TECHNICAL BRIEF

Distance to Health Facilities as A Factor in The Uptake of Institutional Delivery Services in Nepal

Introduction

While steady gains have been made in the expansion of and access to maternal health services in Nepal, disparities still persist across different population groups. These inequities are a result of a combination of financial, socio- cultural, and geographical barriers.[1] Geography plays a key role as the country can be divided into three landform regions: the Terai (lowland plains), the Hills and the Mountains. The rugged terrain of the Hills and Mountains, and poor road networks across several regions of the country, pose great barriers to travel and women's use of obstetric care facilities and institutional delivery services[2]. Using the Nepal Demographic Health Survey 2016 (NDHS 2016) and Health Management Information System (HMIS) data, this study assesses how distance to birthing facilities can affect the uptake of delivery services. It also provides recommendations on ways to improve equitable utilisation of institutional delivery services.

Methodology

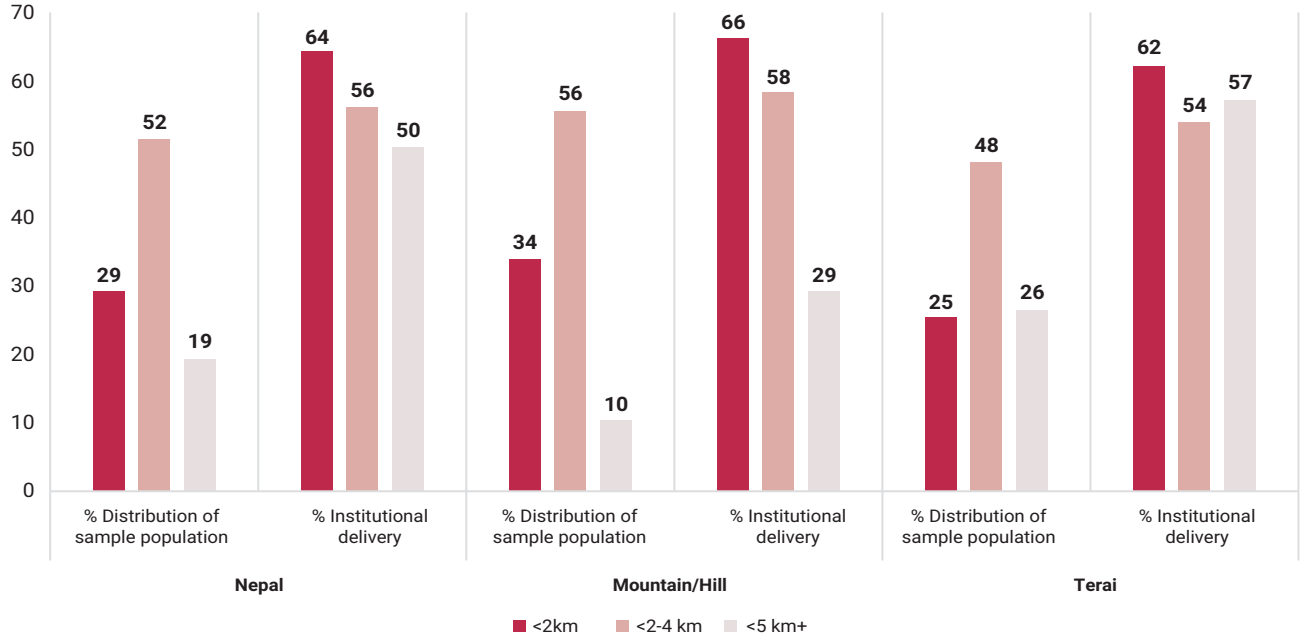
Combining NDHS 2016 data on utilization of institutional delivery services with the geo-location codes of health facilities recorded in the Ministry of Health and Population's HMIS database, a new dataset was prepared. We determined the distance from the central point of the NDHS 2016 data clusters to the nearest birthing facilities based on this combined data and undertook multivariable logistic regression to examine the effect of distance to the closest birthing facility on the uptake of institutional delivery services. Separate independent regression models for each category – wealth status, education, ecological zone and province – were carried out to examine the impact of distance for each of these contexts. Potential socio-economic factors were also controlled to assess the influence of distance on the outcome variable. Any anomalies in the NDHS 2016 sampling design were accounted for through sampling weights.

Results

More than a third (36%) of the closest birthing facilities were located within 2 kms of the centre of their respective NDHS 2016 clusters, 48% were located within 2-4 kms and 16% were located 5 kms away or further. The analysis also found that less than six out of every 10 births (57%) took place at a health facility and some key findings with regard to distance and childbirths are:

Institutional deliveries decrease as the distance to the facility increases: More than two-thirds (64.3%) of deliveries in clusters that were within 2 kms of the closest birthing facility took place at the health facility, as compared to 50.3% of births in clusters that were 5 kms or farther from their closest birthing facility. The probability of institutional delivery was 26% less for women living 2-4 kms from the closest birthing facility and 43% less for women who lived 5 kms or farther compared to women who lived within 2 kms.

Figure 1 Geographical Distribution of sample population and prevalence of institutional delivery



Poorer women experience greater distance-related barriers to institutional delivery: Women from lower-income background experienced comparatively more distance-related barriers to institutional delivery than those who were economically better off. (See Figure 2)

The effect of distance on institutional delivery varies by province: Distance stood out as a barrier to institutional delivery in Province 1, Province 3, Gandaki Province, Karnali Province and Sudurpaschim Province (See Fig 2). However, despite the easier physical access to health facilities in Province 2 as it is largely Terai (flat-land plains), it still had a very low rate of institutional delivery. This situation illustrates how other factors, such as socio-cultural practices, facility readiness and quality of care, need to be considered to better understand the barriers to institutional delivery.

