INEQUALITIES IN MATERNAL HEALTH SERVICE UTILISATION IN NEPAL

An analysis of routine and survey data

November 2018

Government of Nepal
Ministry of Health and Population

Supported by:

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Executive Summary

Nepal has made steady progress in improving maternal health service utilisation but inequalities among different population sub-groups still persist. The objective of this analysis was to assess the levels and trends of inequalities in availability and utilisation of maternal health services in Nepal using selected indicators. Data from Nepal Health Facility Survey 2015, Health Management Information System (FY 2014/15 to 2016/17) and Nepal Demographic and Health Surveys (1996 to 2016) were used for analysis. Both absolute and relative indicators of inequality were calculated to assess inequalities from socio-economic positon – wealth quintile, caste/ethnicity composition and geographical position – ecological zone, district and provinces. All analyses were conducted using Stata 15 and MS-Excel© 2016.

Availability and readiness of maternal health services: When considering ecological zone, inequality is higher for availability of delivery services than for antenatal care services. Fewer health facilities in *Terai* offer normal vaginal delivery services; while availability of caesarean delivery was lowest in the mountain region. More public facilities showed readiness to provide delivery services vs private facilities. There is a huge gap between Province 6 (Karnali) and Province 2 when it comes to availability of normal vaginal delivery services. Province 5 showed highest readiness for both ANC and delivery services while Province 2 fared worst.

It is necessary to improve/strengthen existing health facilities in the services they provide. Additionally, investigate reasons for underutilization of services, based on which, improvements in quality of existing services or expansion of the services (making the services available) in other health facilities could be undertaken. Under performing provinces and regions should be targeted.

Annual levels and trends of inequalities in utilisation of maternal health services: Consistent trends in inequality could not be identified in terms of ecological zone and districts. Among provinces, inequality is increasing in utilisation of delivery services. Province 2 is consistently performing poorly compared to others. Larger drop outs between first ANC visits and four ANC visits as per protocol was revealed; similarly, between PNC checkups within 24 hours of delivery and three PNC checkups as per protocol.

Granted, strictly not within the scope of this analysis – for retention of mothers during antenatal, delivery and postnatal period, the quality of service delivery must be ensured; the social, economic and cultural barriers in regions that have lower utilisation should be identified and addressed; and supply factors such as budgeting, human resource and capacity development of staff should also be considered.

Long term levels and trends in inequality: In terms of wealth, from 1996 to 2016, although disproportionately concentrated in richer households, the overall inequality shows a decreasing trend in utilisation of all maternal health services. Wealth quintile specific utilisation is increasing over time but there is a disparity between the poorest and the richest group, with richest group showing higher utilisation. Among caste/ethnic groups, in general, utilisation is higher in *Newar* and lower in *Dalit*, Muslim and Other *Terai* caste group. The average increase in utilisation is higher in *Brahmin/Chhetri.*

The poor should be incentivized to utilize maternal health care services – reduce financial barriers to access, minimize catastrophic health expenditures, introduce new/strengthen existing social safety net programmes (existing conditional cash transfer programme) that raise people out of poverty, and prevent poor from further destitution. Additionally, there should be a focus on most disadvantaged caste and ethnic groups which are susceptible to both under utilisation of services and relative poverty to bring about improvements in inequality in utilisation indicators.

The current levels and trends in equity gaps in maternal health services shows that with increasing coverage of services, bottom inequality prevails, leading to marginal exclusion of the disadvantaged and most vulnerable groups. Barriers to access should be identified and appropriate services should be targeted at these groups. Policies should be tailored to inequality patterns.

Note: Nepali version of this summary is available at the end of this report.

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List of Abbreviations

ANC	Antenatal Care
CS	Caesarean Section
FY	Fiscal Year
HMIS	Health Management Information System
LNOB	Leaving no one behind
M & E TWG	Monitoring and Evaluation Technical Working Group
MOHP	Ministry of Health and Population
NDHS	Nepal Demographic and Health Survey
NFHS	Nepal Family Health Survey
NHFS	Nepal Health Facility Survey
NHSP	Nepal Health Sector Programme
NHSS	Nepal Health Sector Strategy
NHSSP	Nepal Health Sector Support Programme
PNC	Post-natal Care
PP	Percentage Point
SDG	Sustainable Development Goals

1. Background

Nepal's population is diverse in caste, ethnicity, geographic distribution, and wealth. The Government is committed to the Sustainable Development Goals set for 2030 and promotes equity and inclusion in health service use. These Goals are principled on "leaving no one behind" (1). There is a need to identify at-risk communities. Evidence of inequity informs policy-makers and programme managers on where and how to focus efforts. So far, achieving equity has been slow despite being featured in the earlier sectoral strategies. NHSP-I attempted to put *clear systems in place to make sure that the poor and vulnerable communities have priority for access* (2). While the National Health Policy 2014 and Nepal Health Sector Strategy (2015-2020), emphasize on multi-sectoral partnership, local governance, and decentralized service delivery including mitigation of access barriers and promotion of equity and inclusion (3).

In the past two-decades, Nepal has made steady progress in improving maternal health service utilisation but inequalities among different population sub-groups still persist (4). Women with four or more antenatal care (ANC) visits increased from 14% in 2001 to 69%; and assistance during delivery from a skilled provider increased from 11% in 2001 to 58% in 2016 (5) (6). In 2016, ANC 4+ visits were higher in urban areas (76%) than rural (62%). Deliveries assisted by skilled provider were disproportionately concentrated among those with higher education and greater wealth – 85% in those with school leaving certificate or higher education and 89% in those belonging to the richest wealth quintile. Only 57% of both mothers and newborns received a postnatal care check within two days of delivery in 2016. It was also concentrated in the richest quintile (81%) and those with school leaving certificate or higher education (80%); and was lowest in Province 6 - Karnali (39%).

Maternal health is a priority programme of the Ministry of Health and Population (MOHP) and aims to reach the Sustainable Development Goals target of 70 maternal deaths per 100,000 live births by 2030 (1). Despite the progress in maternal health on an average, the country is still facing widespread challenges, particularly inequitable access and use of maternal health services resulting from financial, socio-cultural, and geographical barriers (3). The ongoing policy and programme reviews in the health sector show that the status quo strives to improve access to health services among under reached population - poorer, those with less education and those living in remote areas - using the undifferentiated approach of service delivery. Empirical findings from different national data sources still raise concerns over unequal utilisation of services. A previous study concluded that to increase equitable use of maternal health services in Nepal, there is a need to strengthen the health system to increase access to and utilisation of services among poorer women, those

From a review of existing literature, it is evident that educational status, wealth, geography, area of residence, age, parity, caste/ethnicity and women's autonomy are important factors that influence the access and utilisation of maternal health care services (Refer Box 1)

with less education and those living in remote areas (4).

Equity is one of the basic principles of primary health care approach (7) and features implicitly or explicitly in health-related progress and achievements (8). Although debatable, inequity in health is often defined as the

"differences which are unnecessary and avoidable, but in addition, are also considered unfair and unjust" (9; 10). Others do argue that health inequities cannot be recognized by formulation of irrefutable criteria and what is viewed as unjust or unfair may depend on subjective values, political ideologies or normative considerations (11). Some even say that emphasizing on income disparities and pro-poor policies only are superficial solutions that ignore the underlying structural factors within the inequity dynamics in a given context. (12). The health care system needs to have equity of access regardless of a client's background. This means that health care is easily accessible when needed and equitably distributed amongst the population. Gender, education, occupation, income, ethnicity, and place of residence are all closely linked to people's access to, experiences of, and benefits from health care. In this report, analysis of the secondary data by social, economic or geographical factors to help identify vulnerable populations and target health interventions is considered as health equity analysis.

Thus, to reduce inequities in utilisation of maternal health services in Nepal, it is essential to explore and examine the levels and trend of disparities in availability and utilisation of maternal health services. The DFID/Nepal Health Sector Support Programme (NHSSP) together with Policy, Planning and Monitoring Division, within the MOHP and Integrated Health Information Management Section, Department of Health Services, analyzed the existing data on availability and utilisation of maternal health services from Nepal Health Facility Survey 2015, Nepal Demographic and Health Surveys and Health Management Information System. This report highlights equity gaps to inform programme managers and policy makers to make evidence-based decisions to address the gaps and feed the planning processes at different levels. Such monitoring of equity gaps in health service utilisation will be useful for policy-making and those involved in the allocation of scarce health sector resources. This will also help provide momentum to leaving no one

Box 1. What the literature says:

A study in Tazakistan reported having a residence in rural areas, lower educational status and belonging to the poorest quintile as the factors that decreased the likelihood of utilising ANC and delivery services (18). There was significant use inequity by asset quintile, education, the area of residence, and region in maternal health care in Indonesia. Older age and lower parity were positively correlated with service utilisation (19). Analysis of data from four demographic and health surveys indicated that the most significant determinants of inequality in maternal health use were maternal education and wealth index. Women from the poorest wealth quintile and those with no formal education were the most disadvantaged group in terms of their use of maternal health services in Nepal regardless of age, place of residence (rural-urban), ecological zone (mountain, hill and *Terai*), or caste/ethnicity (20). The poor, regardless of caste, are the most disadvantaged group in relation to maternal health services in Gujarat, India. In addition to poverty, social class measured as caste in India was also an important structural determinant of unequal use of maternal health services (21).

An analysis of the 2011 Ethiopian Demographic and Health Survey results showed that access and utilisation of maternal service is less in women with lower education, women from rural areas and women with low autonomy (22). Analysis of health service access and health status in a National Household Survey of South Africa showed that women with lower education, women from rural areas and women from lower quintile had lowest ANC coverage thus resulting in inequalities in utilisation of maternal service (23). A study from Bangladesh indicated that wealthier and more educated mothers utilized services to a greater extent than socioeconomically disadvantaged women; and women living in urban areas utilized more maternal health services than those in rural areas (24). Likewise, a study carried out in India showed that the factors with the largest contribution to utilisation of ANC services were rich economic status of women, higher education, and residence in a rural area (25).

behind efforts.

