from private health facilities using the last three nationally representative Nepal Demographic Health Surveys conducted in 2006, 2011, and 2016.

**Methods**

This paper analysed data from the Nepal Demographic Health Survey (NDHS) conducted in 2006, 2011, and 2016. The NDHS is a nationally representative cross-sectional household survey which collects information on health and socio-demographic information at the national and sub-national levels. The NDHS applies a two-stage cluster sampling technique. The enumeration areas are selected in the first stage based on probability proportion to size (PPS); households are then selected from each cluster based on equal probability (27).

Of all women interviewed with the NDHS, 4,066 women provided information on ANC services in 2006, 4,148 women in 2011, and 3,998 women in 2016 (Table 1). Likewise, information related to place of delivery was collected from 5,545 women in 2006, 5,391 women in 2011, and 5,060 women in 2016. Information on services for child sickness was collected from 5,252 women in 2006, 4,040 women in 2011, and 4,887 women in 2016.

**Table 1: Sample size distribution by NDHS survey year**

| Year | Women interviewed | Information on ANC services | Information on delivery services | Information on child sickness services |
|------|-------------------|-----------------------------|---------------------------------|---------------------------------------|
| 2006 | 10,793            | 4,066                       | 5,545                           | 5,252                                 |
| 2011 | 12,674            | 4,148                       | 5,391                           | 5,140                                 |
| 2016 | 12,862            | 3,998                       | 5,060                           | 4,887                                 |

Maternal and child health-seeking behaviour, the primary outcome variable, was measured using data on place of ANC services, place of delivery, and place of treatment for child diarrhoea and fever/cough. Place of health-seeking was categorized into two groups: 1) public (government hospitals, primary health care centers, health post, sub-health post, primary health care outreach clinics); and 2) private (private hospitals, nursing homes, polyclinic, non-governmental organization-run health facilities).

Potential socio-economic confounders were selected based on prior knowledge of the socio-demographic and economic context. The major socio-economic confounders selected included wealth quintile (poorest, second poorest, middle, second richest, richest); caste/ethnicity (Dalit, Janajati, Brahman/Chhetri, other); mother’s completed years of schooling; mother’s age; headship of the household (male or female); urban versus rural residence; and agroecological zone (mountain, hill, terai).

The data analysis plan was designed based on the Zweifel economic model. The model indicates that economic, demographic, and social factors combine to determine health-seeking practices (2, 4). We examined trends in health-seeking from private health facilities over time. Bivariate and multivariate
logistic regression models were fitted to illustrate trends in and possible determinants of maternal and child health-seeking behaviours from private health facilities. A binary variable was created, with 1 specifying health-seeking from private health facilities and 0 specifying either no services received, health-seeking from government institutions, or other. The weight sample was used for the analyses and the final model was adjusted for survey design effect. Data analysis was performed in Stata version 14 (College Park, Texas).

Results

The percentage of women receiving ANC services from private facilities increased from 14.7% in 2006 to 23.8% in 2016. Similarly, delivery in private facilities increased from 4.60% in 2006 to 10.8% in 2016. Information on place of treatment for diarrhoea and fever/cough were collected from mothers who had a child under 5 years of age who received care for these symptoms in the two weeks prior to completing the survey. Use of private facilities for the treatment of diarrhoea increased from 32.7% in 2006 to 47.8% in 2016 and use of private facilities for the treatment of fever/cough also increased from 34.0% in 2006 to 68.8% in 2016 (Table 2).

