Open Access

A Decade of Inequality between the Rich and the Poor in Utilizing Antenatal Care Services in Nepal (2006-2016)

Bidhya Shrestha[1*]

[1]PhD Scholar, Central Department of Population Studies, Tribhuvan University
*Corresponding Author: bidhyasrestha@gmail.com

Abstract: *The utilization of antenatal care service (ANC) in Nepal is in an increasing trend; however, the utilization pattern differs from socioeconomic factors. Issues are the same but the utilizing pattern of ANC is not the same among women of the same age groups. The Sustainable Development Goals (SDGs) has also focused on inclusive and equitable health services, and promised to no one left behind. In this regard, this study aims to explore a decade of inequality between the rich and the poor in utilizing the ANC in Nepal using the three consecutive Nepal Demographic Health Surveys i.e., 2006, 2011 and 2016. Results suggest that women's household economies divide the pattern of ANC utilization. Despite the tremendous progress in health technologies, the utilization of ANC coverage gap between the rich and poor are still prevalent. The evidence from a decade inequality between the rich and the poor suggests that ANC services should be improved in Nepal, especially among the poor women who are concerned about their own health as well as the newborn health.*
Keywords: Antenatal care, inequality, utilization, rich-poor and Nepal

1. Introduction

Pregnant women have different practices depending on where they were born and lived. This divides the pattern of care during pregnancy and the utilization of the available health services. The inequality between the rich and the poor is one of the key factors that divides in ANC utilization others are location, education (Novignon, Ofori, Tabiri, & Pulok, 2019). This inequality in service utilization is a common phenomenon in developing countries like Nepal where women have to overcome many barriers to utilize the available services. Arsenault, Jordan, Lee, Dinsa, Manzi. Marchant and Kruk (2018) stated that poorer people across low-income and middle-income countries (LMICs) are less likely to use health services than are the wealthier ones. However, in some developing countries wealth-related inequality in maternal care has increased (Novignon, Ofori, Tabiri, & Pulok, 2019).

According to Akokuwebe and Okafor (2016), pregnancy-related death is the main most critical health problem that medical practitioners have faced with. Especially women who are of the low socioeconomic background are constantly on the verge of being a victim of maternal mortality. Low use of maternal health services especially antenatal care services can contribute to high maternal mortality. Adequate ANC service utilization during pregnancy is assumed to minimize maternal mortality rate by educating and counselling them about prompt emergencies recognition and emergency care (Mcdonagh, 1996). Despite the importance of ANC utilization, still many women are dying from simple preventable and amenable conditions. Equity is at the core component of SDGs. SDG 3 is about healthy lives for all at all ages while SDG 10 is about the reduction of inequality within and between countries. Sustainable Development Goals prioritizes health equity with a specific call to reduce inequality – referring to any quantifiable differences, variations, and disparities in different aspects of health across individuals or social. But still, there is an equity gap in terms of the economic status of the household where women live.

However, there is growing concern that risk factors —such as income, education, ethnicity, and household economic condition play a vital role in the utilization of ANC services. Despite ongoing efforts to address inequities, evidence suggests that poor women

receive lower ANC services and experience worse health outcomes than rich women (Arsenault, et al., 2018; Novignon, Ofori, Tabiri, & Pulok, 2019). A study in Gujrat by Saxena, Vangani, Mavalankar and Thomsen (2013) stated that there is a significant relationship between being poor and access to less utilization of ANC services independent of caste category of residence and poverty is the most important determinant of non-use of maternal health services in Gujarat. In the case of Nepal, maternal health services have expanded all over the country by setting free government services at different levels of hospitals, so that women can reach there conveniently, and free of charge or at low cost. Consequently, the country has achieved a remarkable reduction in maternal mortality ratio, reduction of fertility and expansion of the coverage of antenatal care (ANC). A decade of coverage of ANC utilization in Nepal indicates good progress in ANC services (Figure 1). Despite the availability of free ANC services in Nepal, utilization of adequate ANC services among remains low; thus, the purpose of this study is to determine whether household economic status influences ANC utilization among currently married women in Nepal, i.e. four or more visits, visits during the first trimester, and receipt of care component during their visits or not. For this purpose, this study has tried to track a decade of inequality on antenatal care services based on the wealth index among currently married women who had a live childbirth three years preceding the survey. It is completely based on secondary data from four Nepal Demographic and Health Surveys (NDHSs). This analysis will be useful for policy-making and will also provide evidence regarding 'leaving no one behind.