1.1 Objective

The key objective of this analysis is to track progress on health outcomes revealing differences between sub-groups that overall averages may mask. The specific objectives are to assess the levels and trends of inequalities in availability and utilisation of maternal health services in Nepal and generate the evidence that is not readily made available by the routine information systems and periodic survey reports, through an analysis of secondary data. This analysis will be useful for policy-making. It will provide necessary evidence for the allocation of scarce health sector resources to help address *'universal health coverage*' and '*leaving no-one behind*'.

The objective of this analysis is to assess the levels and trends of inequalities in availability and utilisation of maternal health services in Nepal using selected indicators

2. Methods

2.1 Indicator selection and sources of data

Inequalities were assessed using two major perspectives: 1. Maternal health service availability and 2. Maternal health service utilisation. In this analysis, service availability denotes that services were physically accessible and could be potentially utilized as required (13). While, utilisation was defined as the use of services as an outcome of service availability. This analysis focused on selected indicators (Table 1) to analyze the inequalities in availability and utilisation of maternal health services. These indicators were determined after discussion with MOHP officials.

Table 1. List of indicators selected to assess inequality in availability and utilisation of maternal health services in Nepal

SN	Indicators	Data sources	Disaggregation	Measures
1	% of health facilities that offer antenatal care, normal vaginal delivery and cesarean delivery service	NHFS	Ecological zone, managing authority and provinces	Availability
2	% of health facilities with service readiness for ANC service among facilities that offer ANC services	NHFS	Ecological zone, managing authority and provinces	Readiness
3	% of health facilities with service readiness for delivery service among facilities that offer ANC services	NHFS	Ecological zone, managing authority and provinces	Readiness
4	% of pregnant women who had first antenatal care checkup as per protocol (4^{th} month)	HMIS	Ecological zone, districts and provinces	Utilisation
5	% of pregnant women who had four antenatal care checkups as per protocol (4^{th}, 6^{th}, 8^{th} and 9^{th} month)	HMIS	Ecological zone, districts and provinces	Utilisation
6	% of institutional deliveries	HMIS	Ecological zone, districts and province	Utilisation
	% of live births in the five (or three) years preceding the survey delivered at a health facility	NDHS	Wealth quintile and caste/ethnicity groups	Utilisation
7	% of live births in the five (or three) years preceding the survey delivered by caesarean section	NDHS	Wealth quintile and caste/ethnicity groups	Utilisation
8	% of postpartum women who received a PNC checkup within 24 hours of delivery	HMIS	Ecological zone, districts and provinces	Utilisation
9	% of women who had three post-natal checkup as per protocol (1^{st} within 24 hours, 2^{nd} within 72 hours and 3^{rd} within 7 days of delivery)	HMIS	Ecological zone, districts and provinces	Utilisation
10	% of women who had a live birth in the five (or three) years preceding the survey who had 4+ antenatal care visits	NDHS	Wealth quintile and caste/ethnicity groups	Utilisation

Nepal Health Facility Survey (NHFS) 2015, Health Management Information System (HMIS) raw data sets of last three fiscal years (2014/15, 15/16 and 16/17) and Nepal Demographic and Health Survey (NDHS) data (1996 to 2016) were used for this analysis (Table 1). HMIS data was used to analyze the annual levels and trends of inequalities in utilisation of maternal health services. Similarly, NHFS data was used to analyze inequalities in availability and readiness of maternal health services. Long term trends in inequalities were examined using the NDHS series data. Using the wealth index information available in NDHS dataset the household economic disparities in the selected indicators were also analyzed.

In addition to analyses of raw data, in certain tables, values from the published reports of these data sources (indicated in table source where needed) have been used. Values calculated from analysis were cross-checked with published figures where necessary. A number of suspected data quality related problems have been noticed during the analysis of HMIS data. These include – underestimated expected live births, inconsistency in trends of reported values and unavailability of data for certain districts.

2.2 Data Analysis

One absolute indicator of inequality was calculated – the difference between the top and bottom performing category in each of the disaggregation available and their trends. Two relative inequality indicators were also calculated – the ratio of the selected outcome (indicator) in the topmost category to the bottommost category, their trends; and the concentration index (their trends) where household wealth information was available. The differences between disaggregation categories was used to determine inequitable distribution and utilisation of the services from socio-economic positon – wealth quintile, caste/ethnicity composition and geographical position – ecological zone, district and provinces. All analyses were conducted using Stata 15 and MS-Excel© 2016. To obtain prevalence values from the NDHS and NHFS data, weights were applied with svy command in Stata. Data source specific analysis and disaggregation are described below:

HMIS: Absolute and relative indicators of inequality and their annual trends were calculated to analyze the inequalities in utilisation of maternal health services. HMIS data were disaggregated by ecological zone (mountain, hill and *Terai*), districts and provinces to identify the top and bottom performers.

NDHS: The concentration index was used to capture inequality across all wealth quintiles. The concentration index is expressed in a scale ranging from -1 to 1; a value of zero represents perfect equality, whereas a value of 1 to -1 indicates that only the richest or the poorest households bear the burden. NDHS data were disaggregated by wealth and caste/ethnicity groups to identify the top and bottom performers. Subsequently, absolute and relative indicators of inequality and their trends were calculated.

NHFS: NHFS data were disaggregated by ecological zone, provinces and managing authority to identify the top and bottom performers. Subsequently, absolute and relative indicators of inequality were calculated. ANC service readiness was measured by constructing a separate variable based on the domains of ANC service readiness identified in WHO reference manual (14). For this analysis, readiness was defined as the availability of: 1) service delivery guideline and job-aid; 2) equipment; 3) availability of diagnostic [hemoglobin and urine dipstick-protein] tests; and 4) medicine and commodities. Equal scores (100/4) were assigned for each domain. Each domain consisted of dichotomized components e.g. domain 1 has two components – i. Availability of guideline (Yes/No) and ii. Availability of job aid (Yes/No). A composite score was then calculated using total scores of all four domains of service readiness. The calculated composite scores were then categorized into two groups – with readiness, and without readiness using the 'xtile' stata command. Similarly, based on the WHO reference manual (14), PNC service

readiness was measured using three different domains: 1) staff and training; 2) equipment; and 3) medicines and commodities; and scores were calculated as described above.

2.3 Limitations

When interpreting the results of this analysis, some limitations will need to be considered. This analysis mainly focused on inequalities in maternal health services using available secondary data sources, namely, NDHS 1996-2016, NHFS 2015 and DOHS Annual Report 2014-2016. The datasets were analyzed separately, which limited us in the use of additional statistical analyses using a single model; however, since it was not the objective to begin with, we are confident that even in its present state, this analysis is able to show inequalities using different dimensions and makes use of all available sources of information; thus, also contributing to the use of data for policy dialogue.

In this report, inequality simply refers to the uneven distribution of health services or health resources as a result of several factors while inequity refers to unfair, avoidable differences arising usually from poor governance or cultural exclusion. Thus, in this report, wherever measurements are explained, the term equality/inequality is used but in places where there are implications to be discussed, the term equity/inequity is used to bring supply side justice and fairness to the forefront.

3. Results

3.1 Availability and readiness of maternal health services

Table 2. Maternal health service availability and readiness, NHFS 2015

Variables and categories	% of health facilities that offer[2]			Service readiness	
	ANC	Normal vaginal delivery	Caesarean delivery[1]	ANC[2]	Delivery[3]
Ecological zone					
Mountain	100.0	57.2	42.3	22.3	36.4
Hill	99.4	57.3	53.5	28.9	42.0
Terai	94.7	33.4	52.1	30.3	37.7
Ratio of highest to lowest category	1.1	1.7	1.3	1.4	1.2
Difference in highest and lowest category	5.3	23.9	11.4	8.0	5.6
Managing Authority					
Private	86.4	64.2	49.5	36.4	25.5
Public	98.7	47.4	60.9	28.0	41.7
Ratio of highest to lowest category	1.1	1.4	1.2	1.3	1.6
Difference in highest and lowest category	12.3	16.8	11.4	8.4	16.2
Provinces					
Province 1	97.9	47.4	42.2	25.0	42.8
Province 2	94.3	23.1	65.1	17.0	27.3
Province 3	98.7	44.4	61.8	27.5	30.0
Province 4 (Gandaki)	99.1	55.5	41.0	33.4	32.1
Province 5	97.7	45.7	38.3	43.6	65.1
Province 6 (Karnali)	99.4	83.3	47.6	25.7	38.7
Province 7	99.5	75.4	48.2	31.4	42.9
Ratio of highest to lowest category	1.1	3.6	1.7	2.6	2.4
Difference in highest and lowest category	5.2	60.2	26.8	26.6	37.8
Total %	97.8	48.6	52.2	28.6	40.2
Weighted N	940	940	91	919	457

Source: Authors' estimates; [2]NHFS 2015

[1] Below hospital level data were not included in this analysis for the caesarean section delivery

[2]Percentage of health facilities with ANC service readiness among those health facilities which offer ANC service

[3]Percentage of health facilities with delivery service readiness among those health facilities which offer delivery services

Note: Highest and lowest values in each category are underlined where there are three or more categories

- Table 2 shows availability of ANC and delivery (normal vaginal and CS) services in health facilities and the readiness of the facilities to provide such services. It also presents the absolute and relative differences between the highest and lowest category which captures inequality amidst the worst and the best performing ecological zone, managing authority of health facilities and provinces.
- According to NHFS 2015, 98% of health facilities offer ANC services and 49% offer delivery services. However, only 29% of health facilities that offer ANC services had service readiness for

ANC service while only 40% of health facilities that offer delivery services had service readiness for delivery services.