Table 2: Facility accessed for ANC, delivery, and child treatment
|                                      | 2006         | 2011         | 2016         |
|--------------------------------------|--------------|--------------|--------------|
|                                      | N (%)        | N (%)        | N (%)        |
| **Place of ANC services**            |              |              |              |
| None received                        | 1,065 (26.2) | 628 (15.2)   | 236 (5.9)    |
| Government institution               | 2,297 (56.5) | 2,474 (59.6) | 2,689 (67.3) |
| Private institution                  | 598 (14.7)   | 996 (24.0)   | 952 (23.8)   |
| Other                                | 105 (2.6)    | 50 (1.2)     | 121 (3.0)    |
| **Total**                            | 4,665 (100.0)| 4,148 (100.0)| 3,998 (100.0)|
| **Place of delivery**                |              |              |              |
| Government institution               | 724 (13.1)   | 1,399 (26.0) | 2,183 (43.1) |
| Private institution                  | 256 (4.60)   | 506 (9.40)   | 549 (10.9)   |
| Other                                | 4,565 (82.3) | 3,486 (64.6) | 2,328 (46.0) |
| **Total**                            | 5,545 (100.0)| 5,391 (100.0)| 5,060 (100.0)|
| **Child illness**                    |              |              |              |
| Suffered from diarrhoea              | 623 (11.9)   | 711 (13.8)   | 371 (7.6)    |
| Suffered from fever/cough            | 1,212 (23.1) | 1,442 (28.1) | 1,420 (29.1) |
| **Total**                            | 5,252 (100.0)| 5,140 (100.0)| 4,887 (100.0)|
| **Place of diarrhoea treatment**     |              |              |              |
| None received                        | 308 (49.4)   | 270 (38.0)   | 131 (35.2)   |
| Government institution               | 112 (18.0)   | 158 (22.1)   | 48 (12.9)    |
| Private institution                  | 203 (32.7)   | 272 (38.3)   | 177 (47.8)   |
| Other                                | -            | 11 (1.6)     | 15 (4.10)    |
| **Total**                            | 623 (100.0)  | 711 (100.0)  | 371 (100.0)  |
| **Place of fever and cough treatment**|            |              |              |
| None received                        | 588 (48.5)   | 539 (37.4)   | 227 (16.0)   |
| Government institution               | 206 (17.0)   | 206 (14.3)   | 196 (13.8)   |
| Private institution                  | 412 (34.0)   | 674 (46.7)   | 978 (68.8)   |
| Other                                | 6 (0.50)     | 23 (1.6)     | 20 (1.4)     |
| **Total**                            | 1,212 (100.0)| 1,442 (100.0)| 1,420 (100.0)|
Determinants of health-seeking from private health facilities

The adjusted logistic regression models show that in all three surveys, higher household wealth quintile was statistically significantly associated with utilisation of private facilities for ANC services (Table 3). Compared with women from the poorest households, women from the richest households were six times more likely to seek ANC care at private facilities in 2006 and 2011, and three times more likely in 2016 (Table 3).

Table 3: Associations between seeking ANC services from private facilities and household sociodemographic characteristics
| Household characteristics | 2006       | 2011       | 2016       |
|---------------------------|------------|------------|------------|
| Wealth quintile           | AOR (95% CI) | AOR (95% CI) | AOR (95% CI) |
| Poorest (reference)       |            |            |            |
| Second poorest            | 2.23** (1.50 – 3.31) | 1.14 (0.78 – 1.67) | 1.13 (0.68 – 1.87) |
| Middle                    | 3.00** (2.03 – 4.43) | 1.79** (1.21 – 2.65) | 1.40 (0.87 – 2.25) |
| Second richest            | 3.73** (2.47 – 5.63) | 3.14** (2.08 – 4.72) | 2.14** (1.34 – 3.42) |
| Richest                   | 6.00** (3.78 – 9.52) | 5.56** (3.51 – 8.81) | 3.01** (1.53 – 5.91) |
| Caste/ethnicity           |            |            |            |
| Dalit (reference)         |            |            |            |
| Janajati                  | 1.38 (0.92 – 2.07) | 0.77 (0.54 – 1.10) | 0.92 (0.61 – 1.39) |
| Brahmin/Chhetri           | 1.61* (1.09 – 2.36) | 1.05 (0.74 – 1.48) | 0.95 (0.62 – 1.47) |
| Other                     | 2.37** (1.58 – 3.56) | 1.24 (0.77 – 1.99) | 0.83 (0.50 – 1.40) |
| Mother’s years of schooling | 1.05 (1.02 – 1.08) | 1.06** (1.02 – 1.09) | 1.15 (1.10 – 1.19) |
| Mother’s age              | 1.00 (0.98 – 1.02) | 1.00 (0.98 – 1.03) | 0.99 (0.96 – 1.01) |
| Mother as a household head | 0.95 (0.77 – 1.16) | 0.13 (0.90 – 1.42) | 1.19 (0.89 – 1.58) |
| Rural as the place of residence | 0.98 (0.71 - 1.35) | 0.97 (0.73 - 1.29) | 0.92 (0.54 - 1.55) |
| Agroecological zone       |            |            |            |
| Mountain (reference)      |            |            |            |
| Hill                      | 3.25** (1.58 – 6.69) | 1.52 [0.91 – 2.55] | 1.33 (0.57 – 3.11) |
| Terai                     | 4.11** (1.98 – 8.54) | 2.33** [1.38 – 3.92] | 1.68 (0.72 – 3.92) |

* p<0.05; ** p<0.01

In the adjusted logistic regression models, women from the richest households were more than seven times as likely to have delivered their child at a private facility in 2006 and 2011 compared with women from the poorest households (Table 4). In 2016, women from the richest households were three times as likely as women from the poorest households to access these services. Additionally, the more years of...
schooling the woman had received was also statistically significantly associated with delivering at a private facility in all three survey waves.

