



**Factors Associated with Stagnation  
in Modern Contraceptive Use,  
Declining Fertility, Increased Use of Traditional  
Methods, and Induced Abortion,  
2016–2022 Nepal DHS Surveys**

**DHS Further Analysis Reports No. 155**

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**September 2024**



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This is one of 11 reports from a further analysis activity undertaken as part of the follow-up to the 2022 Nepal Demographic and Health Survey (NDHS). ICF provided technical assistance for the activity while USAID Learning for Development coordinated the activity. USAID Learning for Development also provided quality assurance and led the analysis of eight of the 11 reports, coordination with government stakeholders, and dissemination. ICF led the analysis of three of the reports.

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The DHS Program assists countries worldwide in the collection and use of data to monitor and evaluate population, health, and nutrition programs. Additional information about The DHS Program can be obtained from ICF, 530 Gaither Road, Suite 500, Rockville, MD 20850, USA; telephone: +1 301-407-6500; fax: +1 301-407-6501; email: [info@DHSprogram.com](mailto:info@DHSprogram.com); internet: [www.DHSprogram.com](http://www.DHSprogram.com).

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# CONTENTS

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<b>TABLES</b> .....	<b>v</b>
<b>FIGURES</b> .....	<b>vii</b>
<b>PREFACE</b> .....	<b>ix</b>
<b>FOREWORD</b> .....	<b>xi</b>
<b>ACKNOWLEDGMENTS</b> .....	<b>xiii</b>
<b>ABSTRACT</b> .....	<b>xv</b>
<b>ACRONYMS AND ABBREVIATIONS</b> .....	<b>xvii</b>
<b>1 INTRODUCTION</b> .....	<b>1</b>
1.1 Study Rationale .....	1
1.2 Objectives .....	3
<b>2 METHODS</b> .....	<b>5</b>
2.1 Data Sources .....	5
2.2 Study Variables .....	5
2.3 Data Analyses .....	6
<b>3 RESULTS</b> .....	<b>9</b>
3.1 Background Variables .....	9
3.2 Proximate Determinants of Fertility .....	11
3.3 Use of Family Planning Methods .....	12
3.4 Use of Modern Family Planning Methods .....	13
3.5 Use of Traditional Family Planning Methods .....	14
3.6 Unmet Need for Family Planning .....	15
3.7 Demand for Family Planning .....	16
3.8 Demand Satisfied by Modern Family Planning Methods .....	17
3.9 Method Mix .....	19
3.10 Determinants of Family Planning Use .....	19
3.11 Determinants of Unmet Need for Family Planning .....	21
3.12 Induced Abortion .....	22
3.12.1 Differentials in induced abortion by background variables .....	22
3.12.2 Determinants of induced abortion .....	23
<b>4 DISCUSSION</b> .....	<b>25</b>
4.1 Contraception and Spousal Separation Contribute to Fertility Decline .....	25
4.2 Declining Use of Family Planning Methods in Certain Provinces .....	25
4.3 High Unmet Need for Family Planning .....	26
4.4 Induced Abortion Among Older Women, Women Living with Husbands/Partners, and Women in Karnali .....	27
4.5 Role of Wealth in Demand for Family Planning and Demand Satisfied .....	27
4.6 Study Limitations .....	28
<b>5 conclusion</b> .....	<b>29</b>
5.1 Key Findings .....	29
5.2 Key Recommendations .....	29
<b>REFERENCES</b> .....	<b>31</b>
<b>APPENDIX</b> .....	<b>35</b>



## TABLES

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Table 1	Percentages of women using contraception (and total fertility rates) in Nepal, 1996 Nepal Family Health Survey and 2001–2022 Nepal DHS Surveys.....	2
Table 2	Operational definitions of terms used in the analysis .....	5
Table 3	Definitions and categorizations of background variables .....	6
Table 4	Distribution of currently married women age 15–49 by background variables, 2016–2022 Nepal DHS surveys .....	9
Table 5	Indices of proximate determinants of fertility, index of spousal separation, and estimated and observed fertility rates, per Bongaarts' model, 2022 Nepal DHS ....	11
Table 6	Contribution of proximate determinants to total fertility reduction, 2022 Nepal DHS.....	11
Table 7	Current use of any family planning method among currently married women age 15–49, by background variables, 2016–2022 Nepal DHS surveys .....	12
Table 8	Determinants of use of any, modern, and traditional family planning methods among currently married women age 15–49, 2022 Nepal DHS.....	20
Table 9	Determinants of unmet need for family planning among currently married women age 15–49, 2022 Nepal DHS .....	21
Table 10	Determinants of induced abortion among women age 15–49 with pregnancies that ended in 3 years prior to the survey, 2022 Nepal DHS .....	24
Table A1a	Details of calculation for the index of marriage.....	35
Table A1b	Details of calculation for the index of spousal separation.....	35
Table A1c	Details of calculation for the index of contraception, the index of induced abortion, and the index of postpartum infecundability .....	35
Table A2	Distribution of current use of modern family planning methods among currently married women age 15–49, by background variables, 2016–2022 Nepal DHS surveys.....	36
Table A3	Distribution of current use of traditional family planning methods among currently married women age 15–49, by background variables, 2016–2022 Nepal DHS surveys.....	37
Table A4	Distribution of unmet need for family planning among currently married women age 15–49, by background variables, 2016–2022 Nepal DHS surveys .....	39
Table A5	Distribution of total demand for family planning among currently married women age 15–49, by background variables, 2016–2022 Nepal DHS surveys .....	40
Table A6	Distribution of demand satisfied by modern family planning methods among currently married women age 15–49, by background variables, 2016–2022 Nepal DHS surveys.....	42
Table A7	Distribution of pregnancies ending in induced abortion among all women age 15–49 whose pregnancies ended in the 3 years prior to the survey, by background variables, 2022 Nepal DHS.....	43





## FIGURES

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Figure 1	Significant percentage-point increases and decreases in use of modern family planning methods, by categories of background variables, 2016–2022 Nepal DHS surveys .....	14
Figure 2	Significant percentage-point increases in use of traditional family methods, by categories of background variables, 2016–2022 Nepal DHS surveys .....	15
Figure 3	Significant percentage-point declines in unmet need for family planning, by categories of background variables, 2016–2022 Nepal DHS surveys .....	16
Figure 4	Significant percentage-point increases in demand for family planning, by categories of background variables, 2016–2022 Nepal DHS surveys .....	17
Figure 5	Significant percentage-point declines in demand satisfied by modern family planning methods, by categories of background variables, 2016–2022 Nepal DHS surveys .....	18
Figure 6	Method mix among currently married women using family planning methods, 2016–2022 Nepal DHS surveys .....	19
Figure 7	Proportion of women whose pregnancies ended in induced abortion, among women whose pregnancies ended in the 3 years prior to the survey, by background variables, 2022 Nepal DHS.....	23





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## PREFACE

The 2022 Nepal Demographic and Health Survey (2022 NDHS) is the sixth survey of its kind implemented in the country as part of the worldwide Demographic and Health Surveys (DHS) Program. It was implemented under the aegis of the Ministry of Health and Population (MoHP) of the Government of Nepal with the objective of providing reliable, accurate, and up-to-date data for the country. The survey received funding from the United States Agency for International Development (USAID). 2022 NDHS information has assisted policymakers and program managers in policy formulation, monitoring, and designing programs and strategies for improving health services in Nepal. The 2022 NDHS is a key data source for tracking the progress of the Nepal Health Sector Strategic Plan 2023–2030 and the Sustainable Development Goal indicators.

The 2022 NDHS further analysis reports provide additional in-depth knowledge and insights into key issues that emerged from the 2022 NDHS. This information provides guidance for planning, implementing, refocusing, monitoring, and evaluating health programs in Nepal. This further analysis is also an important initiative to strengthen the technical capacity of Nepali professionals for analyzing and using large-scale data to better understand specific issues related to the country’s needs. We are glad that in the sixth round of the NDHS, we were able to produce 11 further analysis reports. We urge that all policymakers, program administrators, program managers, health workers, and other key stakeholders optimally use the information from these reports in program planning and management. High-quality evidence should be the basis of our health programs planning, implementation, monitoring, and evaluation.

Finally, we would like to appreciate the leadership of the Policy Planning and Monitoring Division, and the efforts of the different individuals of the MOHP, and the Department of Health Services in generating these reports. We are thankful to USAID Nepal for their continued support in implementing the NDHS and further analysis studies in Nepal.

