

Trends and Inequities in Use of Abortion Services in Nepal: A Nepal Demographic and Health Survey Data Analysis 1996-2022 A.D.

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ABSTRACT

Background: Despite policy advances and public health initiatives in Nepal to improve access to reproductive healthcare, disparities persist in utilization of abortion services. Grounded in longitudinal data from the Nepal Demographic and Health Survey from 1996 to 2022, this study aims to shed light on evolving patterns in pregnancy outcomes and inequities in use of abortion services across ecological zones and wealth quintiles.

Methods: Utilizing six rounds of Nepal Demographic and Health Survey data, pregnancy outcomes were categorized as abortion, delivery, miscarriage, or stillbirth. Income-related inequality in the utilization of abortion services was assessed through the concentration index, ranging from -1 to 1. Trends over time were evaluated using the annual rate of change.

Results: The ARC indicated a substantial rise in induced abortion rates, surging from 0.4% in 1996 to 8.8% in 2022. In contrast, live births witnessed a decline from 92.8% to 81.2%. Significant variations were observed across ecological zones and wealth quintiles, with the Mountain zone and the Poorest group experiencing the most pronounced increases in induced abortion rates. By 2022, the concentration index reached a near-zero value, signifying a near-elimination of income-related disparities in the use of induced abortion services.

Discussion: The findings suggest that while there has been significant progress in access to and use of abortion services in Nepal, particularly post-2002 policy shifts, challenges remain. Women from lower socio-economic backgrounds continue to face barriers, indicating the need for a multi-pronged approach to address residual challenges.

Conclusions: Nepal has made remarkable strides in enhancing equitable access to and use of induced abortion services, but more needs to be done to guarantee equitable access for all women. Future efforts should focus on policy reforms, infrastructural improvements, and societal change to eliminate existing barriers to reproductive healthcare.

Keywords: Abortion services; concentration Index; socio-economic disparities.

INTRODUCTION

Addressing inequities in healthcare access, particularly in sexual and reproductive health services, is a pressing issue in Nepal, a subject that holds significant policy and healthcare implications.¹ The focus on Nepal is justified by its unique sociocultural and legal context, which presents both advancements and limitations in the accessibility of abortion services.²

Legal constraints, policy limitations, social stigma, and

gender inequality form a complex nexus of challenges that hinder abortion access globally.³ However, these challenges become especially pronounced for women from lower socioeconomic backgrounds.^{4,6} While strides have been made in Nepal to recognize reproductive rights and offer free services, ensuring equitable access to and use of abortion services for women from all socioeconomic backgrounds remains an ongoing challenge.² In light of this persistent issue, the primary objective of this study is to analyze income-related disparities in abortion services from 1996 to 2022.

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METHODS

A secondary data analysis was conducted using all six rounds of the Nepal Demographic and Health Survey (NDHS) from 1996 to 2022. The primary objective of the study was to analyze abortion services within the broader context of pregnancy outcomes, with a focus on income-related inequalities. In addition to income-related disparities, spatial inequality was also considered crucial for a comprehensive analysis, given the diverse ecological zones in Nepal and their distinct socio-economic contexts. Pregnancy outcomes were divided into four categories: abortion, delivery, miscarriage, or stillbirth, based on women's self-reported histories. For the inequality analysis of abortion services and to identify income-based disparities, the Concentration Index was used, taking into account the cluster sampling design.⁷ The Concentration Index values range from -1 to 1: a value of zero indicates no income-related inequality, while values deviating from zero signify the extent of inequality.⁷ Specifically, negative and positive values suggest disproportionate utilization by lower- and higher-income women, respectively. The calculation also incorporated a 95% confidence interval for the Concentration Index, along with a p-value. If $P < 0.05$, this indicates the presence of statistically significant disparities in the utilization of abortion services among different wealth groups.

Ethical approval for the surveys was granted by the Institutional Review Board of the ICF/DHS program as well as the Nepal Health Research Council (NHRC). In line with global standards, informed consent was gathered from every participant in the survey. Given that this study utilized publicly accessible data, additional ethical approvals were not needed. Permissions for data access were duly acquired from the DHS program, in accordance with their terms of use from <https://dhsprogram.com/Data/terms-of-use.cfm>.

RESULTS

The Annual Rate of Change (ARC) was utilized to track variations in pregnancy outcomes from 1996 to 2022. This indicator was chosen for its ability to provide a straightforward comparison of changes over time, and its statistical significance has been validated ($P < 0.05$).