Table 4: Associations between delivering a child at a private facilities and household sociodemographic characteristics

| Household characteristics | 2006                      | 2011                      | 2016                      |
|---------------------------|---------------------------|---------------------------|---------------------------|
| Wealth quintile           |                           |                           |                           |
| Poorest (reference)       |                           |                           |                           |
| Second poorest            | 2.94** (1.52 – 5.69)      | 1.40 (0.78 – 2.49)        | 1.39 (0.60 – 2.94)        |
| Middle                    | 7.36** (3.74 – 14.47)     | 2.28* (1.28 – 4.07)       | 1.23 (0.56 – 2.72)        |
| Second richest            | 8.16** (4.22 – 15.79)     | 4.28** (2.32 – 7.88)      | 2.17* (1.08 – 4.37)       |
| Richest                   | 8.34** (3.97 – 17.42)     | 7.27** (3.91 – 13.54)     | 3.31** (1.54 – 7.09)      |
| Caste/ethnicity           |                           |                           |                           |
| Dalit (reference)         |                           |                           |                           |
| Janajati                  | 1.91* (1.16 – 3.15)       | 1.16 (0.72 – 1.86)        | 1.58 (0.71 – 3.50)        |
| Brahmin/Chhetri           | 1.69* (1.01 – 2.82)       | 1.33 (0.78 – 2.26)        | 1.91 (0.98 – 3.72)        |
| Other                     | 1.48 (0.86 – 2.57)        | 1.09 (0.54 – 2.23)        | 1.68 (0.65 – 4.33)        |
| Mother’s years of schooling | 1.11** (1.07 – 1.16)   | 1.09** (1.04 – 1.14)     | 1.22** (1.17 – 1.27)      |
| Mother’s age              | 1.03* (1.00 – 1.06)       | 1.01 (0.98 – 1.04)        | 1.00 (0.97 – 1.04)        |
| Female household head     | 0.78 (0.57 – 1.05)        | 1.14 (0.79 – 1.63)        | 1.88* (1.19 – 2.97)       |
| Rural residence           | 1.19 (0.82 - 1.72)        | 0.81 (0.56 - 1.18)        | 1.12 (0.65 - 1.93)        |
| Agroecological zone       |                           |                           |                           |
| Mountain (reference)      |                           |                           |                           |
| Hill                      | 3.46** (1.59 – 7.52)      | 1.11 (0.64 – 1.93)        | 1.06 (0.42 – 2.68)        |
| Terai                     | 4.20** (1.88 – 9.38)      | 2.49** (1.42 – 4.35)      | 2.14 (0.85 – 5.35)        |

* p<0.05; ** p<0.01

No sociodemographic characteristic consistently predicted receiving treatment for child diarrhoea at a private health facility across all three survey waves. However, in 2006 and 2016, children from the richest
households were respectively six and seven times more likely than children from the poorest households to receive treatment for diarrhoea at private facilities (Table 5).

### Table 5: Associations between receiving treatment for child diarrhoea at a private facilities and household sociodemographic characteristics

| Household characteristics  | 2006                | 2011                | 2016                |
|----------------------------|----------------------|----------------------|----------------------|
| **Wealth quintile**        |                      |                      |                      |
| Poorest (reference)        |                      |                      |                      |
| Second poorest             | 4.95* (1.44 – 16.98) | 0.79 (0.35 – 1.82)  | 2.37 (0.91 – 6.20)  |
| Middle                     | 4.19* (1.25 – 14.04) | 0.93 (0.46 – 1.87)  | 3.06* (1.19 – 7.90) |
| Second richest             | 3.95* (1.22 – 12.77) | 1.95 (0.78 – 4.85)  | 3.65** (1.40 – 9.55) |
| Richest                    | 6.41** (1.59 – 25.85)| 3.34 (0.95 – 11.67) | 8.03** (2.43 – 26.54) |
| **Caste/ethnicity**        |                      |                      |                      |
| Dalit (reference)          |                      |                      |                      |
| Janajati                   | 0.53 (0.20 – 1.42)   | 0.80 (0.36 – 1.79)  | 0.93 (0.34 – 2.54)  |
| Brahmin/chhetri            | 0.32 (0.11 – 0.90)   | 0.61 (0.27 – 1.34)  | 0.51 (0.19 – 1.37)  |
| Other                      | 0.50 (0.14 – 1.77)   | 0.44 (0.15 – 1.30)  | 1.17 (0.24 – 5.65)  |
| **Mother’s years of schooling** | 1.00 (0.90 – 1.11) | 1.00 (0.91 – 1.11) | 0.98 (0.89 – 1.09) |
| Mother’s age               | 1.03 (0.96 – 1.11)   | 0.95 (0.90 – 1.01)  | 1.00 (0.94 – 1.06)  |
| Female household head      | 0.60 (0.28 – 1.28)   | 0.98 (0.53 – 1.80)  | 1.93 (0.88 – 4.25)  |
| Rural residence            | 0.68 (0.29 - 1.56)   | 0.61 (0.27 - 1.35)  | 0.91 (0.38 – 2.17)  |
| **Agroecological zone**    |                      |                      |                      |
| Mountain (reference)       |                      |                      |                      |
| Hill                       | 2.31 (0.58 – 9.20)   | 0.66 (0.30 – 1.47)  | 0.87 (0.35 – 2.20)  |
| Terai                      | 4.17 (0.90 – 19.34)  | 2.47* (1.03 – 5.89) | 1.41 (0.59 – 3.38)  |