Figure 1 ANC coverage in Nepal, 2006-2016
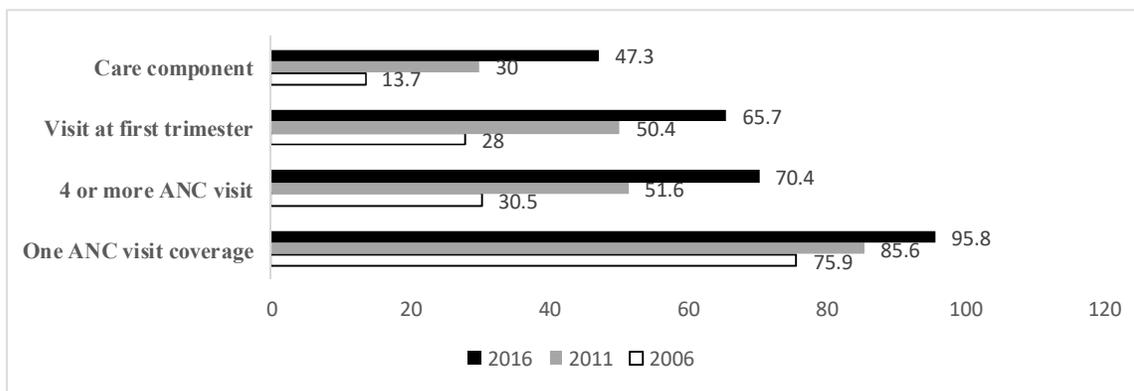
Source: Author's estimates; NDHS 2006, 2011 and 2016 dataset

2. Methods and Materials

This study is completely based on secondary data from three consecutive Nepal Demographic and Health Surveys i.e., 2006, 2011 and 2016. This study has tried to analyse a decade of the inequality between the rich and the poor in ANC services utilization based on the wealth index scores for each woman living in households as calculated by the NDHSs. In NDHS wealth index was constructed performing principal component analysis using the information on the ownership of consumer goods, dwelling characteristics, water and sanitation, and other characteristics that are related to the household's wealth, to generate weights (factor scores) for each of the items used. These scores are presented in quintiles, with quintile representing the poorest quintiles representing the poorest 20 percent of households in the survey sample and quintile 5 (Q5) representing the richest household.

For determining inequity, as the earlier study, accessing data on household assets to create a wealth index is easier and more accurate than accessing data on household income and it also provides a relevant measurement for people in low- and middle-income countries (Houweling, Ronsmans, Campbell, & Kunst, 2007). There is also some criticism that the DHS wealth index may have an urban bias since publicly provided services (electricity, piped

water, sewers) are not available in many rural areas; some assets depend on having electricity, piped water, etc.; and the original Index did not include principal rural stores of wealth, such as land holdings and animal herds (Rutstein, 2008). The wealth index is particularly valuable in countries that lack reliable data on income and expenditures, which are the traditional indicators used to measure household economic status. The DHS wealth index is an attempt to make better use of existing data in the Demographic and Health Surveys systematically to determine a household's relative economic status. There are three principal indicators of economic status: household income, household consumption expenditures, and household wealth (Rustein & Kirersten, 2004).