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## FOREWORD

The 2022 Nepal Demographic and Health Survey (2022 NDHS) is the sixth nationally representative comprehensive survey conducted as part of the worldwide Demographic and Health Surveys (DHS) Program in the country. The survey was implemented by New ERA under the aegis of the Ministry of Health and Population (MoHP). Technical support for this survey was provided by ICF, with financial support from the United States Agency for International Development (USAID) through its mission in Nepal.

The standard format of the survey’s final report included descriptive presentations of findings and trends but not of analytical methods that could ascertain the significance of differences and associations among variables. Thus, although largely sufficient, the final report is limited, particularly in providing answers to “why” questions-answers those are essential for reshaping important policies and programs. After the dissemination of the 2022 NDHS, the MoHP, USAID, and other health development partners convened and agreed on key areas that are necessary for assessing progress, gaps, and determinants in high-priority public health programs being implemented by the MoHP. In this context, 11 further analysis studies have been conducted by Nepali consultants under the direct leadership of the MoHP. The consultants were supported by USAID through the Learning for Development Activity in Nepal and through The DHS Program.

The primary objective of the analysis studies was to provide more in-depth knowledge and insights into key issues that emerged from the 2022 NDHS. This information provides guidance for planning, implementing, refocusing, monitoring, and evaluating health programs in Nepal. One of the learning objectives is to strengthen the technical capacity of Nepali professionals for analyzing and using data from complex national population and health surveys to better understand specific issues related to country needs.

The further analysis of the 2022 NDHS was the concerted effort of many individuals and institutions, and it is with the great pleasure that we acknowledge the work involved in producing this useful document. The participation and cooperation of the officials of the MoHP and the Department of Health Services are highly valued. We would like to extend our appreciation to USAID Nepal for providing financial support for the further analysis. We would also like to acknowledge The DHS Program for its technical assistance at all stages. Our sincere thanks also goes to the USAID Learning for Development Activity team for the overall management and coordination of the entire process. Our special appreciation goes to the Policy Planning and Monitoring Division, MoHP, for their efforts and dedication to the completion of the further analysis of the 2022 NDHS.

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The further analysis of the 2022 Nepal Demographic and Health Survey (2022 NDHS) was conducted under the aegis of the Policy Planning and Monitoring Division of the Ministry of Health and Population (MoHP). The United States Agency for International Development (USAID) provided financial support, with technical assistance provided by the Demographic and Health Surveys (DHS) Program. Overall coordination, recruitment of local consultants, facilitation, administration, and logistic support were provided by the USAID Learning for Development Activity.

I am indebted to Dr. Bikash Devkota, Additional Secretary of the MoHP, for his unwavering guidance throughout the analysis process. I would like to acknowledge the efforts of Dr. Push pa Raj Poudel, Mr. Ravi Kanta Mishra, Mr. Manoj Tamrakar from the Policy Planning and Monitoring Division/MoHP. My special gratitude goes to all the co-authors for their input, coordination, data analysis, and writing of reports. My special thanks go to the co-authors from the MoHP and the Department of Health Services (DoHS) who provided significant contribution to ensure that the analysis aligned with our data needs and to improve the quality of the reports. My sincere appreciation goes to the peer reviewers: Dr. Gunanidhi Sharma from MoHP, Kabita Aryal, Sagar Dahal, Dr. Abhiyan Gautam, Dr. Uttam Pachya, Dr. Poma Thapa, and Dr. Bibek Lal from the DoHS; Pradeep Poudel from USAID Learning for Development; Tirtha Tamang from the United Nations Population Fund; Milima Dangol; Bidur Bastola from the USAID Adolescent Reproductive Health project; Dr. Rahul Pradhan from the World Health Organization; Abhilasha Gurung, and Naveen Poudyal from the United Nations Children's Fund; and Dr. Saroj Dhakal, Dr. Jaganath Sharma, and Sabita Tuladhar from USAID for reviewing the reports.

Special thanks to Sabita Tuladhar from USAID for her continuous support of this process. My sincere appreciation to Dr. Kerry L. D. MacQuarrie from The DHS Program, Jade Lamb, Tarun Adhikari, Sagar Neupane, Lokesh Bhatta, and Alexandra Cervini from USAID Learning for Development for their hard work in supporting the completion of these 11 further analysis reports.

Dr. Krishna Prasad Paudel  
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## ABSTRACT

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Nepal has transitioned from having a high total fertility rate (TFR) to having a replacement level of fertility, according to the 2022 Nepal Demographic and Health Survey (NDHS). The lower fertility rate was achieved despite a slow increase in the modern contraceptive prevalence rate (mCPR). This study examined the factors associated with stagnation in modern contraception use, declining fertility rates, increasing use of traditional family planning (FP) methods, and increasing rates of induced abortion in Nepal.

The study team used data derived from the 2016 NDHS (n=9,875) and the 2022 NDHS (n=11,180) among currently married women age 15–49. We analyzed percentage-point changes in the utilization of FP methods (any, modern, and traditional methods), unmet need for FP, demand for FP, and demand satisfied, by selected background variables. Proximate determinants of fertility were also identified. Induced abortion was separately considered using data from the 2022 NDHS among all women age 15–49 who had pregnancies that ended within 3 years prior to the survey (n=3,833).

The index of contraception and the index of spousal separation had the largest contributions to the current level of fertility reduction in Nepal. A significant increase of 5 percentage points in use of any FP method was observed from 2016 to 2022. Women from the Newar ethnic group, women from Bagmati province, and women in the lowest wealth quintile had the largest significant increases in traditional FP method use. Women living with their husbands/partners, those exposed to FP messages in the media, Muslim women, and women with living children had the largest increases in any FP method use.

Women living in Madhesh and Gandaki provinces had significantly decreased odds of using modern FP methods. Women in the fourth wealth quintile, women with any number of living children, women living with their husbands/partners, women exposed to FP messages in the media, and women with any level of education were among those with significantly increased odds of using a traditional FP method. Women had significantly increased odds of unmet need if they were from Gandaki province, had some level of education, were in the second wealth quintile, had any number of living children, had no experience of child loss, or lived with their husbands/partners. Women age 35 and older, women in the middle and fourth wealth quintiles, and women living in Karnali province were among the most likely to have had pregnancies ending in induced abortion.

Evidence-based recommendations for health systems include using advocacy to raise awareness about FP among populations with high unmet need and among returned immigrants, and increasing the availability of contraceptives at service delivery outlets. In the context of increased use of traditional FP methods, the effective use of these methods could reduce contraceptive failure rates, which lead to unintended pregnancies. Efforts to raise health awareness need to be implemented to reverse the practice of using induced abortion as contraception.

**Key words:** family planning, unmet need, traditional methods, modern methods, fertility, induced abortion



## ACRONYMS AND ABBREVIATIONS

---

Ca	index of induced abortion
Cc	index of contraception
Ci	index of postpartum infecundability
Cm	index of marriage
Csep	index of spousal separation
DHS	Demographic and Health Surveys
DoHS	Department of Health Services
FP	family planning
mCPR	modern contraceptive prevalence rate
MoHP	Ministry of Health and Population
NDHS	Nepal Demographic and Health Survey
R	residual factor
TF	total fecundity
TFR	total fertility rate
UNFPA	United Nations Population Fund
UNICEF	United Nations Children’s Fund
USAID	United States Agency for International Development
WHO	World Health Organization



# 1 INTRODUCTION

---

The Government of Nepal has a long history of family planning (FP) programs. Nepal adopted a policy incorporating population issues into its first 5-year periodic plan in 1956.<sup>1</sup> In 1959, the Family Planning Association of Nepal, a nongovernmental organization, was established to deliver reproductive health and FP services. The Nepal Family Planning and Maternal and Child Health Board, a semi-autonomous body under the Ministry of Health and Population, was formed during the third periodic plan (1965–1970).<sup>2</sup> Before the 1990s, FP services focused on reducing the crude birth rate. Post-1990s, the FP program focused on regulating the fertility rate.<sup>3,4</sup> Nepal's tenth periodic plan (1997–2002) incorporated the Program of Action proposed in the 1994 International Conference on Population and Development, which led to the development of the current reproductive health program toward improving the quality of life of women and children.<sup>5–7</sup>