* *p<0.05; ** *p<0.01

Across all three survey waves, children from the terai agroecological region were more than three times as likely as children from the mountain region to receive treatment for fever/cough at private facilities. In
2006 and 2011, children from the richest households were more than three times as likely as children from the poorest households to receive treatment for fever/cough at private facilities (Table 6).

Table 6: Associations between receiving treatment for child fever/cough at a private facilities and household sociodemographic characteristics

| Household characteristics | 2006            | 2011            | 2016            |
|---------------------------|-----------------|-----------------|-----------------|
| Wealth quintile           |                 |                 |                 |
| Poorest (reference)       |                 |                 |                 |
| Second poorest            | 2.37** (1.32 – 4.27) | 1.84 (0.96 – 3.52) | 1.13 (0.48 – 2.70) |
| Middle                    | 2.08* (1.06 – 4.10) | 1.69 (0.81 – 3.54) | 1.29 (0.58 – 2.84) |
| Second richest            | 2.42* (1.18 – 4.97) | 2.89** (1.32 – 6.31) | 1.32 (0.56 – 3.11) |
| Richest                   | 3.28* (1.19 – 9.08) | 3.48** (1.35 – 9.00) | 2.45 (0.97 – 6.19) |
| Caste/ethnicity           |                 |                 |                 |
| Dalit (reference)         |                 |                 |                 |
| Janajati                  | 1.08 (0.56 – 2.08) | 1.31 (0.67 – 2.57) | 1.46 (0.70 – 3.06) |
| Brahmin/Chhetri           | 0.56 (0.29 – 1.07) | 1.37 (0.72 – 2.60) | 1.38 (0.72 – 2.64) |
| Other                     | 1.13 (0.47 – 2.69) | 1.37 (0.61 – 3.09) | 1.17 (0.39 – 3.50) |
| Mother's years of schooling | 0.97 (0.92 – 1.03) | 0.96 (0.89 – 1.03) | 0.95 (0.88 - 1.02) |
| Mother's age              | 0.98 (0.95 – 1.01) | 1.00 (0.96 – 1.04) | 0.98 (0.94 - 1.01) |
| Mother as household head  | 0.68 (0.47 – 1.00) | 1.30 (0.84 – 2.03) | 1.02 (0.56 - 1.86) |
| Rural residence           | 1.11 (0.68 - 1.84)  | 0.98 (0.52 - 1.84)  | 0.63 (0.34 - 1.16)  |
| Agroecological zone       |                 |                 |                 |
| Mountain (reference)      |                 |                 |                 |
| Hill                      | 1.10 (0.47 – 2.57) | 2.06* (1.02 – 4.16) | 3.11** (1.32 – 17.30) |
| Terai                     | 3.37** (1.38 – 8.25) | 3.71** (1.93 – 7.14) | 5.29** (2.32 - 12.10) |

* p<0.05; ** p<0.01

Discussion
This paper outlines trends in and sociodemographic characteristics associated with maternal and child health-seeking practices in Nepal using nationally representative survey data. The proportion of women receiving ANC services, institutional delivery, and treatment for child diarrhoea and fever/cough at private health facilities increased over time, with the highest proportion of women receiving health services in the private sector in 2016. Household wealth status, the woman's total years of schooling, and agroecological zone had the strongest associations with utilisation of maternal and child health services at private health facilities.

The present findings indicate that maternal and child health-seeking practices in the private sector increased from 2006 to 2016. A study based on 205 demographic and health surveys conducted in 70 LMICs between 1990 and 2013 also indicated an increase in health-seeking for maternal and child health services at private facilities over time (28). Other studies indicate that in many LMICs, most people receive child health care services at private facilities, including private clinics and local pharmacies (29, 30). In Nepal, private clinics and local pharmacies are the primary point of access for health services (31). Furthermore, the number of private clinics and local pharmacies available has increased in the last two decades (32).