According to Rustein and Kiresten (2004), wealth has several advantages as a measure of economic status. It represents a more permanent status than either income or consumption does. In the form that it is used, wealth is more easily measured (with only a single respondent needed in most cases) and requires far fewer questions than either consumption expenditures or income. Realizing the advantages of the wealth index as stated by Rustein and Kiresten, this study has also measured inequality based on the wealth index. To measure the inequality, this study has calculated two absolute indicators of inequality (the difference between absolute indicators of inequality (the difference between richest and poorest) and two relative inequality indicators (the ratio of richest to poorest). Further, this study has calculated the Average Increase Per Year (AIPY) and the total increase in Percentage Points (PP) to show the progress in ANC service utilization during a decade.

The current study has explored a decade inequity in ANC service utilization among women in Nepal who gave their last birth in the 3 years prior to each survey year. In this study, inequality is defined as the differences in receiving ANC services between the rich and the poor. This is the outcome measures of the study which is measured by four components of ANC that is any antenatal care (any ANC), four or more ANC (ANC4+), visit at first trimester and care component.

2.1 A decade of wealth inequality in ANC utilization

A decade wealth inequality trends in at least one ANC visits among currently married women who had at least one child three years preceding the survey has shown in Table 1. It also portrays the absolute and relative differences between the rich and the poor in 2006-2016. Further, this table shows the average increase per year and total increase. Data shows that making at least one ANC visit during pregnancy has increased from 2006 to 2016. Evidence shows the average increase per year (AIPY) is higher among poor women than rich women (3.56PP Vs 0.39PP respectively). However, a decade's absolute difference between the rich and the poor is narrowing, for example, in 2006 it was 39.3PP and it is just about 7.6PP in 2016. This shows the increasingly equitable over the past 10 years. Although this doesn't imply that equity in ANC services has improved correspondingly. For further analysis, this study has analyzed in terms of four or more ANC services among currently married women in Nepal in following tables.

Table 1 *A decade wealth inequalities in at least one ANC services among currently married women in Nepal, 2006-2016*

Wealth index	At least one ANC visit			Absolut increase (percent points)	
				AIPY	Total increase
	2006 (n=2868)	2011 (n=2825)	2016 (n=2746)	2006-2016	2006-2016
Poorest	54.4	68.8	90.0	3.56	35.6
Poorer	75.5	83.3	95.7	2.02	20.2
Middle	78.0	91.3	97.7	1.97	19.0

Richer	87.9	93.7	98.4	1.05	10.5
Richest	93.7	99.1	97.6	0.39	3.9
One ANC visit coverage	**75.9**	**85.6**	**95.8**	**1.99**	**19.9**
Diffrence (rich-poor)	39.3	30.3	7.6		
Ratio (rich/poor)	1.72	1.44	1.08		

Source: Author's estimates; NDHS 2006, 2011 and 2016 dataset

Four or more ANC visits during pregnancy are compulsory to ensure the health of mother and baby. It would be reasonable to assume that the highest levels for at least one antenatal visit would also be found for at least four visits. In practice, this is not necessarily the case. Table 2 also provides the evidence for it. About 96 percent of women received one ANC visit in 2016 whereas only about 70 percent of women received four or more ANC visits during pregnancy. Likewise, table also presents a decade of progress of four or more ANC visits which is in an increasing trend. However, the average increase per year is found higher among the poorest women compared to the richest women (4.92 PP Vs 2.40PP respectively). The narrowing of the differences in four or more ANC visits during pregnancy shows an increasing inequality (48.4PP Vs 23.2PP) (Table 2).