- Considering ecological zone, service readiness for both ANC (22%) and delivery (36%) services was lowest in mountain region. The absolute difference in percentage points (PP) between the highest and the lowest category was 8 PP for ANC and 5.6 PP for delivery services.
- A higher percentage (99%) of public facilities offer ANC services. Sixty-four percent private hospitals and 47% public health facilities offered normal vaginal delivery. Caesarean delivery services were offered more by public hospitals (61% public and 50% private). Service readiness is higher in private facilities for ANC while lower for delivery. However, it should be noted that all private facilities assessed in NHFS were hospitals whereas most facilities in public sector were health posts and results may not be comparable.
- Service readiness for both ANC and delivery services was higher in Province 5 and lower in Province 2. An absolute difference of 27 PP for ANC services and 38 PP for delivery services was found. The relative differences were comparable at 2.6 and 2.4 respectively.

3.2 Annual levels and trends of inequalities in utilisation of maternal health services (FY 2014/15 to 2016/17)

- Table 3 shows the trends and patterns in utilization of maternal health service during antenatal, delivery and postnatal period. It also presents the absolute and relative differences between the highest and lowest category which captures inequality amidst the worst and the best performing ecological zone, districts and provinces for aforementioned utilisation of maternal health services. The table shows three year trends for each indicator – FY 2014/15 to FY 2016/17.
- In all years considered for analysis, health facilities in mountain region reported least utilisation of antenatal and delivery services. However, for postnatal services, utilisation is lowest in the hills. Province 2 is consistently performing poorly utilisation of both ANC and delivery services.
- In the past three years, remarkable changes were not seen in trend of women who visited a health facility for ANC service at least at four months of pregnancy and those who continued to utilize the services as per protocol (visits at fourth, sixth, eighth and ninth month). The situation is similar in delivery as well as post-natal care.
- Proportion of women who delivered at a health facility is higher than women who completed all four ANC checkups as per protocol. Women who did not visit the health facility for ANC services may also have delivered in health facilities.
- Ten percent of women who delivered at health facilities did not receive PNC checkup within 24 hours of delivery in the last fiscal year (2016/17). And out of those who received PNC checkup within 24 hours of delivery, around two third women failed to complete all postnatal checkups as per protocol (24 hours, 72 hours and seventh day of delivery).
- Disaggregated details about the trend and patterns in inequalities are presented in Annex I
- I.

Table 3. Trends and patterns of inequalities in utilisation of maternal health services: antenatal, delivery and postnatal care services, HMIS 2014/15 – 2016/17

Variables and categories	First ANC visit as per protocol (%)			Four ANC checkups as per protocol (%)			Institutional deliveries (%)			PNC checkup within 24 hours of delivery (%)			Three PNC checkup as per protocol (%)		
	2016/17	2015/16	2014/15	2016/17	2015/16	2014/15	2016/17	2015/16	2014/15	2016/17	2015/16	2014/15	2016/17	2015/16	2014/15
Ecological zone															
Mountain	63.3	62.5	59.1	43.2	40.1	39.4	48.2	47.3	40.9	46.4	47.9	43.8	20.2	19.3	17.2
Hill	74.7	66.6	77.0	60.4	53.0	54.0	54.5	51.1	52.9	51.5	47.4	43.6	16.2	14.7	16.6
Terai	66.5	70.1	70.6	47.7	51.6	51.9	55.4	59.6	52.7	51.5	61.3	52.0	21.4	21.4	23.1
Ratio of highest to lowest category	1.2	1.1	1.3	1.4	1.3	1.4	1.2	1.3	1.3	1.1	1.3	1.2	1.3	1.5	1.4
Difference in highest and lowest category	11.4	7.6	17.9	17.2	12.9	14.6	7.3	12.2	12.0	5.1	13.9	8.4	5.1	6.7	6.5
Districts*															
Lowest value	20.7	19.7	32.2	14.5	7.0	7.9	12.0	6.2	6.0	12.8	14.8	3.6	1.7	0.2	0.0
Highest value	129.0	160.5	127.3	109.6	116.0	99.2	126.7	121.2	128.0	105.0	129.0	125.5	52.7	69.9	76.8
Ratio of highest to lowest category	6.2	8.1	4.0	7.6	16.6	12.6	10.6	19.5	21.3	8.2	8.7	34.9	31.0	349.5	na
Difference in highest and lowest category	108.3	140.8	95.1	95.1	109	91.3	114.7	115	122	92.2	114.2	121.9	51	69.7	76.8
Provinces															
Province 1	62.7	62.3	67.8	44.1	58.0	47.5	49.1	58.1	51.1	42.0	56.1	51.3	8.9	24.7	16.2
Province 2	57.9	60.5	63.2	37.3	40.7	42.3	43.9	39.7	24.7	43.7	43.3	34.4	22.9	20.1	22.3
Province 3	78.0	71.1	80.0	68.0	48.4	51.3	52.8	54.3	58.4	47.6	51.3	27.5	13.4	10.7	18.3
Province 4 (Gandaki)	75.1	72.1	75.7	58.8	61.8	61.9	45.8	52.2	55.4	42.9	47.1	53.9	13.6	13.3	19.7
Province 5	76.1	75.0	80.9	58.0	55.8	65.1	69.4	63.1	66.5	65.3	63.6	67.2	25.0	16.7	18.7
Province 6 (Karnali)	70.1	70.3	67.9	48.9	46.8	43.3	60.0	60.5	55.2	59.1	59.9	55.7	20.3	20.7	19.7
Province 7	72.3	70.1	70.2	55.2	54.5	54.8	67.8	67.4	66.2	67.4	67.0	65.0	34.8	26.3	26.7
Ratio of highest to lowest category	1.3	1.2	1.3	1.8	1.5	1.5	1.6	1.7	2.7	1.6	1.5	2.4	3.9	2.5	1.6
Difference in highest and lowest category	20.1	14.6	17.7	30.7	21.1	22.8	25.6	27.7	41.9	25.4	23.7	39.7	25.9	15.6	10.5
Total %	69.8	68.1	72.5	52.8	51.4	51.9	54.6	55.1	51.9	51.2	54.5	47.9	19.1	18.4	19.9

*Detail disaggregation in the annex I; Note: Highest and lowest values in each category, in a particular year are underlined where there are three or more categories.

3.2 Long term levels and trends in inequality (1996 to 2016)

Table 4. Wealth quintile specific trends and estimates for four or more ANC check-ups in 1996, 2001, 2006, 2011 and 2016

Categories	Four or more ANC check-ups					Absolute increase (percent points)	
						Average increase per year	Total increase
	1996	2001	2006	2011	2016	1996-2016	1996-2016
First quintile (poorest)	2.7	4.7	10.5	28.3	56.7	2.7	54.0
Second quintile	4.7	4.9	20.1	39.1	65.4	3.0	60.7
Third quintile	5.8	11.9	27.6	48	66.8	3.0	61.0
Fourth quintile	9.6	16.7	38	65.1	74.7	3.3	65.1
Fifth quintile (richest)	30.8	44.1	60.3	83.7	87.4	2.8	56.6
Total*	9.1	14.3	29.4	50.1	69.4	3.0	60.3
Ratio of fifth to first quintile	11.4	9.4	5.7	3.0	1.5		
Difference in fifth and first quintile	28.1	39.4	49.8	55.4	30.8		
Concentration index	0.491	0.465	0.323	0.218	0.083		
Standard error of concentration index	0.059	0.034	0.023	0.012	0.008		
Weighted N	4,254	4,736	4,065	4,148	3,998		

*Source: Authors' estimates; *NFHS 1996, NDHS 2001-2016 reports*

Note: Data for 1996 are estimated three years preceding the survey; for other years, data are estimated in the five years preceding the survey

- Table 4 shows the wealth quintile specific trends and estimates for four or more ANC check-ups. It also presents the absolute and relative differences between the first and fifth quintile which captures inequality amidst the poorest and the richest groups. Furthermore, it calculates the concentration index which captures inequality across all wealth groups. The absolute increase in four or more ANC check-ups is also reflected in the table in PP. This takes into account the estimates in 1996 and 2016 to show a total increase and corresponding average increase per year.
- The total proportion of women utilizing four of more ANC check-ups has steadily increased, from 9% in 1996 to 69% in 2016. Quintile specific estimates are also in an increasing trend but estimates are larger in fifth quintile (richest) compared to first quintile (poorest) showing greater utilisation among the well off. Between 1996 and 2016, the average increase in utilisation per year was lowest in first quintile at 2.7 PP, while it was highest in fourth quintile at 3.3 PP. The corresponding total increase in these quintiles were 54 PP and 65 PP, respectively.
- The absolute difference (Q5-Q1) in utilisation has increased from 28 PP in 1996 to 55 PP in 2011; but then decreased to 31 PP in 2016. Although the absolute difference has increased overtime, estimates of relative difference (Q5/Q1) show decreasing disparity – the ratio of 11.4 in 1996 has decreased to 1.5 in 2016. It should be noted that these estimates are based only on richest vs poorest groups.
- Unlike absolute and relative difference, the concentration index takes into account disparity across all wealth groups. It decreased from 0.491 in 1996 to 0.083 in 2016 (also shown in Figure 2). The positive values indicate that the utilisation of four or more ANC check-ups is disproportionately concentrated in richer households. However, the values are decreasing overtime, which shows that inequality has declined over the years. A concentration index value of zero would mean absence of inequality.