Table 1 presents the trends in pregnancy outcomes as reported in the Nepal Demographic and Health Surveys (NDHS) from 1996 to 2022. The data showcase the shifts in different outcomes, including abortion, delivery, miscarriage, and stillbirth, derived from women's self-reported pregnancy histories. Live births have seen a consistent decline, decreasing from 92.8% in 1996 to 81.2% in 2022, resulting in an Annual Rate of Change (ARC) of -0.52. The rate was 2.1% in both 2001 and 2006 and then declined to 0.8% in 2022, resulting in an ARC of -3.12% per annum. Miscarriages demonstrated a consistent increase, rising from 4.9% in 1996 to 9.2% in 2022, with an ARC of 2.42% per annum. Abortions experienced the most substantial growth, surging from a mere 0.4% in 1996 to 8.8% in 2022, marking a remarkable ARC of 11.88% per annum. Additionally, the dataset revealed a decline in the total number of pregnancies over the past five years, decreasing from 24,224 in 1996 to 6,399 in 2022.

Similarly, Table 2 delves deeper into the trend in the utilization of abortion services, segregated by ecological zones and wealth quintiles, among Women of Reproductive Age (WRA). This table, focusing on the last five years and using direct methods, highlights disparities in use of induced abortion services across different ecological zones and socioeconomic backgrounds. Within the ecological zones, the Mountain zone observed a significant increase in use of induced abortions, with rates jumping from 4 per 1,000 women in 1996 to 60 in 2022, and an ARC of 10.14% per annum.

Table 1. Trends of pregnancy outcomes from 1996 to 2022.

Pregnancy outcomes	NDHS 1996	NDHS 2001	NDHS 2006	NDHS 2011	NDHS 2016	NDHS 2022	ARC (1996-2022)
Live Birth	92.8	92.3	90.3	84.8	80.6	81.2	-0.52
Still Birth	1.9	2.1	2.1	0.9	1.4	0.8	-3.12
Miscarriage	4.9	4.8	5.2	6.8	9.1	9.2	2.42
Abortion	0.4	0.7	2.4	7.5	9	8.8	11.88
Number of pregnancies in last five years	24,224	15,210	12,831	6,356	6,281	6,399	

The Hill zone also saw an escalation, with rates starting at 4 in 1996 and reaching 39 by 2022, translating to an ARC of 9.06% per annum. Meanwhile, the Terai zone began with a rate of 9 in 1996, peaked at 34 in 2016, but dropped slightly to 27 in 2022, having an ARC of 4.27% per annum. Particularly noteworthy is the dramatic increase in induced abortion rates in the Poorest group and the Mountain ecological zone, indicating substantial shifts in service utilization.

Similarly, in the context of wealth quintiles, the Poorest group exhibited a consistent upward trend in abortions, with numbers increasing from 2 in 1996 to 41 in 2022 and an ARC of 12.02% per annum. The Poorer group observed a rise from 2 in 1996 to 20 in 2022, with an ARC of 8.67% per annum. The Middle group, while experiencing some fluctuations, saw an overall increase from 3 in 1996 to 39 in 2022, resulting in an ARC of 9.74% per annum. The Richer group's abortion rate progressed from 7 in 1996 to 35 in 2022, with an ARC of 6.30% per annum. However, the Richest group, despite an initial high rate of 19 in 1996, experienced a peak at 54 in 2016 before declining to 33 in 2022, leading to an ARC of 2.12% per annum. Considering all WRA, the general trend was an increase in abortion rates, moving from 6 in 1996 to 33 in 2022, corresponding to an ARC of 6.31% per annum.

Figure 1, along with the accompanying dataset, offers a comprehensive account of the evolving patterns in both the use of abortion per 1,000 Women of Reproductive Age (WRA) in last five year and income-related inequalities in abortion service utilization from 1996 to 2022.

In 1996, the Concentration Index was 0.475 (95% CI:

0.25, 0.70), corroborated by a statistically significant p-value of less than 0.001. This unambiguously indicates that women from higher socioeconomic brackets were the predominant users of induced abortion services. The abortion use in last five year was notably higher among the richest quintile at 19, compared to a scant 2 among the poorest quintile.

By 2001, the Concentration Index had experienced a marked reduction to 0.072 (95% CI: -0.12, 0.27). This decline, however, was not statistically significant, as evidenced by a p-value of 0.475. Concurrently, the use of induced abortion among the poorest quintile surged to 8, signaling an increase in use of these services.

In 2006, a resurgence in income-related inequalities was evident, with a Concentration Index of 0.273 (95% CI: 0.15, 0.40) and a statistically significant p-value of less than 0.001. This period also saw a substantial rise in use of induced abortion across all income quintiles, with the richest quintile reaching of 37.