The Government of Nepal enshrined FP as a fundamental right in the Constitution of Nepal and included it in the basic health services package under the Public Health Act of 2018.<sup>8</sup> Nepal's 2019 National Health Policy emphasized quality health services, including FP services.<sup>9</sup> Additionally, Nepal has published the Nepal Health Sector Strategic Plan (2023–2030),<sup>10</sup> the 20-year Population Perspective Plan (2010–2031),<sup>11</sup> and the National Family Planning Costed Implementation Plan (2015–2020),<sup>12</sup> further emphasizing a commitment to quality services. The FP program emphasizes individuals' and couples' reproductive needs and rights through voluntary and informed choices about selecting FP methods. Government policies also focus on mobilizing resources, promoting public-private partnerships, and involving both health and non-health sectors in ensuring access to a variety of modern contraceptive methods (including long-acting reversible methods) and reducing contraceptive discontinuation. Strategies for increasing the use of FP services include social marketing and mobilization of female community health volunteers for distributing short-acting commodities such as condoms and oral contraceptive pills. Service delivery outlets include private clinics, pharmacies, hospitals, satellite clinics, clinics run by nongovernmental organizations, private and commercial outlets, and visiting service providers and mobile camps.<sup>13</sup> Nevertheless, delivering FP services is constrained by issues such as the supply of FP commodities, stockouts, inadequate counseling services, lack of skilled health workers, limited advocacy and behavior change communication, and gaps in both knowledge and use of FP.<sup>9,14</sup>

## 1.1 Study Rationale

Nepal has not seen a significant change in its modern contraceptive prevalence rate (mCPR) since 2006.<sup>14,15</sup> However, the use of traditional FP methods has increased, leading to an increase in overall contraceptive use among women (Table 1). Nepal has committed to reaching an mCPR of 70% by 2030 (mCPR was 48% in 2016) and has set a target of reducing the rate of unmet need for modern contraceptives to 10% or less.<sup>10</sup> Nepal has also committed to ensuring budget allocations for the FP program toward universal coverage of quality FP services.<sup>16,17</sup>

**Table 1 Percentages of women using contraception (and total fertility rates) in Nepal, 1996 Nepal Family Health Survey and 2001–2022 Nepal DHS Surveys**

Indicator	1996 NFHS	2001 NDHS	2006 NDHS	2011 NDHS	2016 NDHS	2022 NDHS
Overall contraceptive use	28.5	39.3	48.0	49.7	52.6	57.2
Modern method use	26.0	35.4	44.2	43.2	42.8	42.7
Traditional method use	2.5	3.9	3.7	6.5	9.8	14.6
<b>Total fertility rate</b>	4.6	4.1	3.1	2.6	2.3	2.1

NDHS = Nepal Demographic and Health Survey; NFHS = Nepal Family Health Survey

Source: Information from previous Nepal Demographic and Health Surveys<sup>14,18–20</sup>

Fertility is one of the important components of population change, playing a significant role in determining the size, structure, and composition of the population of any area. Total fertility rate (TFR) is the most widely used indicator of fertility at the country level. Although modern contraceptive use stagnated from 2006 to 2022, the TFR declined from 4.6 births per woman in 1996 to 2.1 births per woman in 2022. The current observed TFR is expected to be sustained until 2030.<sup>13</sup> Moreover, a decline of 0.24 births per woman was measured between the 2016 Nepal Demographic and Health Survey (NDHS) and the 2022 NDHS. Since this was the smallest change in TFR between any two survey periods (Table 1), exploring the role of proximate determinants in shaping the current fertility rate is warranted.

Potential reasons for the overall decline in TFR over the past few decades could be the use of traditional methods, spousal separation, and abortion. Among married women in Nepal, 15% use traditional FP methods, and spousal separation has increased due to migration; 34% of married women did not live with their spouses in 2022, compared with 16% in 1996, primarily due to labor migration.<sup>14</sup> Cohabiting couples had a contraceptive prevalence rate of 68% in 2016, which was 44% higher than that among non-cohabiting couples.<sup>21</sup> Earlier research from Nepal also found higher unmet need for FP and lower contraception use among women who were not living with their husbands/partners.<sup>22</sup> Similarly, further analysis of previous rounds of the NDHS attributed Nepal’s TFR decline to spousal separation (10%), contraceptive use (4.4%), and abortion (5.2%).<sup>15</sup>

Given this background, Nepal’s labor migration situation should be reviewed with more focus on family formation. Program interventions are also lacking for families left behind, socioeconomically disadvantaged families, and women whose husbands are out of the country.<sup>23</sup> More research is needed to determine if women whose husbands return from abroad are more likely to experience unplanned pregnancies. If unmet need is high among women whose husbands return from migration, this may be an essential area for policy formation or reform. Looking at variation across provinces may also help improve FP programming, as the provincial government can draft agendas to support the implementation of such programs.

After the 1990s, the Government of Nepal focused its FP program on health rights and the quality of FP services. Since, then, the rate of abortion has increased by 10 times—from 1% in 2001 to 10% in 2022 after the legalization of safe abortion services.<sup>24</sup> In the meantime, the use of modern contraception has also increased. This contradictory result might be due to the unmet need for FP being converted into a met need. The Government of Nepal amended its penal code (Muluki Ain) in 2002 to allow abortion services. Prior to this, abortion was highly restricted. Abortion services were permitted to ensure that women had the right

to make their own fertility choices. The Constitution of Nepal 2015 and the Safe Motherhood and Reproductive Health Rights Act 2018 guaranteed safe abortion on broader grounds. Nepal initiated medical abortion services in 2009, and since 2017 all abortions at accredited public facilities have been free. As of 2021, 1,853 nurses (include auxiliary nurse midwives and staff nurses); 743 nurses; 1,853 medical officers; and 92 obstetricians, gynecologists, and general practitioners have been trained on providing safe abortion services. In total, 1,516 public and private hospitals have been accredited for safe abortion services in Nepal.<sup>25</sup>

Many factors can be associated with contraceptive use and a decline in fertility rate. Women's increased education levels are associated with fewer births, irrespective of other developmental and cultural factors.<sup>26,27</sup> In most of these cases, modern contraceptive use is evident, as most sociodemographic factors affect women's education, which in turn affects economic status, access to FP, and other attitudinal behaviors.<sup>28</sup> In this context, examining trends in and determinants of fertility decline and contraceptive use in Nepal, while simultaneously examining changes over time and any associations with socioeconomic characteristics, is essential.

## **1.2 Objectives**

We aimed to investigate the reasons behind the declining fertility rate and the stagnating mCPR in Nepal. The specific objectives of this study were:

- To examine the proximate determinants of fertility to see which factors have the largest impact on limiting fertility
- To investigate the factors associated with the current use of FP methods
- To identify the factors associated with the current use of traditional FP methods
- To examine the factors associated with a declining unmet need for FP
- To investigate the factors associated with the current level of induced abortion





## 2 METHODS

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### 2.1 Data Sources

The data used for this analysis came from the 2016 Nepal Demographic and Health Survey (NDHS) and the 2022 NDHS. Both surveys were nationally representative population-based household surveys that collected family planning (FP) information from all women age 15–49. The 2022 NDHS adopted a standard questionnaire that also collected information on pregnancy histories of all women age 15–49. Details about the survey designs and sampling procedures are explained in publicly available NDHS final reports.<sup>14,16</sup>

In total, 9,875 currently married women age 15–49 from the 2016 NDHS and 11,180 currently married women age 15–49 from the 2022 NDHS were included in the analysis. Although both NDHS surveys captured information from all women of reproductive age, we concentrated on currently married women, as contraceptive use and births among nonmarried women are relatively uncommon in Nepal. However, induced abortion was considered among all women age 15–49 who had pregnancies that ended within 3 years prior to the survey (n=3,833).

### 2.2 Study Variables

The outcome variables were use of any FP method, use of modern FP methods, use of traditional FP methods, unmet need for FP, demand for FP, demand satisfied, and pregnancy ending in induced abortion. Table 2 summarizes key terminology related to these outcome variables. Definitions and categorization of the independent variables (i.e., background characteristics of women) used in the study are summarized in Table 3.

For trend analyses, to aid in comparison between data from the two surveys, the education variable was categorized according to the 2016 NDHS—no education, basic, and secondary or higher. For analyses of determinants of outcomes variables (which utilized only the 2022 data), education was categorized according to the 2022 NDHS—no education, basic, secondary, and higher.