Table 5. Caste/ethnicity specific trends and estimates for four or more ANC check-ups in 1996, 2001, 2006, 2011 and 2016

Categories	Four or more ANC check-ups					Absolute increase (percent points)	
						Average increase per year	Total increase
	1996	2001	2006	2011	2016	1996-2016	1996-2016
Dalit	4.4	10.2	21.5	39.9	62.2	2.9	57.8
Janajati	5.2	10.4	26.2	46.4	69.7	3.2	64.5
Other *Terai* caste	6.8	8.9	16.2	35.9	58.8	2.6	52.0
Muslim	2.6	9.1	17.8	34.8	52.5	2.5	49.9
Newar	32.9	41.3	57.2	82.8	79.9	2.4	47.0
Brahmin/Chhetri	14.3	20.7	40.3	63.5	81.1	3.3	66.8
Ratio of highest to lowest category	12.7	4.6	3.5	2.4	1.5		
Difference in highest and lowest category	30.3	32.4	41.0	48.0	28.6		
Weighted N	4,254	4,736	4,065	4,148	3,998		

Source: Authors' estimates

Note: Highest and lowest values in each category, in a particular year are underlined where there are three or more categories. Data for 1996 are estimated three years preceding the survey; for other years, data are estimated five years preceding the survey

- Table 5 shows the trends and estimates for four or more ANC check-ups distributed by categories of caste and ethnicity. It also presents the absolute and relative differences between the highest and lowest category which captures inequality amidst the worst and the best performing caste/ethnicity groups. The absolute increase in four or more ANC check-ups is also reflected in the table in PP. It takes into account estimates in 1996 and 2016 to show total increase and corresponding average increase per year.
- Caste/ethnicity specific estimates of four or more ANC check-ups are in increasing trend and estimates in general are larger in *Newar* compared to other caste/ethnicity groups showing greater utilisation among *Newar*. Between 1996 and 2016, the average increase in utilisation per year was lowest in *Newar* at 2.4 PP, while it was highest in *Brahmin/Chhetri* at 3.3 PP. Likewise, the corresponding total increase was highest in *Brahmin/Chhetri* (67 PP) and lowest in *Newar* (47 PP). In 1996, *Newar* already had a high percentage of utilisation compared to *Brahmin/Chhetri*, a possible reason why the total and average increase were lower among them. An interesting trend to take note is the consistent increase in utilization among other *Terai* caste/ethnicity groups over the years.
- The absolute difference (highest category – lowest category) in utilisation increased from 30 PP in 1996 to 48 PP in 2011; but then decreased to 29 PP in 2016. Estimates of relative difference (highest category/lowest category) show decreasing disparity – the ratio of 12.7 in 1996 has decreased to 1.5 in 2016. It should be noted that these estimates are based only on categories with highest vs lowest values.

Table 6. Wealth quintile specific trends and estimates for delivery in a health facility in 1996, 2001, 2006, 2011 and 2016

Categories	Delivery in a health facility					Absolute increase (percent points)	
						Average increase per year	Total increase
	1996	2001	2006	2011	2016	1996-2016	1996-2016
First quintile (poorest)	1.7	2.3	4.3	11.4	33.9	1.6	32.2
Second quintile	3.5	3.0	9.3	23.3	46.6	2.2	43.1
Third quintile	4.8	5.5	11.9	35.4	57.6	2.6	52.8
Fourth quintile	6.2	9.0	21.7	51.9	69.5	3.2	63.3
Fifth quintile (richest)	29.9	36.5	55.0	77.9	89.6	3.0	59.7
Total*	7.6	9.1	17.7	35.3	57.4	2.5	49.8
Ratio of fifth to first quintile	17.2	15.6	12.7	6.8	2.6		
Difference in fifth and first quintile	28.2	34.2	50.7	66.5	55.6		
Concentration index	0.551	0.558	0.481	0.349	0.186		
Standard error of concentration index	0.070	0.048	0.030	0.015	0.011		
Weighted N	4,373	6,972	5,545	5,391	5,060		

*Source: Authors' estimates; *NFHS 1996, NDHS 2001-2016 reports*

Note: Data for 1996 are estimated three years preceding the survey; for other years, data are estimated five years preceding the survey

- Table 6 shows the wealth quintile specific trends and estimates for delivery in a health facility (institutional deliveries). It also presents the absolute and relative differences between the first and fifth quintile which captures inequality amidst the poorest and the richest groups. Furthermore, it calculates the concentration index which captures inequality across all wealth groups. The absolute increase in deliveries in a health facility is also reflected in the table in PP. This takes into account estimates in 1996 and 2016 to show total increase and corresponding average increase per year.
- Trends in the total proportion of women utilizing service for delivering in a health facility show minimal increase from 1996 to 2001. Thereafter, the increase is remarkable, from 9% in 2001 to 57% in 2016. Quintile specific estimates are also in increasing trend but estimates are larger in fifth quintile (richest) compared to first quintile (poorest) showing greater utilisation among the well off. Between 1996 and 2016, the average increase in utilisation per year was lowest in first quintile at 1.6 PP, while it was highest in fourth quintile at 3.2 PP. The corresponding total increase in these quintiles were 32 PP and 63 PP respectively.
- The absolute difference (Q5-Q1) in utilisation has increased from 28 PP in 1996 to 67 PP in 2011; but then decreased to 56 PP in 2016. Although the absolute difference has increased overtime, estimates of relative difference (Q5/Q1) show decreasing disparity – the ratio of 17.2 in 1996 has decreased to 2.6 in 2016. It should be noted that these estimates are based only on richest vs poorest groups.
- Unlike absolute and relative difference, the concentration index takes into account disparity across all wealth groups. It decreased from 0.551 in 1996 to 0.186 in 2016 (also shown in Figure 2). The positive values indicate that the utilisation of institutional deliveries is disproportionately concentrated in richer households. However, the values are decreasing overtime, which shows that inequality has declined over the years. A concentration index value of zero would mean absence of inequality.

Table 7. Caste/ethnicity specific trends and estimates for delivery in a health facility in 1996, 2001, 2006, 2011 and 2016

Categories	Delivery in a health facility					Absolute increase (percent points)	
						Average increase per year	Total increase
	1996	2001	2006	2011	2016	1996-2016	1996-2016
Dalit	4.9	5.7	9.3	26.4	45.4	2.0	40.5
Janajati	4.4	6.2	14.2	28.9	57.9	2.7	53.5
Other *Terai* caste	6.4	6.8	15.2	37.9	48.1	2.1	41.7
Muslim	4.4	6.3	12.2	32.3	51.6	2.4	47.2
Newar	29.0	28.0	47.9	68.0	74.6	2.3	45.6
Brahmin/Chhetri	10.6	13.0	24	44.1	68.4	2.9	57.8
Ratio of highest to lowest category	6.6	4.9	5.2	2.6	1.6		
Difference in highest and lowest category	24.6	22.3	38.6	41.6	29.2		
Weighted N	4,373	6,972	5,545	5,391	5,060		

Source: Authors' estimates

Note: Highest and lowest values in each category, in a particular year are underlined where there are three or more categories. Data for 1996 are estimated three years preceding the survey; for other years, data are estimated five years preceding the survey

- Table 7 shows the trends and estimates for deliveries in a health facility (institutional deliveries) distributed by categories of caste and ethnicity. It also presents the absolute and relative differences between the highest and lowest category which captures inequality amidst the worst and the best performing caste/ethnicity groups. The absolute increase in institutional deliveries is also reflected in the table in PP. It takes into account estimates in 1996 and 2016 to show total increase and corresponding average increase per year.
- Caste/ethnicity specific estimates of institutional deliveries are in increasing trend and estimates are larger in *Newar* in all survey years compared to other caste/ethnicity groups showing greater utilisation among *Newar*. Except in 1996, estimates are lowest in *Dalit*. Between 1996 and 2016, the average increase in utilisation per year was lowest in *Dalit* at two PP, while it was highest in *Brahmin/Chhetri* at 2.9 PP. Likewise, the corresponding total increase was highest in *Brahmin/Chhetri* (58 PP) and lowest in *Dalit* (41 PP). In 1996, *Newar* already had a high percentage of utilisation compared to *Brahmin/Chhetri*, a possible reason why the total and average increase were lower among them.
- The trend in absolute difference (highest category – lowest category) in utilisation of institutional deliveries is not consistent. It decreased slightly from 1996 to 2001 but increased from 2001 to 2011. In 2011, the absolute difference was 42 PP but it decreased to 29 PP in 2016. Estimates of relative difference (highest category/lowest category) also show inconsistent trend. However, from 2006 to 2016 it decreased from 5.2 to 1.6. It shows that the disparity has decreased during this period between these groups. It should be noted that these estimates are based only on categories with highest vs lowest values.