Table 2 *A decade wealth inqualities in four or more ANC services among currently married women in Nepal, 2006-2016*

Wealth index	Four or more ANC visit			Absolut increase (percent points)	
				AIPY	Total increase
	2006 (n=2868)	2011 (n=2825)	2016 (n=2746)	2006-2016	2006-2016
Poorest	12.5	29.9	61.7	4.92	49.2
Poorer	22.5	42.2	65.9	4.34	43.4
Middle	29.4	49.2	67.6	3.82	38.2
Richer	39.3	66.0	76.2	3.69	36.9
Richest	60.9	87.5	84.9	2.40	24.0
4 or more ANC visit	**30.5**	**51.6**	**70.4**	**3.99**	**39.9**
Diffrence (rich-poor)	48.4	57.6	23.2		
Ratio (rich/poor)	4.87	1.93	1.37		

Source: Author's estimates; NDHS 2006, 2011 and 2016 dataset

A visit during pregnancy is insufficient; a visit during the first trimester is critical for detecting complications on time. Though pregnancy is a biological process, if we can provide the necessary care on time, most mothers will avoid unnatural death. About 66 percent of women made their first ANC visit in the first trimester. However, if we analyzed it according to women's household economy, the evidence shows the gap within the women. Table 3 displays that women living in households that fall within the poorest population index use antenatal services in first trimester is much less frequently than the richest women do. The average increase per year is found higher among the poorest and the middle wealth index women. However, the differences between the richest and the poorest appear to have become increasingly equitable over the past decade, for example, in 2006 the rich-poor differences is about 36PP a gap narrowed by 11PP in 2016 (Table 3).

Table 3 *A decade wealth inequalities in ANC visit at first trimester among currently married women in Nepal, 2006-2016*

Wealth index	Visit at the first trimester			Absolut increase (percent points)	
				AIPY	Total increase
	2006 (n=2868)	2011 (n=2825)	2016 (n=2746)	2006-2016	2006-2016
Poorest	16.4	33.7	58.6	4.22	42.2
Poorer	23.6	41.6	59.0	3.54	35.4
Middle	23.3	46.8	63.6	4.03	40.3
Richer	33.2	62.0	69.4	3.62	36.2
Richest	52.0	82.7	83.2	3.12	31.2
Visit at first trimester	**28.0**	**50.4**	**65.7**	**3.77**	**37.7**
Diffrence (rich-poor)	35.6	49.0	24.6		
Ratio (rich/poor)	3.17	1.45	1.42		

Source: Author's estimates; NDHS 2006, 2011 and 2016 dataset

During ANC visits, a pregnant woman should have at least physical and medical screening. These care components are the most important part of the ANC visits. Only the number of visits does not matter, it matters only with the care components. The care components include a blood pressure check, blood and urine test, counselling on pregnancy complications and a place to go if any complication occurs. Table 4 explains about a decade of wealth inequality in receiving the ANC component during visits among currently married women. Less than half of the women have received care components during their ANC visits. The percentage of receiving this care is found low in all survey years compared to other indicators in this study. However, the average increase per year is 3.36PP which is about 4PP. Still, the poorest women found to continue to lag their counterparts. The differences between the rich and the poor 40.3PP in 2006 but in 2016 it has increased by18.6PP in 2011 and again decreased by 6.5PP in 2016. However, the decreasing disparity of the rich/poor ratio suggests increasing equitable over the past 10 years (Table 4).

Table 4 *A decade wealth inequalities in receiving ANC care component during visits among currently married women in Nepal, 2006-2016*

Wealth index	Care component during pregnancy			Absolut increase (percent points)	
				AIPY	Total increase
	2006 (n=2868)	2011 (n=2825)	2016 (n=2746)	2006-2016	2006-2016
Poorest	3.2	8.5	27.1	2.39	23.9
Poorer	4.1	19.5	41.5	3.74	37.4
Middle	8.8	25.6	45.4	3.66	36.6
Richer	19.1	46.8	57.1	3.80	38.0
Richest	43.5	67.4	73.6	3.01	30.1
Care component	**13.7**	**30.0**	**47.3**	**3.36**	**33.6**
Diffrence (rich-poor)	40.3	58.9	46.5		
Ratio (rich/poor)	13.59	7.93	2.71		