**Table 2 Operational definitions of terms used in the analysis**

Term	Operational definition
Currently married	Formal marital union or living with a partner at the time of survey
Pregnancy outcome	Live birth, miscarriage, induced abortion, or stillbirth, as recorded in the 2022 Nepal Demographic and Health Survey
Current use of modern FP methods	Use of male or female sterilization, pills, injectables, intrauterine devices, implants, male condoms, the lactational amenorrhea method, the Standard Days Method, or emergency contraception at the time of the survey
Traditional FP methods	Rhythm method or withdrawal during intercourse
Unmet need for FP	The proportion of women (1) who are not pregnant, are not postpartum amenorrheic, are considered fecund, and either want to postpone their next birth for at least 2 years or stop childbearing altogether but are not using a contraceptive method; (2) who have a mistimed or unwanted current pregnancy; or (3) who are postpartum amenorrheic and whose most recent birth in the last 2 years was mistimed or unwanted <sup>29,35</sup>
Demand for FP	The sum of unmet need for FP and the use of any FP method <sup>18</sup>
Demand satisfied	Demand satisfied by modern FP methods (not traditional methods), as emphasized by Nepal's FP program

FP = family planning

**Table 3** Definitions and categorizations of background variables

Variable	Definition/categorization
Age	Age of respondents (15–49), categorized into 5-year age groups
Number of living children	Number of living children of respondents, categorized as 0, 1, 2, 3, or 4+
Place of residence	Place of residence, categorized as urban or rural
Province	Seven administrative provinces, according to the Constitution of Nepal 2015
Wealth quintile	Five ordinal categories of household wealth: lowest, second, middle, fourth, and highest
Spousal separation	Whether the husband/partner of a currently married woman age 15–49 lives away from home, irrespective of duration of stay, categorized as Yes or No
Education	No education, basic (classes 1–8), or secondary (classes 9–12) or higher (class 13 and above)
Ethnicity	Brahmin, Chhetri, Terai/Madheshi caste, Dalit, Newar, Hill Janajati, Terai Janajati, Muslim, or Other
Exposure to FP messages	Exposure to FP messages received through any form of media, categorized as Yes or No
Number of living sons	Number of sons a woman has given birth to in her lifetime who are still alive, categorized as 0, 1, or 2+
Number of living daughters	Number of daughters a woman has given birth to in her lifetime who are still alive, categorized as 0, 1, or 2+
Child loss experience	Loss of any number of children after live birth in the respondent's lifetime

FP = family planning

## 2.3 Data Analyses

Descriptive analyses of the frequencies of background variables in the 2016 and 2022 NDHS surveys were conducted. We then analyzed proximate determinants of fertility using data from the 2022 NDHS.

The determinants of fertility were first analyzed to understand the biological factors through which social, economic, and environmental variables affect fertility.<sup>30</sup> Bongaarts' framework, published in 1978,<sup>31</sup> operationalized the most important factors affecting fertility and proposed a model incorporating several variables commonly known as proximate determinants.<sup>32</sup> Bongaarts and Potter (1983)<sup>32</sup> found that 96% of variation in fertility was explained by four determinants, measured as indices: the index of marriage (annotated as  $C_m$ ), the index of contraception ( $C_c$ ), the index of induced abortion ( $C_a$ ), and the index of postpartum infecundability ( $C_i$ ). The model, as suggested by Bongaarts, assumes that the natural reproductive capacity of all fecund women, or total fecundity (TF), is nearly the same for all women (i.e.,  $TF = 15.3$ ), which in actual life is altered by proximate determinants. The model is expressed as:

$$\text{Total fertility rate (TFR)} = C_m \times C_c \times C_a \times C_i \times TF \quad (\text{i})$$

Due to many male migrations, husbands living elsewhere (not at home) has become common in Nepal. Therefore, it is assumed that fertility for women whose husbands are away from home is suppressed. To incorporate this in the model, another index—the index of spousal separation ( $C_{sep}$ )—was added to the model by Blanc (2004).<sup>33</sup> The modified model is expressed as:

$$TFR = C_m \times C_c \times C_a \times C_i \times C_{sep} \times TF \quad (\text{ii})$$

This model was used in a further analysis of 2016 NDHS data to evaluate the fertility decline in Nepal at that time,<sup>15</sup> and has been cited elsewhere.<sup>34</sup> Details on the model and the calculation of indices have been previously described.<sup>15</sup>

In our study, we calculated the indices of the proximate determinants of fertility (i.e., Cm, Cc, Ci, and Ca), plus Csep. The predicted fertility rate was estimated from the model, and the residual factor (R) was the ratio of observed TFR to that estimated from the model. The fertility-inhibiting effects of each component of the model were also measured.

Using data from the 2016 and 2022 NDHS surveys, we also analyzed trends in the current use of FP methods (any method, modern methods, and traditional methods), unmet need for FP, demand for FP, demand satisfied, and method mix (among current contraceptive users). Differentials and changes over time in the proportions of women experiencing each outcome variable, disaggregated by background variable, were expressed in percentage points. Bivariate analyses were conducted using chi-square tests. The level of statistical significance for differentials was set at  $p < .05$ .

Binomial logistic regression was conducted to examine factors associated with the outcome variables, with results expressed as adjusted odds ratios with 95% confidence intervals. The clustering effect was adjusted for in all analyses using the complex survey “svy” command in Stata. All reported findings were weighted (unless otherwise indicated), adjusting for the clustering effect of the complex sampling design adopted in the NDHS surveys. All analyses were conducted using Stata version 15.



## 3 RESULTS

### 3.1 Background Variables

The distributions of currently married women age 15–49 by selected background variables in the 2016 Nepal Demographic and Health Survey (NDHS) and the 2022 NDHS are shown in Table 4. The proportions of women in the youngest two age groups declined from 2016 to 2022, whereas the proportion age 35–39 slightly increased and the proportions in the other age groups remained the same. The proportions of women of Dalit and Hill Janajati ethnicity increased from 2016 to 2022, while the proportions of women from most other ethnic groups decreased. Women exposed to family planning (FP) messages, those with one or two children, those living in urban areas, and those with living sons made up larger proportions of the population of married women in 2022 than in 2016. Conversely, women with two or more daughters and those with child loss experience each made up smaller proportions of the population in 2022 than in 2016. In both surveys, the proportions of women in different provinces and different wealth quintiles were similar.

**Table 4** Distribution of currently married women age 15–49 by background variables, 2016–2022 Nepal DHS surveys

Variable	2016 NDHS		2022 NDHS	
	%	N=9,875	%	N=11,180
<b>Age</b>				
15–19	7.1	701	5.0	559
20–24	17.1	1,689	15.9	1,778
25–29	19.8	1,955	19.7	2,202
30–34	17.5	1,728	18.1	2,024
35–39	15.3	1,511	17.1	1,912
40–44	13.0	1,284	13.5	1,509
45–49	10.2	1,007	10.6	1,185
<b>Education</b>				
No education	41.5	4,098	31.7	3,544
Basic education	30.7	3,032	32.5	3,634
Secondary or higher	27.8	2,745	35.8	4,002
<b>Ethnicity</b>				
Brahmin	11.3	1,116	9.5	1,062
Chhetri	18.2	1,797	17.6	1,968
Terai/Madheshi caste	17.8	1,758	16.4	1,834
Dalit	12.8	1,264	15.5	1,733
Newar	4.6	454	3.5	391
Hill Janajati	20.3	2,005	22.2	2,482
Terai Janajati	9.7	958	10.5	1,174
Muslim	5.1	504	4.7	525
Other	0.3	30	0.1	11
<b>Exposure to FP messages</b>				
No	30.6	3,022	33.3	3,723
Yes	69.4	6,853	66.7	7,457
<b>Number of living children</b>				
0	10.4	1,027	9.4	1,051
1	21.5	2,123	24.1	2,694
2	29.6	2,923	33.6	3,756
3	19.2	1,896	18.9	2,113
4+	19.3	1,906	13.9	1,554
<b>Number of living sons</b>				
0	26.5	2,617	27.3	3,052
1	40.6	4,009	43.4	4,852
2+	32.9	3,249	29.3	3,276