Table 8. Wealth quintile specific trends and estimates for deliveries by caesarean section in 1996, 2001, 2006, 2011 and 2016

	Deliveries by caesarean section					Absolute increase (percent points)	
						Average increase per year	Total increase
	1996	2001	2006	2011	2016	1996-2016	1996-2016
First quintile (poorest)	0.1	0.2	0.8	1.0	2.4	0.1	2.3
Second quintile	0.6	0.3	0.5	0.8	4.2	0.2	3.6
Third quintile	0.8	0.2	1.0	4.6	6.8	0.3	6.1
Fourth quintile	1.2	1.1	2.0	7.1	9.4	0.4	8.2
Fifth quintile (richest)	3.2	3.6	11.9	14.1	28.2	1.3	25.0
Total	1.0	0.8	2.7	4.6	9	0.4	8.0
Ratio of fifth to first quintile	22.9	23.4	14.9	14.5	11.7		
Difference in fifth and first quintile	3.1	3.5	11.1	13.2	25.8		
Concentration index	0.526	0.621	0.621	0.541	0.442		
Standard error of concentration index	0.124	0.128	0.102	0.061	0.043		
Weighted N	4,349	6,977	5,545	5,391	5,060		

Source: Authors' estimates; [†] NFHS 1996, NDHS 2001-2016 reports

Note: Data for 1996 are estimated three years preceding the survey; for other years, data are estimated five years preceding the survey

- Table 8 shows the wealth quintile specific trends and estimates for deliveries by caesarean section. It also presents the absolute and relative differences between the first and fifth quintile which captures inequality amidst the poorest and the richest groups. Furthermore, it calculates the concentration index which captures inequality across all wealth groups. The absolute increase in deliveries by caesarean section is also reflected in the table in PP. This takes into account estimates in 1996 and 2016 to show total increase and corresponding average increase per year.
- Trends in the total proportion of women delivering by caesarean section has almost doubled from 5% in 2011 to 9% in 2016. Quintile specific estimates are also in increasing trend but estimates are larger in fifth quintile (richest) compared to first quintile (poorest) showing greater utilisation among the well off. Between 1996 and 2016, the average increase in utilisation per year was lowest in first quintile at 0.1 PP, while it was highest in fifth quintile at 1.3 PP. The corresponding total increase in these quintiles were two PP and 25 PP respectively.
- The absolute difference (Q5-Q1) in utilisation has increased from three PP in 1996 to 26 PP in 2016. In contrast, estimates of relative difference (Q5/Q1) show decreasing disparity – the ratio of 22.9 in 1996 has decreased to 11.7 in 2016. This indicates to the fact that in addition to richest groups, deliveries by caesarean section is also increasing in poorest groups. It should be noted that these estimates are based only on richest vs poorest groups.
- Unlike absolute and relative difference, the concentration index takes into account disparity across all wealth groups. It increased from 0.526 in 1996 to 0.621 in 2001 and 2006; then decreased to 0.442 in 2016 (also shown in Figure 2). The positive values indicate that the utilisation of caesarean section deliveries is disproportionately concentrated in richer households. However, the values show decreasing trend in the last decade, which shows that inequality has declined during this period. A concentration index value of zero would mean absence of inequality.

Table 9. Caste/ethnicity specific trends and estimates for deliveries by caesarean section in 1996, 2001, 2006, 2011 and 2016

	Deliveries by caesarean section					Absolute increase (percent points)	
						Average increase per year	Total increase
	1996	2001	2006	2011	2016	1996-2016	1996-2016
Dalit	0.8	0.1	1.1	2.1	5.4	0.2	4.7
Janajati	0.8	0.6	2.0	3.0	8.1	0.4	7.3
Other *Terai* caste	1.5	0.9	2.1	6.0	7.1	0.3	5.6
Muslim	0.0	0.0	1.0	3.2	5.0	0.2	5.0
Newar	4.0	4.9	5.9	7.8	26.8	1.1	22.8
Brahmin/Chhetri	0.9	1.0	4.5	7.3	11.3	0.5	10.4
Ratio of highest to lowest category			6.0	3.7	5.4		
Difference in highest and lowest category	4.0	4.9	5.0	5.7	21.8		
Weighted N	4,373	6,977	5,545	5,391	5,060		

Source: Authors' estimates

Note: Highest and lowest values in each category, in a particular year are underlined where there are three or more categories. Data for 1996 are estimated three years preceding the survey; for other years, data are estimated five years preceding the survey

- Table 9 shows the trends and estimates for deliveries by caesarean section distributed by categories of caste and ethnicity. It also presents the absolute and relative differences between the highest and lowest category which captures inequality amidst the worst and the best performing caste/ethnicity groups. The absolute increase in deliveries by caesarean section is also reflected in the table in PP. It takes into account estimates in 1996 and 2016 to show total increase and corresponding average increase per year.
- Caste/ethnicity specific estimates of deliveries by caesarean section are in increasing trend and estimates are larger in *Newar* in all survey years compared to other caste/ethnicity groups showing greater utilisation among *Newar*. Except in 2011, estimates are lowest in Muslim. Between 1996 and 2016, the average increase in utilisation per year was lowest in *Dalit* and Muslim at 0.2 PP, while it was highest in *Newar* at 1.1 PP. Likewise, the corresponding total increase was highest in *Newar* (23 PP) and lowest in *Dalit* and Muslim (5 PP).
- The trend in absolute difference (highest category – lowest category) in utilisation of caesarean section deliveries increased remarkably from six PP in 2011 to 22 PP in 2016. Estimates of relative difference (highest category/lowest category) show inconsistent trend. It decreased from 2006 to 2011, but increased from 3.7 in 2011 to 5.4 to 2016. It shows that the disparity has increased during this period between these groups. It should be noted that these estimates are based only on categories with highest vs lowest values.

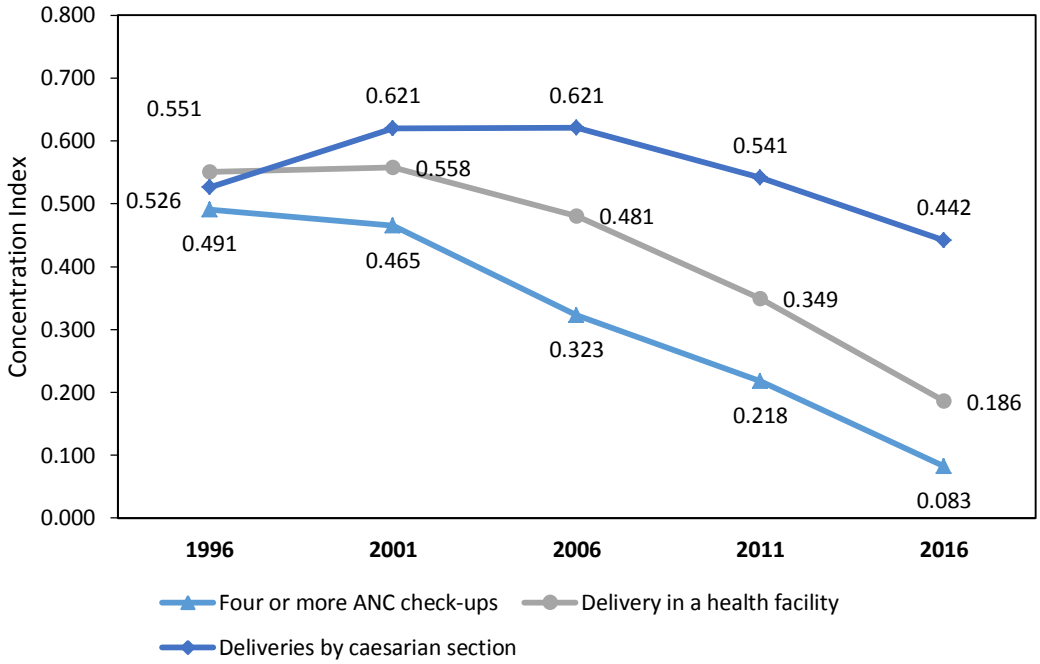

Figure 1. Trend in concentration index of maternal service utilisation indicators.

4. Conclusions and Recommendations

- Availability and readiness of maternal health services:
    - When considering ecological zone, inequality is higher for availability of delivery services than for ANC services. Compared to other regions, fewer health facilities in *Terai* offer normal vaginal delivery services; while availability of caesarean delivery was lowest in the mountain region. In contrast, service readiness for ANC services show higher inequality compared to delivery services. Health facilities in the mountains are least ready to provide both ANC and delivery services.

      Recommendation 1: MOHP in coordination with the Province and Local Governments, should address inequalities in the availability of ANC and delivery services. First, it is necessary to investigate the reasons for underutilization of existing services, based on which, improvements in quality of existing services or expansion of the services (making the services available) in the existing health facilities could be undertaken. Expansion of ANC services could be made through outreach centers like community health units, particularly in the mountain region to capture the geographically hard to reach population.

    - In managing authority, there was remarkably high inequality between public and private facilities in the availability of caesarean delivery. Similarly, inequality is higher for delivery service readiness compared to ANC service readiness. A larger percentage of public facilities show readiness to provide delivery services as opposed to private facilities.

      Recommendation 2: Caesarean delivery is a life-saving component within safe motherhood services. To save mothers' lives from delivery related complications, it is necessary to first improve/strengthen existing facilities that provide caesarean delivery services and secondly initiate such services in those government health facilities where there is need and that are easily accessible by mothers. It is essential to monitor caesarean section services particularly in private health facilities to ensure that services are provided when the pregnancy is complicated and there is medical indication for caesarean delivery. However, the government health facilities should also be routinely monitored for quality of caesarean section service delivery.

    - Among provinces, there is a huge gap between Province 6 (Karnali) and Province 2 when it comes to availability of normal vaginal delivery services. Inequality in readiness for delivery services is higher than for readiness for ANC services. Province 5 showed highest readiness for both ANC and delivery services while Province 2 fared worst.

      Recommendation 3: In the federal context, the local governments should prioritise to improve the availability and readiness of maternal health services in Province 2 and Province 6. The federal ministry should support the local level to improve service readiness for ANC and delivery services to increase their status in line with other provinces.

- Annual levels and trends of inequalities in utilization of maternal health services (FY 2014/15 to 2016/17):
    - When considering ecological zone, there was not any consistent trends in inequality. However, when looking at data from past two years only, inequality has increased in utilisation of ANC services; while that for PNC services has declined ever so slightly. Women may be unable to travel during post-partum period due to cultural reason and there is also the possibility that they may receive PNC at home.

      Recommendation 4: Local governments should introduce interventions that facilitate equitable utilization to reduce drop-out of mothers in maternal health services utilisation; while the federal government may provide strategic guidance during this process.