Distance to the nearest birthing facility has a greater effect on institutional deliveries in mountain/hill regions: Institutional deliveries were substantially higher among women living less than 2 km from a birthing facility in mountain/hill areas compared to women living 5 km or more from their facility, clearly showing that physical access in these areas is a big challenge. In the Terai, on the other hand, there was only a small difference (9%) in the institutional delivery rate between women living less than 2 km from a birthing facility and those living 5 km or more. (See Fig 1 and 2)

Figure 2 Association between distance and institutional delivery

Women with no education access facilities lesser but distance has no bearing on it: Institutional delivery rate was 59% lower among women with no education (36%) as compared to women with higher education (89%). The probability of institutional delivery decreased as distance to birthing facilities increased among the educated group, whereas distance to birthing facilities had no significant effect on the institutional delivery rate among uneducated women. (See Table 1)

Proximity to birthing facilities increases the likelihood of institutional deliveries for all caste/ethnic/religious groups: Women going for institutional deliveries was much more likely if they lived closer to a birthing facility. This trend was similar for all caste/ethnic/religious groups although the magnitude of probability varied by group. The likelihood of institutional delivery among women from Janjati, Dalit and Other Terai /Muslim groups dropped significantly if they lived farther than 2 kms away from a birthing facility, and this went down further for those living farther than 5 kms or more, especially amongst Janjati women. Amongst Brahmin/Chhetri and Newar women the distance to a birthing facility made no difference on their institutional deliveries if they lived within 5 kms. However, living at 5 km or beyond reduced the likelihood of an institutional delivery significantly.

Table 1

Distribution of sample, prevalence of institutional delivery by distance, and adjusted odds ratio with distance on the utilization of institutional delivery service by education and caste/ethnicity

Categories	Percentage of Women			Percentage of Institutional Delivery			Adjusted Odds Ratio (Ref. <2Km)	
	<2 Km	2-4 Km	5 Km+	<2 Km	2-4 Km	5 Km+	2-4 Km	5 Km+
Women's Education								
No education	25.1	54.1	20.8	38.8	36.0	34.4	0.74	0.71
Primary	30.6	48.6	20.9	55.4	49.7	39.2		
Secondary	30.1	51.3	18.7	79.5	69.2	64.8	0.59	0.50
Higher	35.9	49.7	14.4	90.1	88.6	87.7		
Caste/Ethnicity								
Brahmin/Chhetri	35.5	50.1	14.5	69.0	70.1	58.6	0.97	0.30
Newar	38.0	55.5	6.5	89.0	64.1	80.0		
Janjati	27.3	50.2	22.6	68.6	56.9	47.1	0.63	0.35
Other Terai	23.6	47.0	29.4	55.9	43.5	49.2	0.72	0.65
Muslim	25.2	58.2	16.6	48.1	51.5	57.4		
Dalit	28.2	59.3	12.6	52.1	43.8	37.7	0.75	0.48

Recommendations

Governments at all spheres – federal, provincial and local need to take proactive action to ensure availability of quality delivery services within 4 km from communities. The Safe Motherhood and Newborn Health (SMNH) Roadmap 2030 provides guidance on how birthing services can be strategically placed and improved.

Recommendations for local governments

- Investigate the local and contextual reasons behind the unequal utilization of existing birthing services by certain population groups. This will require an examination of the evidence from the local areas which should then inform the decisions and intervention designs that can make access to childbirth services more equitable.
- Local governments which have a large levels of income poverty should introduce specific interventions and promote the uptake of existing ones such as the Aama Suraksha Programme. These should specifically target women from low-income families.
- Local governments in hill/mountain areas should strategically expand existing health facilities to include birthing services, and strengthen quality of care at these facilities as per the SMNH Roadmap 2030.
- Local governments in the Terai should strengthen demand for institutional delivery by addressing wider issues such as socio-cultural norms and practices that deter women from delivering at health facilities and strengthen the referral mechanism.
- All local governments should focus on women from most disadvantaged caste/ ethnic/ religious groups, poorer women and those who are less-educated through various interventions including behaviour change communication.

Recommendations for provincial and federal governments

- Provide strategic guidance and support to local governments, and collaborate to achieve equitable distribution of health facilities that are accessible to all population groups.
- Support local governments in Province 2 and Karnali province to enhance their coverage of institutional deliveries through well designed supply-side and demand-side interventions.
- Support local governments to improve facility readiness for providing Emergency Obstetric and Newborn Care services and better quality care which can enable greater uptake to services.
- Undertake or commission further primary research and analysis to understand the specific reasons for low utilization of institutional delivery among marginalised populations.

References

[1] National Planning Commission (2017) Nepal Sustainable Development Goals; Status and Roadmap: 2016-2030. Kathmandu: Government of Nepal, National Planning0 Commission.

[2] Tegegne TK, Chojenta C, Loxton D, Smith R, Kibret KT (2018) The impact of geographic access on institutional delivery care use in low and middle-income countries: Systematic review and meta-analysis. PLoS One 13: e0203130

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