*Continued...*

Table 4—Continued

Variable	2016 NDHS		2022 NDHS	
	%	N=9,875	%	N=11,180
<b>Number of living daughters</b>				
0	34.0	3,358	35.6	3,980
1	37.1	3,664	38.8	4,338
2+	28.9	2,854	25.6	2,862
<b>Child loss experience</b>				
No	85.4	8,433	89.1	9,961
Yes	14.6	1,442	10.9	1,219
<b>Currently residing with husband/partner</b>				
Yes	66.0	6,518	66.1	7,390
No	34.0	3,358	33.9	3,790
<b>Place of residence</b>				
Urban	61.1	6,034	67.6	7,558
Rural	38.9	3,841	32.4	3,622
<b>Province</b>				
Koshi	16.8	1,659	16.9	1,889
Madhesh	22.0	2,173	21.6	2,415
Bagmati	19.4	1,916	19.3	2,158
Gandaki	9.6	948	9.4	1,051
Lumbini	17.7	1,748	18.1	2,024
Karnali	5.9	583	6.2	693
Sudurpaschim	8.6	849	8.6	961
<b>Wealth quintile</b>				
Lowest	17.1	1,689	18.2	2,035
Second	19.7	1,945	19.8	2,214
Middle	21.1	2,084	20.8	2,325
Fourth	21.3	2,103	21.3	2,381
Highest	20.7	2,044	19.9	2,225

FP = family planning; NDHS = Nepal Demographic and Health Survey

## 3.2 Proximate Determinants of Fertility

Table 5 shows the indices of the proximate determinants of fertility (from Bongaarts' model), as well as the index of spousal separation and the observed and estimated fertility rates, as calculated from the 2022 NDHS data (see Table A1). The observed total fertility rate (TFR) in 2022 was 2.1 births per woman, whereas the estimated TFR from the model was 2.3 births per woman. Similarly, the residual factor (R) was 0.913, which meant that factors other than the five determinants included in the model also affected change in TFR.

**Table 5** Indices of proximate determinants of fertility, index of spousal separation, and estimated and observed fertility rates, per Bongaarts' model, 2022 Nepal DHS

Proximate determinant/rate	Value
Cm	0.678
Cc	0.603
Ca	0.918
Ci	0.680
Csep	0.589
$CmCc \times Ca \times Ci \times Csep$	0.150
TF	15.3
Estimated TFR	2.30
TF - Estimated TFR	13.0
Observed TFR	2.10
Residual factor (R)	0.913

Ca = index of induced abortion; Cc = index of contraception; Ci = index of postpartum infecundability; Cm = index of marriage; Csep = index of spousal separation; TF = total fecundity; TFR = total fertility rate  
 Note: Smaller values indicate stronger effects. Residual factor (R) is the ratio of the observed TFR to the model's estimated TFR.

Table 6 shows the fertility-inhibiting effects of each determinant in the model. The results indicated that an estimated 13 births per woman were inhibited in 2022: 2.67 births because of delayed marriage, 3.47 births due to contraceptive use, 2.65 births due to postpartum infecundability, 0.59 births due to induced abortion, and 3.63 births as the effect of spousal separation. Spousal separation seemed to have the largest contribution (28%) in shaping current fertility, followed by contraceptive use (27%). The roles of delayed marriage/nonmarriage and postpartum infecundability were also notable (approximately 20% each). However, the role of induced abortion was markedly lower (4.5%).

**Table 6** Contribution of proximate determinants to total fertility reduction, 2022 Nepal DHS

Proximate determinant	Births per woman	Percent contribution
Index of marriage (Cm)	2.67	20.5
Index of contraception (Cc)	3.47	26.7
Index of induced abortion (Ca)	0.59	4.5
Index of postpartum infecundability (Ci)	2.65	20.4
Index of spousal separation (Csep)	3.63	27.9
<b>Total</b>	<b>13.00</b>	<b>100.0</b>

### 3.3 Use of Family Planning Methods

Both the 2016 and 2022 NDHS surveys captured current use of FP methods (any method, traditional methods, and modern methods). Table 7 reveals that the current use of any FP method increased significantly, by 5.1 percentage points, between 2016 and 2022. It also shows that FP use varied by age, education, exposure to FP messages, number of living children, number of living sons or daughters, child loss experience, province, and wealth quintile. The largest significant increases in the use of any FP method were seen among women with one child, women with no sons, women living in rural areas, and women living in Lumbini province.

**Table 7 Current use of any family planning method among currently married women age 15–49, by background variables, 2016–2022 Nepal DHS surveys**

Variable	2016 NDHS		N=	2022 NDHS		N=	Change (2016–2022)	
	(%)	p value		(%)	p value		% points	p value
<b>Age</b>								
15–19	23.1		701	28.2		559	5.1	
20–24	32.0		1,689	38.6		1,778	6.6	***
25–29	45.8		1,955	52.1		2,202	6.3	**
30–34	58.6		1,728	61.1		2,024	2.5	
35–39	68.5		1,511	69.8		1,912	1.3	
40–44	69.4		1,284	71.1		1,509	1.7	
45–49	65.3	***	1,007	63.8	***	1,185	-1.5	
<b>Education</b>								
No education	58.0		4,098	62.1		3,544	4.1	*
Basic education	49.3		3,032	55.1		3,634	5.8	***
Secondary or higher	48.2	***	2,745	54.9	***	4,002	6.7	***
<b>Ethnicity</b>								
Brahmin	58.4		1,116	64.7		1,062	6.3	*
Chhetri	51.5		1,797	57.4		1,968	5.9	**
Terai/Madheshi caste	51.6		1,758	55.1		1,834	3.5	
Dalit	47.5		1,264	52.6		1,733	5.1	*
Newar	60.6		454	67.2		391	6.6	
Hill Janajati	51.7		2,005	58.5		2,482	6.8	***
Terai Janajati	66.1		958	65.1		1,174	-1.0	
Muslim	29.6		504	33.2		525	3.6	
Other	(76.3)	***	30	(61.4)	***	11		
<b>Exposure to FP messages</b>								
No	48.4		3,022	53.1		3,723	4.7	*
Yes	54.5	***	6,853	59.3	***	7,457	4.8	***
<b>Number of living children</b>								
0	15.4		1,027	20.9		1,051	5.5	*
1	36.9		2,123	46.0		2,694	9.1	***
2	59.2		2,923	65.4		3,756	6.2	***
3	67.1		1,896	67.8		2,113	0.7	
4+	65.6	***	1,906	67.2	***	1,554	1.6	
<b>Number of living sons</b>								
0	28.4		2,617	36.5		3,052	8.1	***
1	53.8		4,009	61.1		4,852	7.3	***
2+	70.6	***	3,249	70.8	***	3,276	0.2	
<b>Number of living daughters</b>								
0	42.9		3,358	49.1		3,980	6.2	***
1	56.2		3,664	61.6		4,338	5.4	***
2+	59.4	***	2,854	61.9	***	2,862	2.5	
<b>Child loss experience</b>								
No	51.3		8,433	56.6		9,961	5.3	***
Yes	60.1	***	1,442	62.0	**	1,219	1.9	

Continued...



Table 7—Continued

Variable	2016 NDHS (%)	p value	N= 9,875	2022 NDHS (%)	p value	N= 11,180	Change (2016–2022)
<b>Currently residing with husband/partner</b>							
Yes	67.6		6,518	71.3		7,390	3.7 **
No	23.5	***	3,358	29.8	***	3,790	6.3 ***
<b>Place of residence</b>							
Urban	54.8		6,034	56.9		7,558	2.1
Rural	49.2	**	3,841	58.0		3,622	8.8 ***
<b>Province</b>							
Koshi	55.1		1,659	61.5		1,889	6.4 **
Madhesh	47.7		2,173	49.0		2,415	1.3
Bagmati	60.6		1,916	66.2		2,158	5.6 *
Gandaki	48.5		948	51.5		1,051	3.0
Lumbini	48.0		1,748	56.5		2,024	8.5 **
Karnali	51.1		583	55.3		693	4.2
Sudurpaschim	57.3	***	849	58.6	***	961	1.3
<b>Wealth quintile</b>							
Lowest	49.1		1,689	54.3		2,035	5.2 **
Second	53.4		1,945	56.4		2,214	3.0
Middle	49.6		2,084	56.2		2,325	6.6 **
Fourth	50.1		2,103	56.6		2,381	6.5 **
Highest	60.4	***	2,044	62.5	**	2,225	2.1
<b>Total</b>	<b>52.6</b>		<b>9,875</b>	<b>57.2</b>		<b>11,180</b>	<b>4.6 ***</b>