    - Similarly, among districts, consistent trends in inequality were not seen. However, when considering data from past two years only, inequality has decreased in utilisation of ANC services, while increased for delivery as well as PNC services. Data shows that Manang, Terhathum and Dhanusha districts have least utilisation of maternal health services in the last three years.

      Recommendation 5: The federal ministry along with provincial and local authorities should focus on targeted interventions in the low performing areas to reduce inequities in maternal health service utilisation. In addition, it is also necessary to prioritize programme on maternal health in other areas that also report lower utilisation. Further inquiry may be needed to explore the reasons for low utilization in underperforming areas – such as poor recording and reporting, other programmatic reasons.

    - Among provinces, inequality is increasing in utilisation of delivery services. Province 2 is consistently performing poorly compared to others. Particularly in utilisation of postnatal care services, performance of Province 1 and Province 3 is also concerning.

      Recommendation 6: Utilisation of delivery services should be improved in Province 2, while targeted interventions are needed in Province 1 and 3 to improve utilisation of postnatal services.

    - Assessing utilization of maternal health service during antenatal, delivery and postnatal period, a larger drop outs between first ANC visits and four ANC visits as per protocol was revealed; similarly, between PNC checkups within 24 hours of delivery and three PNC checkups as per protocol. First PNC in most cases is similar to institutional delivery, while for the remaining PNC visits they will have to travel to the health facility during post-partum period – where there may be cultural barriers.

      Recommendation 7: The first point of contact with health system for most pregnant women is first ANC visit; and is an important entry point not just for maternal health but also for other programmes. A high coverage of ANC and repeated contacts between the woman and the health services offer many opportunities for providing evidence-based interventions likely to affect maternal, fetal, and neonatal health and survival (15). *Thus, in order to continuously retain them during antenatal, delivery and postnatal period, the quality of ANC service delivery particularly during the first visit must be ensured. Although beyond the scope of this present analysis, the social, economic and cultural barriers in regions that have lower ANC utilisation should be identified and addressed to improve access to ANC services. Supply factors such as budgeting, human resource and capacity development of staff should also be considered. These considerations also pave way for future research in to factors associated with low utilisation of maternal health services in regions that are*

identified to be poor performers. Similar recommendation applies for PNC services as well – both removal of access barriers and improvement in quality should be focused. It might also be equally important to sensitize and clearly communicate with new mothers about the importance of PNC during their first PNC checkup; that should at least in theory motivate them for all three visits. Additionally, a qualitative inquiry may be helpful to explore the barriers.

- Long term levels and trends in inequality (1996 to 2016):
    - Utilisation of maternal health services in the long term is also determined by factors such as household economic status that are beyond direct control of the health system. In terms of wealth, from 1996 to 2016, although disproportionately concentrated in richer households, the overall inequality as calculated by concentration indices show a decreasing trend in utilisation of all maternal health services (4+ ANC, institutional delivery and delivery by caesarean section). Quintile specific utilisation is increasing over time but there is a disparity between the poorest and the richest group, with richest group showing higher utilisation. Absolute disparity may show an increasing trend in the past two decades. This is not unusual, because inequalities in most cases will be small when national coverage is either very low (first decade) or very high (second decade). Relative inequality between the poorest and richest groups is decreasing, in general and this is expected with increasing coverage. As coverage among the poor increases, the absolute differences become similar which leads to lower ratios or relative inequalities (e.g., the ratio between 100% and 90% coverage is 1.1, whereas the ratio between 20% and 10% is equal to 2.0) (16).

      The inverse equity hypothesis suggests that new health interventions are initially adopted by the wealthy and thus increase inequalities—as population coverage increases, only the poorest will lag behind all other groups (17). Similar to a study that analysed institutional deliveries to test this hypothesis (16), this analysis revealed that absolute inequalities were greatest when national coverage was around 50% as in the case with institutional deliveries. At low national coverage levels, top inequality was evident with coverage in the wealthiest quintile taking off rapidly as in caesarean section deliveries; at 60% or higher national coverage, bottom inequality appears predominant, with the poorest quintile lagging behind as in four or more ANC check-ups.

      Recommendation 8: It is important to introduce and provide momentum to efforts that deliver an incentive for the poor to utilize maternal health care services. The financial barriers to access should be reduced not only in the public sector but also in the private sector. Catastrophic health expenditures should be minimized. Social safety net programmes (including strengthening of existing conditional cash transfer programmes) are needed that raise people out of poverty, and prevent poor from further destitution.

    - Considering caste/ethnicity, utilisation of all maternal health services is increasing in trend. Particularly from 2011 to 2016, utilisation has increased in all marginalized groups (Muslim, *Dalit* and other *Terai* caste). However, there are disparities in utilisation between caste and ethnic groups. In general, utilisation is higher in *Newar* and lower in *Dalit*, Muslim and Other *Terai* caste group. The average increase in utilisation is higher in *Brahmin/Chhetri.* Such inequalities are decreasing in utilisation of four or more ANC check-ups and institutional deliveries in relative terms. But increasing in utilisation of delivery by caesarean section in absolute terms.

Recommendation 9: In addition to reducing inequalities in wealth, maternal health programming should be focused on most disadvantaged caste and ethnic groups which are susceptible to both under utilisation of services and relative poverty to bring about improvements in inequality in utilisation indicators. With increasing national coverage of maternal health services, it is time that interventions are now targeted to address inequality in bottom performers that are being left behind. To achieve this, it is necessary to design policies that address the inequality patterns.

The current levels and trends in equity gaps in maternal health services shows that with increasing coverage of services, bottom inequality prevails, leading to marginal exclusion of the disadvantaged and most vulnerable groups. Barriers to access should be identified and appropriate services should be targeted at these groups. Policies should be tailored to inequality patterns.

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Annex I

Table 10. District specific trends and patterns of inequalities in maternal health services: antenatal, delivery and postnatal care services, HMIS 2014/15 – 2016/17

Districts	First ANC visit as per protocol (%)			Four ANC checkups as per protocol (%)			Institutional deliveries (%)			PNC checkup within 24 hours of delivery (%)			Three PNC checkup as per protocol (%)		
	2016/17	2015/16	2014/15	2016/17	2015/16	2014/15	2016/17	2015/16	2014/15	2016/17	2015/16	2014/15	2016/17	2015/16	2014/15
Taplejung	53.2	50.1	63.9	36.3	36.3	46.4	36.0	37.4	30.8	39.0	39.0	36.5	15.1	13.7	14.1
Panchthar	69.4	67.4	75.4	42.5	46.3	50.6	39.1	42.1	47.7	37.1	42.7	47.2	10.8	12.0	13.1
Ilam	52.6	46.6	55.2	36.1	33.9	42.9	20.5	19.0	24.9	22.1	18.3	26.9	3.2	2.9	5.2
Jhapa	61.3	63.1	79.4	41.8	49.0	50.9	74.8	75.6	69.1	64.0	66.2	61.7	5.3	22.9	19.9
Morang	67.8	67.0	65.6	43.1	50.9	50.1	78.0	75.4	87.1	52.9	68.2	86.1	8.4	12.8	22.7
Sunsari	60.7	58.6	62.9	53.7	116.0	44.6	23.1	79.0	29.5	23.6	79.5	30.0	5.6	69.9	9.6
Dhankuta	56.4	59.2	64.2	37.2	44.3	49.4	14.4	17.6	17.2	18.2	20.4	22.3	4.5	7.8	9.8
Terhathum	54.4	57.4	65.6	34.3	32.8	34.6	28.3	24.9	25.9	24.2	23.6	28.6	1.7	0.2	0.9
Sankhuwasabha	64.0	66.8	66.2	46.6	44.7	49.7	60.6	46.2	52.1	50.2	48.1	52.4	12.1	15.9	21.6
Bhojpur	60.1	61.3	58.0	39.6	34.7	35.3	26.7	26.1	26.3	27.9	28.8	23.9	13.0	13.9	10.9
Solukhumbu	62.7	71.0	84.0	39.3	48.3	55.3	24.1	25.7	25.6	25.7	27.0	29.7	21.3	22.2	25.4
Okhaldhunga	60.9	56.4	60.7	43.0	38.1	41.3	61.1	53.0	49.9	62.2	54.8	53.3	30.4	26.5	30.9
Khotang	74.4	76.8	73.0	56.4	56.2	53.0	25.6	21.9	21.2	34.8	40.7	41.0	18.6	19.5	22.6
Udayapur	65.2	63.3	68.5	43.3	42.3	46.4	39.3	43.7	44.8	39.0	46.2	48.2	11.8	13.4	9.7
Saptari	77.2	86.3	96.8	62.2	74.8	79.1	33.1	55.1	32.7	34.4	58.5	37.4	28.8	28.4	34.0
Siraha	68.0	68.4	69.5	40.3	38.3	41.1	45.2	45.0	50.2	44.1	46.9	51.4	10.3	9.0	8.8
Dhanusa	45.0	41.3	49.3	21.1	22.2	25.0	58.6	6.2	6.0	67.1	19.0	17.7	12.9	13.2	14.3
Mahottari	69.3	70.2	69.2	46.9	48.6	49.8	16.3	24.3	21.3	30.4	48.1	39.3	18.6	30.2	33.2
Sarlahi	54.4	53.2	55.3	32.8	35.1	35.8	33.4	40.1	27.1	49.3	46.8	40.0	33.0	22.5	26.2
Sindhuli	53.0	48.8	51.6	29.0	26.0	23.7	23.7	25.2	24.0	25.6	24.9	25.3	4.2	5.4	7.1
Ramechhap	49.1	48.1	51.6	35.9	34.2	38.4	32.2	29.8	30.4	33.3	30.6	33.2	8.9	4.9	8.3
Dolakha	61.0	57.2	58.6	50.7	42.6	44.9	42.7	38.1	26.6	43.8	39.0	32.8	17.5	21.5	17.9