The subsequent years showcased a steady diminution in income-related disparities, with the Concentration Index declining to 0.187 (95% CI: 0.12, 0.26) by 2011 and further reducing to 0.108 (95% CI: 0.05, 0.17) by 2016. Both these declines were statistically significant. Additionally, the use of abortion in last five years seemed to equalize across income quintiles, ranging from 32 for the poorest to 54 for the richest by 2016.

Remarkably, by 2022, the landscape had nearly equalized, with a Concentration Index of -0.002 (95% CI: -0.06, 0.06) and a statistically insignificant p-value of

Table 2. Trend in use of abortion services by ecological zones and wealth quintiles in last five years (Direct methods) among per 1000 women of reproductive age from 1996 to 2022.

Pregnancy outcomes	NDHS 1996	NDHS 2001	NDHS 2006	NDHS 2011	NDHS 2016	NDHS 2022	ARC (1996-2022)
Ecological zone							
Mountain	4	3	12	27	42	60	10.14
Hill	4	8	23	36	42	39	9.06
Terai	9	5	13	32	34	27	4.27
Wealth quintile							
	NDHS 1996	NDHS 2001	NDHS 2006	NDHS 2011	NDHS 2016		
Poorest	2	8	13	23	32	41	12.02
Poorer	2	1	10	21	32	20	8.67
Middle	3	7	6	29	33	39	9.74
Richer	7	6	17	36	38	35	6.30
Richest	19	9	37	53	54	33	2.12
All WRA	6	6	17	33	38	33	6.31

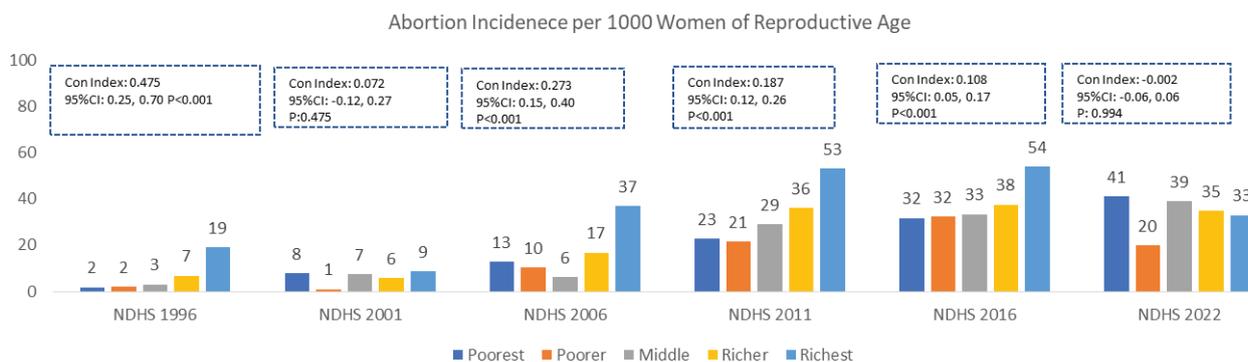


Figure 1. Inequalities in use of abortion services in last five years.

0.994. This near-egalitarian trend was reflected in the use of induced abortion services data, which indicated minimal variations across income quintiles, thereby attesting to the near-normalization of income-related disparities in abortion service utilization.

DISCUSSION

The analysis of NDHS data from 1996 to 2022 presents a comprehensive picture of the evolving dynamics of pregnancy outcomes and access to and use of abortion services in Nepal. Several prominent patterns and disparities emerge, reflecting the nuanced challenges women in different socio-economic brackets face in accessing reproductive healthcare.

Notably, the results showcase the decline in live births over time, juxtaposed against a sharp rise in induced abortion rates. While the decline in live births might signify various factors, including greater awareness about family planning or socio-economic challenges, the surge in abortion rates is indicative of broader societal and policy shifts. It underscores the increasing recognition of women's reproductive rights and their empowerment to make choices about their bodies. The decline in live births could be attributed to enhanced family planning awareness and socio-economic factors, echoing the theories put forth by researchers in reproductive healthcare inequities.^{3,8} The increase in use of induced abortion, on the other hand, substantiates the feminist theories of bodily autonomy and agency, indicating growing societal and legislative support for women's reproductive rights.^{9,10}

Similarly, the data underscore the disparities women face based on their geographic and socio-economic backgrounds. The marked increase in abortion rates in traditionally remote areas such as the Mountain and Hill zones suggests a positive shift in healthcare accessibility and awareness in these regions. However, the nuances

in the data, especially the fluctuations in the Terai region and among different wealth quintiles, hint at the presence of deeper-rooted systemic challenges.