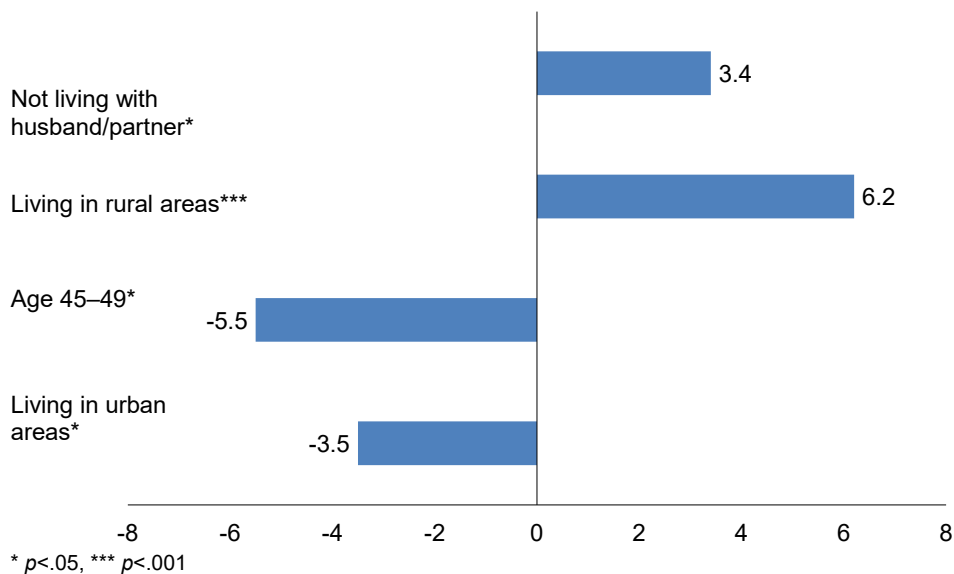
\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$   
FP = family planning; NDHS = Nepal Demographic and Health Survey

### 3.4 Use of Modern Family Planning Methods

Overall, the use of modern FP methods among currently married women stagnated from 2016 to 2022. Most of the background variables were significantly associated with the use of modern FP methods in both surveys, although wealth quintile was significantly associated with modern FP use only in 2022 (see Table A2).

Figure 1 shows significant positive and negative growth in the use of modern FP methods in specific categories of background variables. Between 2016 and 2022, the largest significant increase (6 percentage points) was among rural women, and the largest decline (5.5 percentage points) was among women age 45–49. Among women not residing with their husbands/partners, the use of modern FP methods significantly increased from 2016 to 2022. In urban areas, the use of modern FP methods was significantly lower (-3.5 percentage points) in 2016 than in 2022.

**Figure 1 Significant percentage-point increases and decreases in use of modern family planning methods, by categories of background variables, 2016–2022 Nepal DHS surveys**

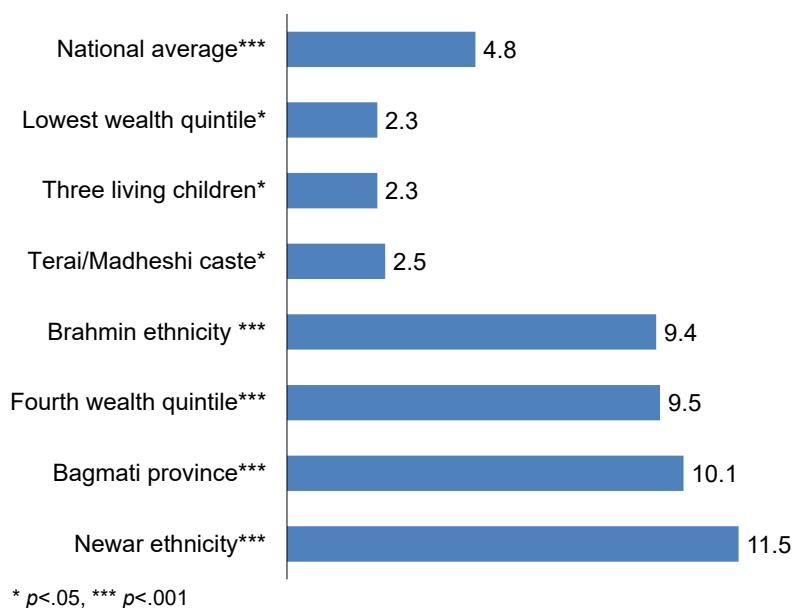


### 3.5 Use of Traditional Family Planning Methods

Use of traditional FP methods significantly increased from 10% in 2016 to 15% in 2022 (see Table A3). Most of the increase could be attributed to reliance on withdrawal, which increased from 8.7% among married women in 2016 to 12.6% in 2022. Disaggregated data showed that use of traditional FP methods differed significantly by almost all variables tested. Exceptions were age and ethnicity, which showed no significant associations with traditional method use in 2022, and child loss experience and number of living daughters, which showed no significant associations in 2016.

Figure 2 shows the breadth of statistically significant increases in traditional FP method use between 2016 and 2022 by categorical variables. The largest percentage-point increases were observed among women in the Newar ethnic group, women in Bagmati province, and women in the highest wealth quintile. Women in the Terai/Madheshi caste, women with three living children, women with two or more living sons, women living in rural areas, and women in the lowest wealth quintile had much smaller increases (less than 3 percentage points) but still significant ones. See Table A3 for all other significant increases observed.

**Figure 2 Significant percentage-point increases in use of traditional family methods, by categories of background variables, 2016–2022 Nepal DHS surveys**

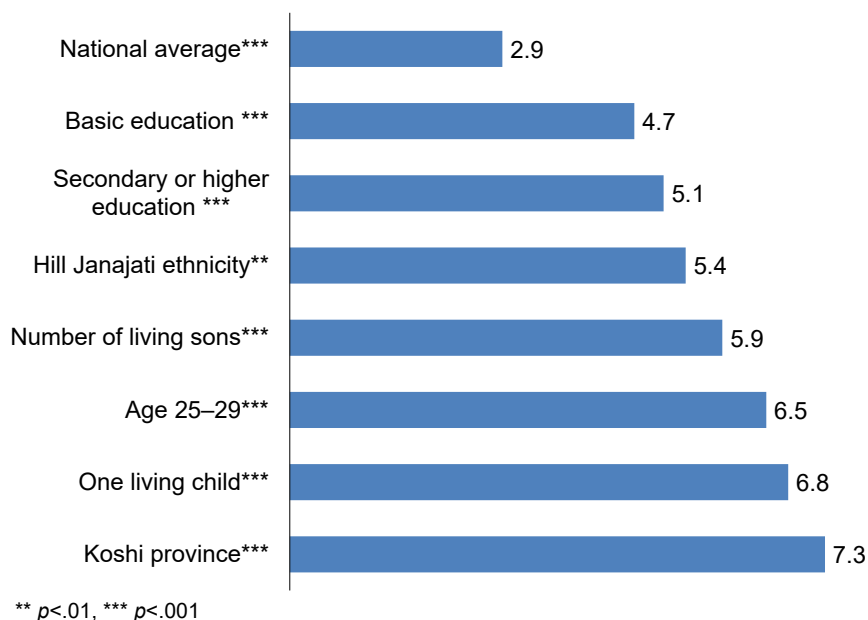


### 3.6 Unmet Need for Family Planning

Table A4 shows the proportions of currently married women with unmet need for FP, disaggregated by background characteristics, for the 2016 and 2022 NDHS surveys. The results showed that almost all background variables, with the exception of exposure to FP messages, were significantly associated with unmet need for FP in both surveys. Other exceptions were number of living daughters and place of residence, which were significantly associated with unmet need in 2016 but not in 2022.

Percentage-point changes in unmet need were also calculated by background variables (see Table A4). Figure 3 shows the most significant percentage-point declines in unmet need between 2016 and 2022. The largest declines were observed among women age 25–29, women in Koshi province, and women with one living child. Significant declines were also noted among women with living sons, women of Hill Janajati ethnicity, and women with basic education or secondary or higher education.