Districts	First ANC visit as per protocol (%)			Four ANC checkups as per protocol (%)			Institutional deliveries (%)			PNC checkup within 24 hours of delivery (%)			Three PNC checkup as per protocol (%)		
	2016/17	2015/16	2014/15	2016/17	2015/16	2014/15	2016/17	2015/16	2014/15	2016/17	2015/16	2014/15	2016/17	2015/16	2014/15
Sindhupalchok	46.6	43.1	43.3	29.2	25.2	26.3	21.7	23.8	17.1	17.4	24.7	21.2	3.7	3.3	5.1
Kavre	72.1	63.5	78.4	44.9	35.9	49.0	65.9	60.9	69.4	63.2	48.3	42.5	16.5	13.3	13.8
Lalitpur	20.7	19.7	36.7	78.0	83.7	92.3	77.6	70.0	81.4	59.4	58.5	79.2	28.4	30.0	34.3
Bhaktapur	64.9	60.5	49.6	37.8	31.2	30.7	21.5	23.9	23.4	19.9	25.6	23.4	6.8	6.6	5.4
Kathmandu	118.4	72.3	127.3	104.2	61.0	63.1	81.0	58.9	68.8	70.6	49.3	10.3	18.7	7.3	7.1
Nuwakot	53.6	68.4	52.9	40.5	50.5	38.1	34.2	37.8	33.8	32.8	39.9	39.1	4.9	15.8	19.1
Rasuwa	69.5	67.9	56.8	47.7	40.1	40.6	24.8	27.3	24.8	27.8	30.8	27.3	16.2	23.1	13.2
Dhading	67.6	70.6	70.4	53.9	50.9	52.2	41.8	44.6	42.9	41.0	42.6	42.6	11.2	18.5	15.9
Makwanpur	75.1	59.6	62.0	52.8	31.9	36.3	46.9	47.2	34.6	47.0	25.6	15.2	11.6	3.1	2.9
Rautahat	58.1	63.9	65.3	37.8	44.1	46.0	41.9	33.9	27.2	53.3	52.1	41.6	32.3	32.6	34.3
Bara	50.8	62.6	61.6	32.1	40.4	44.5	30.6	39.8	16.6	15.5	18.6	24.4	10.4	12.0	17.0
Parsa	42.5	39.8	43.2	28.1	24.1	21.2	97.4	82.8	19.5	52.7	62.2	25.0	37.9	12.3	10.3
Chitawan	75.9	160.5	73.9	68.8	38.8	47.5	18.3	99.2	120.0	18.5	129.0	26.2	3.2	8.4	76.8
Gorkha	60.2	68.2	67.0	46.2	41.5	42.5	35.0	39.4	34.3	36.6	41.2	38.8	18.8	15.3	15.3
Lamjung	73.6	66.2	76.2	53.9	58.3	80.6	42.1	45.7	47.8	42.6	46.5	50.6	14.1	19.5	30.6
Tanahu	43.2	39.2	53.0	25.6	24.1	37.0	22.9	21.2	21.6	22.4	19.7	22.7	8.3	5.1	5.0
Syangja	62.3	75.2	69.7	41.9	44.4	50.3	22.7	24.0	23.9	22.8	24.9	25.7	11.6	10.1	12.4
Kaski	129.0	111.0	106.8	109.6	105.5	91.0	102.0	110.6	128.0	85.7	89.6	111.7	21.3	18.3	36.4
Manang	44.4	21.7	30.2	14.5	7.0	7.9	12.0	8.7	6.5	12.8	14.8	3.6	10.3	7.8	0.0
Mustang	50.0	40.2	40.3	23.4	12.2	11.7	19.5	21.7	20.8	20.3	24.0	20.8	8.2	7.1	10.2
Myagdi	75.1	69.4	74.6	66.5	57.8	66.7	52.8	52.5	47.8	56.3	56.6	57.3	23.6	24.1	27.1
Parbat	53.5	47.5	59.5	43.0	41.5	52.3	29.1	26.5	25.4	27.6	22.8	23.9	6.1	7.3	9.7
Baglung	58.6	62.2	72.9	46.9	80.9	63.6	45.1	42.5	43.0	46.7	40.8	48.2	11.8	11.2	15.0
Gulmi	69.6	68.5	76.1	61.6	57.1	57.6	37.6	32.8	34.7	39.1	38.0	47.5	30.3	20.3	27.7
Palpa	85.5	103.1	105.0	69.1	62.0	67.1	89.1	84.2	94.3	86.1	72.7	89.8	13.0	18.0	17.2
Nawalparasi	80.3	72.6	84.2	63.6	55.3	68.3	34.8	26.1	31.9	34.8	26.5	32.3	5.2	4.4	5.8

Districts	First ANC visit as per protocol (%)			Four ANC checkups as per protocol (%)			Institutional deliveries (%)			PNC checkup within 24 hours of delivery (%)			Three PNC checkup as per protocol (%)		
	2016/17	2015/16	2014/15	2016/17	2015/16	2014/15	2016/17	2015/16	2014/15	2016/17	2015/16	2014/15	2016/17	2015/16	2014/15
Nawalpur	73.4			57.9			19.6			19.9			6.4		
Rupandehi	90.6	82.4	100.1	69.0	71.9	99.2	109.0	105.7	115.7	105.0	108.1	107.6	42.6	35.0	33.8
Kapilbastu	77.4	74.4	77.8	53.9	51.3	58.2	31.4	18.0	17.4	33.7	27.3	31.3	14.3	17.2	19.8
Arghakhanchi	53.8	57.9	60.6	41.0	40.1	43.7	26.5	27.7	27.7	23.6	25.8	26.2	5.9	2.7	5.2
Pyuthan	64.1	61.3	62.8	47.8	45.6	43.2	55.0	53.2	48.0	55.3	55.0	49.3	5.6	5.0	4.7
Rolpa	63.1	59.3	56.2	44.2	41.7	42.4	50.0	48.1	46.5	49.4	47.9	46.4	10.8	11.8	13.7
Rukum	66.9	74.6	80.2	48.8	37.5	28.3	40.4	53.3	41.6	40.7	50.8	42.3	24.0	10.8	10.2
Rukum west	62.8			30.9			52.6			51.3			10.0		
Salyan	74.4	70.1	67.9	58.5	50.3	44.2	54.0	52.9	49.0	53.9	52.4	45.6	10.4	12.9	11.1
Dang	71.4	71.7	75.1	60.7	55.6	69.1	66.3	66.3	67.0	66.5	65.4	66.5	51.3	8.6	11.7
Banke	75.3	83.3	75.2	49.5	48.1	46.0	126.7	121.2	125.7	97.9	115.4	125.5	13.0	14.9	26.8
Bardiya	71.2	70.3	77.4	56.0	53.9	55.6	50.6	53.3	57.7	48.0	52.7	57.7	27.7	22.2	16.3
Surkhet	81.7	78.8	84.6	73.5	68.0	65.9	80.8	78.3	77.5	81.6	79.3	76.9	21.8	25.0	23.0
Dailekh	70.4	71.2	67.1	47.7	52.2	51.2	70.0	71.5	71.7	66.9	68.2	69.4	22.1	21.9	30.2
Jajarkot	47.9	43.3	49.2	25.1	25.6	29.4	31.3	29.4	30.1	32.5	30.7	33.1	18.8	18.7	16.8
Dolpa	36.5	45.5	30.6	29.9	23.1	18.3	30.6	25.6	10.8	31.6	28.1	20.7	22.2	14.7	13.3
Jumla	76.3	79.8	71.7	34.5	40.4	40.7	54.0	57.5	51.2	56.0	57.7	56.1	29.5	22.9	24.2
Kalikot	74.5	64.6	53.1	50.6	37.1	32.6	72.3	68.4	55.8	70.3	66.3	55.9	45.3	35.8	24.3
Mugu	102.1	101.8	55.4	41.7	28.9	27.3	49.4	39.4	36.9	34.9	36.0	42.4	10.5	11.4	9.9
Humla	25.1	55.9	57.5	15.2	32.9	30.4	18.9	79.3	52.4	17.5	86.1	61.3	11.1	42.2	23.1
Bajura	72.3	70.7	58.7	47.7	45.3	36.3	69.0	68.3	55.5	68.1	68.0	53.1	31.6	23.5	19.0
Bajhang	76.2	67.8	64.0	61.1	51.9	46.4	75.8	69.8	60.9	74.8	67.5	62.0	31.5	21.4	22.5
Achham	87.9	90.5	88.0	72.7	79.9	73.8	73.7	74.3	67.0	75.1	79.3	76.4	52.1	58.8	58.8
Doti	73.5	80.6	72.2	52.5	54.1	54.3	71.0	74.8	72.8	70.5	73.9	73.0	31.1	29.6	23.7
Kailali	70.8	63.3	69.0	51.5	47.6	51.8	76.5	73.3	78.1	75.2	70.4	69.9	52.7	23.3	29.2
Kanchanpur	63.5	61.9	64.4	49.0	47.3	51.3	48.2	52.1	56.8	48.2	52.2	56.2	11.7	9.0	8.4

Districts	First ANC visit as per protocol (%)			Four ANC checkups as per protocol (%)			Institutional deliveries (%)			PNC checkup within 24 hours of delivery (%)			Three PNC checkup as per protocol (%)		
	2016/17	2015/16	2014/15	2016/17	2015/16	2014/15	2016/17	2015/16	2014/15	2016/17	2015/16	2014/15	2016/17	2015/16	2014/15
Dadeldhura	73.1	72.6	73.5	61.4	62.2	67.0	68.9	67.8	69.9	69.2	72.4	73.8	19.5	52.9	65.3
Baitadi	76.7	76.5	75.7	61.7	66.9	63.7	64.5	66.1	57.0	64.8	65.6	56.6	27.3	21.8	12.1
Darchaula	65.6	71.0	63.3	50.8	55.3	48.1	59.6	57.7	51.7	59.8	59.0	53.3	19.7	26.1	12.0
A	6.2	8.1	4.2	7.5	16.7	12.5	10.6	19.5	21.3	8.2	8.7	34.9	31.4	413.3	
B	108.3	140.8	97.1	95.1	109.0	91.3	114.7	115.0	122.0	92.2	114.2	121.9	51.0	69.7	76.8

A=Ratio of highest to lowest value of the districts, B=Difference in highest and lowest value of the districts

Note: Highest and lowest values in each category, in a particular year are underlined where there are three or more categories.