The Concentration Index provides an intricate lens through which to examine income-related disparities in the utilization of abortion services. Remarkably, the index has shifted from high values in 1996, which implied that these services were predominantly accessible to wealthier individuals, to a near-zero value in 2022. This significant change suggests substantial progress toward achieving equitable access to abortion services across income groups.

Multiple interrelated factors contribute to this encouraging trend, and each deserves acknowledgment. First and foremost, the dramatic increase in the number of service providers—from just a single provider two decades ago to around 1,500 providers across the country—has been pivotal. This growth in service availability has naturally played a role in democratizing access.

Also, changes in societal attitudes and women's empowerment must be considered. Women today are more comfortable reporting their abortion experiences in surveys, reflective of increasing autonomy and diminishing societal stigma around reproductive choices.

The education around family planning and the widespread use of contraceptives have likely contributed to a decline in unwanted pregnancies, subsequently affecting the Concentration Index.

Lastly, the policy landscape in Nepal has been conducive to these changes. The landmark decision in 2002 to liberalize abortion laws set the stage for subsequent policy interventions that further facilitated access to and use of abortion services. These policy changes have had a ripple effect, significantly improving accessibility for

lower wealth quintiles, and thus playing an instrumental role in driving the Concentration Index toward zero.

In sum, the near-zero Concentration Index in 2022 should be viewed as the result of a complex interplay between increased service provision, evolving social norms, education on family planning, and enabling policy environments. These combined factors likely contributed to the positive shifts observed, particularly the increase in abortion rates and the equitable distribution of services across income groups.

However, even with these positive strides, multiple pieces of evidence still suggest that challenges persist. Women, especially those from lower socio-economic backgrounds, still report being denied care for various reasons.⁴ Recent research suggests that denials of legal abortion services in Nepal are widespread and disproportionately affect women with lower socioeconomic status, despite most being legally eligible for the procedure.⁴ Denying women access to abortion services has profound implications, not just for the women themselves but also for the broader societal fabric. Providers commonly deny abortion services for pregnancies beyond 12 weeks, sex-selective abortions, and medical contraindications; additional reasons include insufficient drug supplies or trained personnel and providers' personal judgments that the woman's reasons for abortion are inadequate.⁵ This exacerbates health inequalities, pushes women toward unsafe abortion practices, and can have lasting impacts on women's reproductive health.

While the data from NDHS present a largely positive trajectory, it's crucial to delve deeper into the underlying challenges. Future policies and programs should focus on addressing these challenges head-on. Comprehensive training for healthcare providers, improving infrastructure, and more targeted awareness campaigns, especially in remote areas and among the more vulnerable sections of the population, are essential. Addressing provider biases, ensuring resource allocation, and establishing efficient referral processes can further streamline the abortion care pathway.

While this study provides valuable insights into the trends and disparities in abortion services in Nepal, it has several limitations that warrant consideration. First and foremost, the study relies exclusively on NDHS data, which could introduce inherent biases or limitations tied to the survey's methodology and scope.¹¹ This singular data source precludes the incorporation of other potentially relevant datasets that might provide

a more nuanced understanding. Second, the use of the Concentration Index (CI) as the primary measure for income-related disparities has its own limitations.^{7,12} The CI is sensitive to changes in the income distribution of the population and may not capture other forms of inequality effectively. Additionally, the CI does not account for other factors such as cultural, educational, or geographical variables that could influence access to and use of abortion services. Furthermore, the abortion data captured by the NDHS is self-reported, which, according to indirect methods, tends to underestimate the actual rates and lacks the multidimensional insights that such methods can offer.¹³ Therefore, while the near-zero CI value in 2022 may suggest a notable reduction in income-related disparities, it may not fully represent the complex landscape of abortion service accessibility in Nepal.

CONCLUSIONS

The comprehensive analysis of NDHS data spanning from 1996 to 2022 offers a nuanced understanding of the evolving landscape of reproductive healthcare in Nepal. The study reveals significant progress in equitable access to and use of abortion services, particularly following policy shifts after 2002. The Concentration Index, which serves as a critical metric for income-related disparities, has notably moved toward a near-zero value in 2022, indicating a more equitable distribution of services across socio-economic groups.

These should aim at eliminating the remaining barriers and ensuring that every woman, irrespective of her socio-economic or geographical background, can fully exercise her reproductive rights. As Nepal continues its march toward improved reproductive healthcare, it is crucial that future studies and policy discussions focus on these lingering challenges to create a truly equitable healthcare environment for all.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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