**Figure 3 Significant percentage-point declines in unmet need for family planning, by categories of background variables, 2016–2022 Nepal DHS surveys**

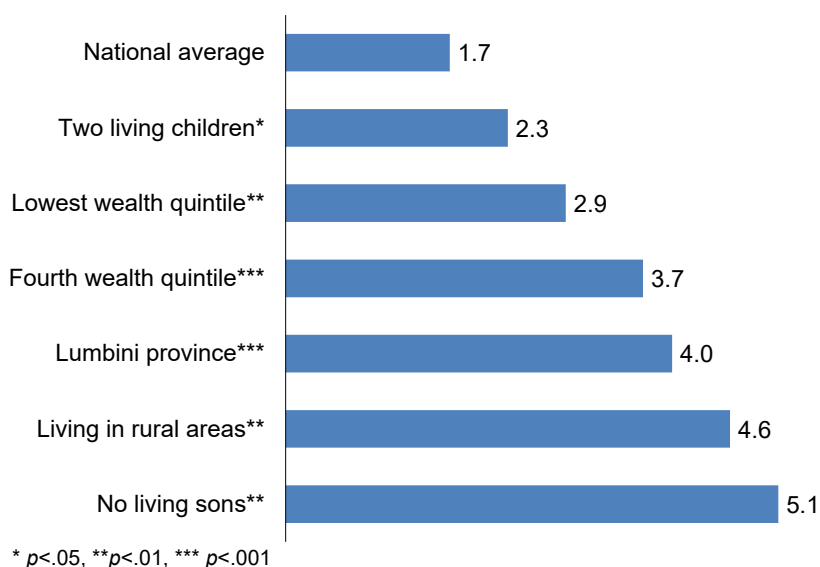


### 3.7 Demand for Family Planning

The proportions of currently married women with demand for FP in 2016 and 2022, as well as changes in demand for FP over time, by background variables are shown in Table A5. Overall demand for FP did not change significantly between 2016 and 2022. However, according to disaggregated data, age, exposure to FP messages, number of living children, and province were significantly associated with changes in demand for FP in both survey years (see Table A5).

Figure 4 shows that between the two survey periods, demand for FP increased significantly among women in the lowest and fourth wealth quintiles, women living in rural areas, women with no living sons, and those with two living children.

**Figure 4** Significant percentage-point increases in demand for family planning, by categories of background variables, 2016–2022 Nepal DHS surveys

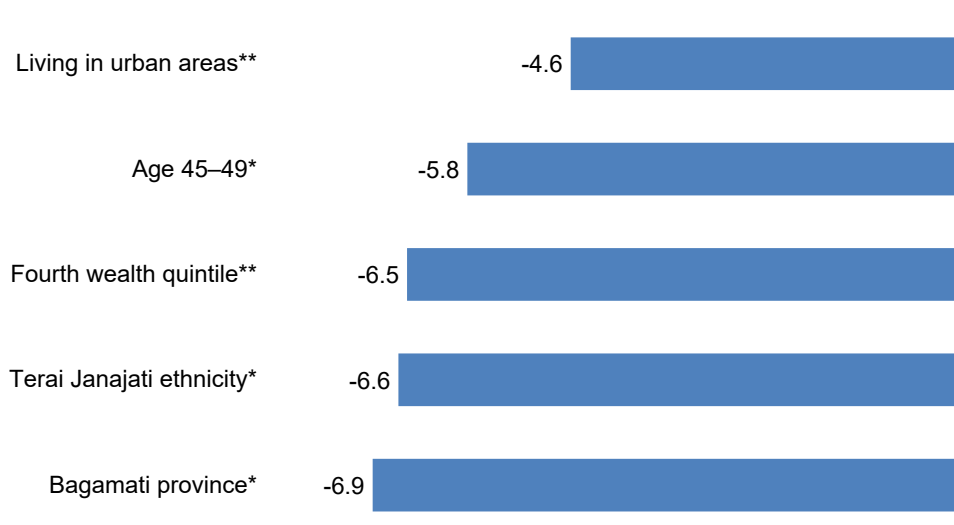


### 3.8 Demand Satisfied by Modern Family Planning Methods

Age, education, ethnicity, exposure to FP messages, number of living children, number of living sons or daughters, child loss experience, residing with husband/partner, and province were all significantly associated with satisfaction of demand by modern FP methods in both 2016 and 2022 (see Table A6). However, no significant associations were observed with place of residence in 2016 or with wealth quintile in either 2016 or 2022.

Figure 5 shows that the largest percentage-point declines in the proportions of women with demand satisfied by modern FP methods were among women in the Terai Janajati ethnic group, women living in Bagmati province, and women in the fourth wealth quintile.

**Figure 5** Significant percentage-point declines in demand satisfied by modern family planning methods, by categories of background variables, 2016–2022 Nepal DHS surveys

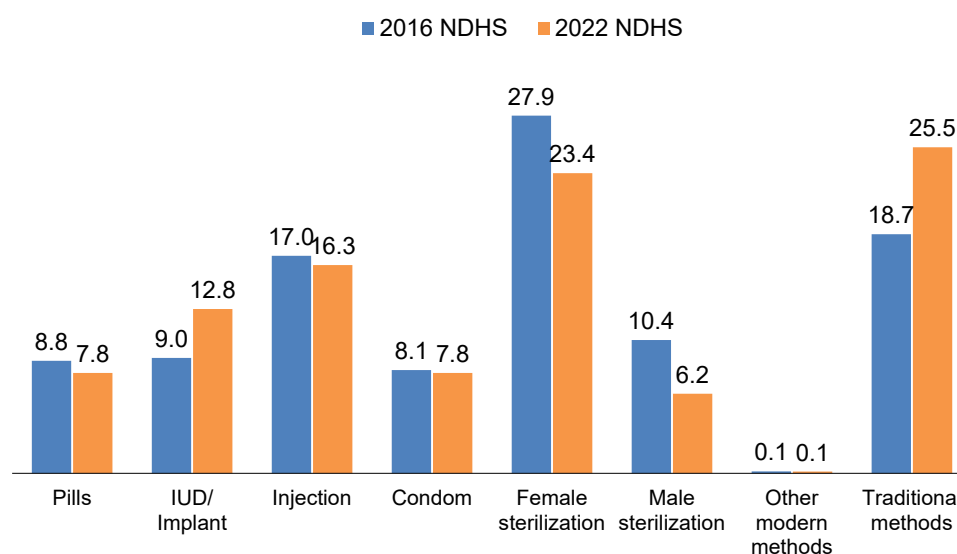


\*  $p < .05$ , \*\*  $p < .01$

### 3.9 Method Mix

Figure 6 shows the method mix among currently married women age 15–49 who were using FP services during the 2016 and 2022 surveys. The use of intrauterine devices/implants increased from 2016 to 2022, while the use of most other modern FP methods declined. Both male and female sterilization use dropped by more than 4 percentage points between 2016 and 2022. In contrast, the use of traditional FP methods increased from 19% in 2016 to 26% in 2022. Withdrawal was the most common traditional method—used by 12.6% of married women using contraceptives in 2022; only 1.9% were using periodic abstinence.

**Figure 6 Method mix among currently married women using family planning methods, 2016–2022 Nepal DHS surveys**



### 3.10 Determinants of Family Planning Use

Table 8 presents the results of multivariate logistic regression analysis for use of any FP method, modern FP methods, and traditional FP methods by currently married women age 15–49 in the 2022 NDHS. Province was significantly associated with FP use. The odds of any FP method use and modern FP method use were both lower in Madhesh and Gandaki provinces than in Bagmati province. In contrast, women residing in Karnali province had lower odds of using traditional methods than those in Bagmati province. Although significantly associated with use of any FP method and use of traditional FP methods, wealth quintile was not significantly associated with modern FP use. Women with higher levels of education had significantly increased odds of using any FP method and of using traditional FP methods. Muslim women had significantly lower odds of using any FP method and of using modern FP methods than did Newar women. However, compared with Newar women, Terai Janajati women had significantly higher odds of using modern FP methods. Dalit, Terai Janajati, and Muslim women had significantly lower odds of using traditional FP methods when compared with the reference group.

Having any number of living children was also associated with FP use. The higher the number of living children, the higher the odds of using any FP method and of using modern FP methods. Significantly increased odds of using traditional FP methods were also observed among women with any number of living children compared with women without children. Women living with their husbands/partners and those exposed to FP messages in the media were at increased odds of FP use (use of any, modern, and

traditional methods) compared with those not living with their husbands/partners and those not exposed to FP messages in the media, respectively (Table 8).