नेपालमा मातृस्वास्थ्य सेवाहरुको उपयोगितामा असमानता: सारंश

नेपालले मातृ स्वास्थ्य सेवाको उपयोगितामा उल्लेख्य प्रगति हासिल गरेको भएता पनि विभिन्न समुहगत जनसङ्ख्याका आधारमा भने हालसम्म पनि सेवाको उपयोगितामा असमानता विद्यमान रहेको छ । केही महत्वपूर्ण सूचकाङ्कहरुका आधारमा नेपालमा मातृस्वास्थ्य सेवाको उपलब्धता र उपयोगितामा रहेको असमानताको तह तथा प्रवृतिको विश्लेषण तथा लेखाजोखा गर्नु यस अध्ययनको उद्वेश्य रहेको छ । यस अध्ययनको लागि, नेपाल स्वास्थ्य संस्था सर्वेक्षण २०७२ को तथ्याङ्क, स्वास्थ्य व्यवस्थापन सूचना प्रणालीको आ.ब.२०७१/७२ देखि २०७३/७४ को तथ्यांङ्क र सन् १९९६ देखि २०१६ का नेपाल जनसांङ्गख्यीक स्वास्थ्य सर्भेक्षणहरूको तथ्याङ्कलाई विश्लेषण गरिएको थियो । सामाजिक आर्थिक (गरिवी, तथा जात/जातीयता) तथा भौगोलिक (जिल्लागत, तथा प्रदेशगत) रुपमा स्वास्थ्य सूचकाङ्कहरूमा रहेको असमानताको अवस्थालाई चित्रण गर्न सूचकाङ्कहरूको पूर्ण तथा तुलनात्मक (absolute and relative) रुपमा विश्लेषण गरिएको थियो । Stata 15 र MS-Excel© 2016 को प्रयोग गरि सम्पूर्ण विश्लेषणहरु गरिएको थियो ।

मातृस्वास्थ्य सेवाहरूको उपलब्धता र तयारीः भौगोलिक क्षेत्रका आधारमा हेर्दा, पूर्व-प्रसुती हेरचाह सम्बन्धि सेवाको उपलब्धताको तुलनामा प्रसुती सेवाहरूको उपलब्धतामा बढी असमानता रहेको थियो । तुलनात्मक रुपमा तराईमा थोरै मात्रामा स्वास्थ्य संस्थाहरूले सामान्य प्रसुति सेवा प्रदान गर्ने पाईयो भने हिमाली क्षेत्रमा शल्यक्रिया द्वारा प्रसुतिसेवाको उपलब्धता कम रहेको थियो । निजी स्तरवाट संचालित स्वास्थ्य संस्था भन्दा धेरैजसो सरकारी स्वास्थ्य संस्थाहरु प्रसुति सेवाको लागि तयारी अवस्थामा रहेको देखिएको थियो । सामान्य प्रसुति सेवाको उपलब्धतामा प्रदेश ६, कर्णाली प्रदेश र प्रदेश २ मा धेरै ठूलो फरक रहेको देखियो । प्रदेश ५ मा पूर्व-प्रसुती र प्रसुति दुबै सेवाको लागि धेरैजसो स्वास्थ्य संस्थाहरु तयारी अवस्थामा रहेका थिए भने प्रदेश २ मा सबैभन्दा कम स्वास्थ्य संस्थाहरु तयारी अवस्थामा रहेका थिए ।

स्वास्थ्य संस्थाहरुमा हाल प्रदान गरिने स्वास्थ्य सेवालाई थप सुधार र सुधृड गर्नु आवश्यक रहेको छ । यसका साथै, स्वास्थ्य सेवाको कम उपयोग हुनुको कारणहरुको पहिचन गरी हाल उपलब्ध तथा बिस्तार गर्नु पर्ने सेवाको गुणस्तरमा बिशेष ध्यान दिनु आवश्यक छ। सेवा बिस्तार गर्दा स्वास्थ्य सेवाहरुको उपयोगमा कमी भएका प्रदेश तथा क्षेत्रहरुमा लक्षित गर्नुपर्दछ ।

मातृस्वास्थ्य सेवाहरुको उपयोगितामा असमानताको तह तथा प्रवृति (बार्षिक): मातृस्वास्थ्य सेवाहरुको उपयोगितामा असमानताको प्रवृतिमा भौगोलिक क्षेत्र तथा जिल्लागत रूपमा एकरूपता पाईदैन। प्रसुति सेवाको उपयोगितामा भने प्रदेश स्तरमा असमानता बढिरहेको छ । अन्य प्रदेशहरुको तुलनामा प्रदेश २ को प्रसुति सेवाको अवस्था निरन्तर रूपमा कमजोर रहेको छ ।

प्रोटोकल अनुसारको पहिलो पटकको पूर्वप्रसुति सेवा र चौथो पटकको पूर्वप्रसुति सेवा लिने महिला तथा प्रसुति पस्चात् २४ घण्टाभित्र गरिने सुत्केरी जाँच र तेस्रो पटक गरिने सुत्केरी जाँचसेवा लिने महिलाको संख्यामा धेरै कमि देखियो।

सबै गर्भवती महिलाहरूले गर्भवती, प्रसुती तथा सुत्केरी सेवा उपयोग गर्नकालागि गुणस्तरीय स्वास्थ्य सेवाको सुनिश्चितता गरिनुपर्दछ । सेवाको न्यून उपयोगका कारणहरुका रुपमा रहेका सामाजिक, आर्थिक तथा सांस्कृतिक व्यवधानहरूको पहिचान र सम्बोधन गरिनु पर्दछ । साथै, बजेट, मानव श्रोत तथा कर्मचारीको क्षमता अभिवृद्धिजस्ता पक्षलाई पनि ध्यान दिईनुपर्दछ।

मातृस्वास्थ्य सेवाहरुको उपयोगितामा असमानताको तह तथा प्रवृति (दीर्घकालीन): आर्थिक अवस्थाका आधारमा, सन् १९९६ देखि २०१६ सम्म, मातृ स्वास्थ्य सेवाहरूको उपयोग असमानुपातिक रूपले धनी परिवारमा मात्र केन्द्रित भएको भएता पनि समग्रमा असमानताको प्रवृति भने घट्दो अवस्थामा रहेको छ। समयको अन्तरालसँगै धनी तथा गरिव सवैमा मातृ स्वास्थ्य सेवाहरूको उपयोग बढ्दै गईरहेको भएता पनि धनी र गरिब बीचमा धेरै ठूलो असमानता रहेको छ। धनी घरपरिवारमा मातृ स्वास्थ्य सेवाहरूको उपयोग बढीनै रहेको छ । जातजातिहरूमा परस्पर रूपमा हेर्दा, सामान्यतया नेवारले उच्च र दलित, मुस्लिम तथा तराईका अन्य जातिगत समूहहरूले न्यून रुपमा मातृ स्वास्थ्य सेवाहरूको उपयोग गरेको देखिन्छ । ब्राम्हण र क्षत्रीमा सेवा उपयोगको औसत बृद्धी उच्च देखिन्छ।

मातृ स्वास्थ्य सेवाको उपयोग गर्न गरिबहरूलाई बिषेश सुबिधा प्रदान गरी प्रोत्साहित गरिनुपर्दछ। स्वास्थ्य विमाको माध्यमबाट अपर्झट आईपर्ने खर्च कम गर्ने, गरिवलाई अझ गरिव हुनवाट रोक्न हाल भईरहेका सामाजिक सूरक्षाका कार्यक्रमहरू (प्रचलित स-शर्त कार्यक्रम) सुद्ढीकरण गर्ने तथा नयाँ कार्यक्रम द्वारा सेवाको पँुहुचमा बाधकका रुपमा रहेको आर्थिक अवरोधलाई घटाउनु पर्दछ। यसका साथै, मातृ स्वास्थ्य सेवाको उपयोगिता सूचकाङ्ककको असमानतामा सुधार ल्याउन, सापेक्ष रूपमा गरिबीको रेखामुनि रहेका तथा सेवाको न्यून उपयोग गर्ने अति संवेदनशील जातिगत समूहलाई लक्षित गरी कार्यक्रम सञ्चालन गर्नु पर्दछ।

मातृ स्वास्थ्य सेवाको समतामा रहेको अन्तरको तह तथा प्रवृतिले सेवा प्रवाहको क्षेत्र बिस्तारका साथ साथै तल्लो तहमा असामानता प्रबल रहेको र जसले अति कमजोर तथा सङ्कटाविमुख समूहलाई झन् किनारातर्फ लगेको देखाएको छ । यी समूहलाई स्वास्थ्य सेवामा पहुँचका लागि रहेका अवरोधहरूको पहिचान गरी तथा उक्त समुह लक्षित उपयुक्त सेवा प्रदान गर्नु पर्दछ । साथ साथै, असमानताको खाडल पुर्नका लागि अनुकूल नीति समेत बनाउनु पर्दछ।