The increase in the use of private health services over time may also be due to increased attention to the public private partnership approach in health care services in both high-income countries and LMICs (33). In Nepal, the 1991 National Health Policy provided avenues for private institutions to enter the health sector. The government in Nepal has emphasized the public private partnership approach in health care services; this has facilitated the expansion of private health institutions in both Kathmandu, the capital city, and other major cities (34, 35).

Household wealth status, mother's years of schooling, and agroecological zone were the key determinants for utilisation of private health services for maternal and child health care. A randomized controlled trial conducted among disadvantaged communities in Bangladesh, India, and Nepal from 2005 to 2011 indicated that institutional delivery was strongly associated with household wealth status and the mother's level of education (36). Similarly, a study based on nationally-representative survey data from 16 countries in sub-Saharan African, Latin America, and Asia indicated that delivery in the private sector significantly increased from 1997 to 2003. Household socioeconomic status was the key determinant associated with delivery at private facilities (37). A trend analysis of the NDHS 2006 data showed economic disparities in access and utilisation of ANC and delivery services (38). Selection of private health facilities was dependent on the economic status of the patient. Similarly, findings from a nationally representative cross-sectional survey in Bangladesh showed that household wealth determined health-seeking from private health facilities (39).

The increase in the use of private health services may also be linked to increased purchasing power of people. An analysis conducted by the World Health Organization in 39 countries found that countries are increasingly relying on private services for outpatient care. Individuals from the highest wealth quintile are more likely to use private inpatient services than individuals from the poorest wealth quintile, while
individuals from poorer households are more likely to rely on government facilities for inpatient services (40). A recent study from India also indicated that wealth quintile is a major predictor for choice of health facility (41).

The quality of health services is a primary determinant for choice of health facility. Studies conducted in India, Pakistan, South Africa, Nigeria, Malawi, and Saudi Arabia have indicated that poor quality of care in public health services was a key determinant for shifting to private facilities (41-46). There is widespread debate regarding the quality of services in private versus public facilities (29). In Nepal, many individuals harbor concerns with the quality and effectiveness of health services in public facilities. These include concerns around availability of medicine and equipment, quality of health workers, and accessibility of service hours (47). These concerns and a general lack of confidence in public health facilities could be another reason for the shift toward utilising private facilities for maternal and child health services in Nepal. Furthermore, women from the highest wealth quintile have the financial resources to adjust health-seeking behaviours based on such preferences and concerns.

Our study shows that, compared to other maternal and child health services, the highest percentage of women use public health facilities for delivery. This could be because of the government’s allowance system for institutional delivery through government health facilities (48). A study conducted in Nepal in 2018 suggests that the institutional delivery rate has in fact increased with the implementation of the maternity incentive scheme program (48).

These findings should be interpreted with the following strengths and limitations in mind. Since we used nationally-representative data for the analyses, findings are generalizable to women across Nepal. The use of data from three survey waves further strengthens the present findings. Despite these strengths, there are existing limitations. First, child illness data only included the past two weeks; this could lead to selection bias. Second, a social health insurance scheme has been implemented in only some parts of Nepal which may have impacted women’s choice of health facility in these regions. Finally, as this study analysed cross-sectional data, we were unable to determine causal relationships between sociodemographic characteristics and health-seeking behaviours.

**Conclusions**

The increase in the utilisation of private facilities for maternal and child health care indicates the importance of a system that incorporates private health facilities alongside government facilities. These findings highlight important policy and practice implications. As more people utilise private health facilities, there is a need to institute monitoring and supervision mechanisms to ensure standards for quality health care are upheld, including mechanisms for timely and correct reporting to the national information management system. Currently, consultation and hospital fees are subjective and differ across private facilities; there is a strong need to systematize these expenses. Increased collaboration between public and private health facilities through public private partnerships would provide opportunities to guarantee the constitutional right to healthcare for all citizens.
Abbreviations

ANC: Antenatal Care
CI: Confidence Interval
DHS: Demographic and Health Survey
LMICs: Low- and Middle- Income Countries
NDHS: Nepal Demographic Health Survey
PNC: Postnatal Care
PPS: Probability Proportion-to-Size
AOR: Adjusted Odds Ratio

Declarations

Ethics approval and consent to participate: The study involved secondary analysis of publicly available data. Thus, independent ethical approval was not needed. However, the first author received permission from dhsprogram.com to use the data for analysis.

Consent for publication: Not applicable

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

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