Source: Author's estimates; NDHS 2006, 2011 and 2016 dataset

3. Discussions and conclusions

Antenatal care is the starting point for those mothers who want to have a healthy baby with skilled attendants. Similarly, early enrollment in ANC allows health workers to provide timely information and services based on gestational age and health status. On the contrary, mothers who arrive late for ANC miss out on health information and interventions such as early HIV detection, malaria and anaemia prophylaxis, and prevention or management of complications (Paudel, Jha, & Mehata, 2017). However, the pattern of utilization varied depending on where these mothers lived. Women's household economies are among those that divide the pattern of ANC utilization. The evidence from this study suggests that ANC services should be improved in Nepal, where the poorest women struggle to assure the health of the mother and the baby. This study's findings also support the results from a study by Saxena, Vangani, Mavalankar and Thomsen (2013). In their study, they had concluded the relationship between being poor and access to less utilization of ANC services in Gujrat. These findings have policies and practice implications. The lowest use of all ANC components among the poorest mothers faces the risk of complications during their pregnancies or childbirths. It is not surprising; given these circumstances that attention has to be paid to these patterns and trends in antenatal care use. However, a decade of use of ANC services by wealth index represents an opportunity to deliver interventions that will improve maternal and newborn health. A greater effort is needed to improve the content and coverage of services to ensure that particular groups of women, specifically those living in rural areas, the poor and the less educated, so that they will obtain better access to antenatal services.

4. References

Arsenault, C., Jordan, K., Lee, D., Dinsa, G., Manzi, F., Marchant, T., & Kruk, M. E. (2018). Equity in antenatal care quality: An analysis of 91 national household surveys. *The Lancet. Global health, 6 (11)*, e1186-e1195. doi:10.1016/S2214-109X(18)30389-9

Bhusal, U. P. (2021). Predictors of wealth-related inequality in institutional delivery: A decomposition analysis using Nepal multiple indicator cluster survey (MICS) 2019. *BMC Public Health 21(2246)*, 1-15. doi:10.21203/rs.3.rs-539128/v1

Houweling, T. A., Ronsmans, C., Campbell, O. M., & Kunst, A. E. (2007). Huge poor-rich inequalities in maternity care: An international comparative study of maternity and child care in developing countries. *Bulletin of the World Health Organization, 85*(10).

Mats, M., Pun, A., Raaijmakers, H., & KC, A. (2017). Persistent inequity in maternal health care utilization in Nepal despite impressive overall gains. *Global Health Action, 10*(1),1-7. doi:10.1080/16549716.2017.1356083

Mcdonagh, M. (1996). Is antenatal care effective in reducing maternal morbidity and mortality-review article. *Health Policy and Planning, 11*(1), 1-15. doi: 10.1093/heapol/11.1.1

Novignon, J., Ofori, B., Tabiri, K. G., & Pulok, M. H. (2019). Socioeconomic inequalities in maternal health care utilization in Ghana. *International Journal for Equity in Health, 18*(1),141. doi:10.1186/s12939-019-1043-x

Paudel, Y. R., Jha, T., & Mehata, S. (2017). Timing of first antenatal care (ANC) and inequalities in Early Initiation of ANC in Nepal. *Frontiers in Public Health, 5*(242), 1-6. doi: 10.3389/fpubh.2017.00242

Rustein, S. O., & Kirersten, J. (2004). *The DHS wealth index. DHS comparative reports no. 6.* Caverton, Maryland: ORC Macro.

Rutstein, S. O. (2008). *The DHS wealth index: Approaches for urban and rural areas.DHS working papers.* Calverton: Macro International Inc.

Saxena, D., Vangani, R., Mavalankar, D. V., & Thomsen, S. (2013). Inequality in maternal health care service utilization in Gujarat: Analyses of district-level health survey data. *Global Health Action 6,* 1-9. doi:10.3402/gha.v6i0.19652