**Table 8** Determinants of use of any, modern, and traditional family planning methods among currently married women age 15–49, 2022 Nepal DHS

Variable	Any FP use (AOR)	<i>p</i> value*	95% CI	Modern FP use (AOR)	<i>p</i> value*	95% CI	Traditional FP use (AOR)	<i>p</i> value*	95% CI
<b>Province</b>									
Bagamati (Ref.)	1.00			1.00			1.00		
Koshi	0.90	.411	[0.71–1.15]	0.85	.197	[0.67–1.09]	1.15	.245	[0.91–1.45]
Madhesh	0.67	<b>.003</b>	[0.51–0.87]	0.71	<b>.014</b>	[0.54–0.93]	0.90	.501	[0.67–1.22]
Gandaki	0.65	<b>.002</b>	[0.50–0.85]	0.71	<b>.015</b>	[0.54–0.93]	0.96	.766	[0.75–1.24]
Lumbini	0.79	.072	[0.60–1.02]	0.85	.192	[0.66–1.09]	0.98	.906	[0.76–1.28]
Karnali	0.79	.104	[0.60–1.05]	1.02	.872	[0.80–1.31]	0.67	<b>.018</b>	[0.48–0.93]
Sudurpaschim	0.80	.105	[0.60–1.05]	0.91	.488	[0.70–1.18]	0.87	.320	[0.65–1.15]
<b>Wealth quintile</b>									
Lowest (Ref.)	1.00			1.00			1.00		
Second	1.15	.072	[0.99–1.34]	1.12	.158	[0.96–1.30]	1.02	.885	[0.82–1.26]
Middle	1.24	<b>.028</b>	[1.02–1.49]	1.09	.387	[0.90–1.31]	1.27	<b>.046</b>	[1.00–1.62]
Fourth	1.31	<b>.005</b>	[1.09–1.58]	0.94	.475	[0.79–1.12]	1.77	<b>&lt;.001</b>	[1.41–2.22]
Highest	1.23	.053	[1.00–1.52]	0.95	.646	[0.77–1.17]	1.51	<b>.002</b>	[1.17–1.94]
<b>Education</b>									
No education (Ref.)	1.00			1.00			1.00		
Basic	0.87	<b>.049</b>	[0.76–1.00]	0.79	<b>&lt;.001</b>	[0.69–0.90]	1.40	<b>.001</b>	[1.15–1.69]
Secondary	1.01	.887	[0.85–1.21]	0.70	<b>&lt;.001</b>	[0.59–0.83]	2.07	<b>&lt;.001</b>	[1.66–2.58]
Higher	1.74	<b>.002</b>	[1.23–2.47]	0.81	.191	[0.60–1.11]	3.01	<b>&lt;.001</b>	[2.08–4.36]
<b>Ethnicity</b>									
Newar (Ref.)	1.00			1.00			1.00		
Brahmin	0.96	.83	[0.64–1.44]	0.79	.169	[0.57–1.10]	1.23	.30	[0.83–1.82]
Chhetri	0.91	.641	[0.61–1.36]	0.91	.572	[0.65–1.26]	1.06	.766	[0.72–1.56]
Terai/Madheshi caste	0.79	.278	[0.52–1.21]	1.09	.645	[0.75–1.60]	0.63	.056	[0.39–1.01]
Dalit	0.85	.454	[0.56–1.30]	1.10	.596	[0.78–1.55]	0.65	<b>.044</b>	[0.43–0.99]
Hill Janajati	1.04	.842	[0.68–1.60]	1.06	.734	[0.76–1.47]	1.04	.862	[0.70–1.53]
Terai Janajati	1.47	.100	[0.93–2.33]	2.02	<b>&lt;.001</b>	[1.39–2.94]	0.53	<b>.007</b>	[0.34–0.84]
Muslim	0.31	<b>&lt;.001</b>	[0.18–0.53]	0.48	<b>.004</b>	[0.29–0.79]	0.45	<b>.005</b>	[0.26–0.78]
Other	0.65	.614	[0.12–3.48]	1.38	.647	[0.34–5.57]	0.38	.289	[0.06–2.28]
<b>Number of living children</b>									
0 (Ref.)	1.00			1.00			1.00		
1	4.29	<b>&lt;.001</b>	[3.44–5.36]	4.70	<b>&lt;.001</b>	[3.56–6.20]	1.75	<b>&lt;.001</b>	[1.34–2.29]
2	10.87	<b>&lt;.001</b>	[8.74–13.54]	11.75	<b>&lt;.001</b>	[8.87–15.57]	1.59	<b>&lt;.001</b>	[2.24–2.03]
3	14.81	<b>&lt;.001</b>	[11.62–18.89]	15.63	<b>&lt;.001</b>	[11.72–20.86]	1.49	<b>.005</b>	[3.13–1.96]
4+	14.97	<b>&lt;.001</b>	[11.44–19.59]	15.43	<b>&lt;.001</b>	[11.42–20.86]	1.59	<b>.003</b>	[1.17–2.17]
<b>Child loss experience</b>									
Yes (Ref.)	1.00			1.00			1.00		
No	1.02	.809	[0.86–1.21]	1.00	.989	[0.86–1.17]	1.02	.837	[0.82–1.27]
<b>Currently residing with husband/partner</b>									
No (Ref.)	1.00			1.00			1.00		
Yes	6.41	<b>&lt;.001</b>	[5.65–7.26]	3.42	<b>&lt;.001</b>	[3.04–3.85]	4.62	<b>&lt;.001</b>	[3.81–5.60]
<b>Exposure to FP messages</b>									
No (Ref.)	1.00			1.00			1.00		
Yes	1.32	<b>&lt;.001</b>	[1.17–1.50]	1.18	<b>.006</b>	[1.05–1.33]	1.21	<b>.026</b>	[1.02–1.42]

\* Statistically significant *p* values in bold

AOR = adjusted odds ratio; CI = confidence interval; FP = family planning; Ref. = reference



### 3.11 Determinants of Unmet Need for Family Planning

Table 9 presents the results of multivariate logistic regression analysis for unmet need for FP. Significantly higher odds of unmet need for FP were observed among women living in Gandaki province and women in the second wealth quintile when compared with their respective reference groups. Women with basic education and those with secondary education had significantly higher odds of having unmet need for FP than women with no education. Similarly, women with any number of living children, women with no child loss experience, and those currently living with their husbands/partners had significantly higher odds of having unmet need than women in the respective reference groups.

**Table 9 Determinants of unmet need for family planning among currently married women age 15–49, 2022 Nepal DHS**

Variable	Unmet need for FP (AOR)	p value*	95% CI
<b>Province</b>			
Bagamati (Ref.)	1.00		
Koshi	0.91	.432	[0.71–1.16]
Madhesh	1.07	.648	[0.79–1.46]
Gandaki	1.37	<b>.023</b>	[1.04–1.79]
Lumbini	1.19	.212	[0.91–1.56]
Karnali	1.01	.952	[0.75–1.37]
Sudurpaschim	1.07	.631	[0.81–1.42]
<b>Wealth quintile</b>			
Lowest (Ref.)	1.00		
Second	1.39	<b>.01</b>	[1.08–1.78]
Middle	1.19	.189	[0.92–1.54]
Fourth	1.03	.847	[0.80–1.32]
Highest	1.07	.596	[0.83–1.37]
<b>Education</b>			
No education (Ref.)	1.00		
Basic	1.54	<b>&lt;.001</b>	[1.30–1.83]
Secondary	1.63	<b>&lt;.001</b>	[1.32–2.02]
Higher	1.26	.285	[0.82–1.92]
<b>Ethnicity</b>			
Newar (Ref.)	1.00		
Brahmin	0.79	.328	[0.50–1.26]
Chhetri	0.94	.804	[0.59–1.52]
Terai/Madheshi caste	0.87	.612	[0.52–1.47]
Dalit	1.12	.653	[0.69–1.80]
Hill Janajati	0.98	.926	[0.61–1.56]
Terai Janajati	0.75	.258	[0.45–1.24]
Muslim	1.21	.502	[0.69–2.10]
Other	3.94	.094	[0.79–19.67]
<b>Number of living children</b>			
0 (Ref.)	1.00		
1	1.68	<b>&lt;.001</b>	[1.32–2.13]
2	1.70	<b>&lt;.001</b>	[2.32–2.19]
3	1.35	<b>.035</b>	[3.02–1.79]
4+	1.37	<b>.053</b>	[1.00–1.90]
<b>Child loss experience</b>			
Yes (Ref.)			
No	1.24	<b>.029</b>	[1.02–1.50]
<b>Currently residing with husband/partner</b>			
No (Ref.)	1.00		
Yes	9.18	<b>&lt;.001</b>	[8.0–10.53]

\* Statistically significant p values in bold

AOR = adjusted odds ratio; CI = confidence interval; Ref. = reference

## 3.12 Induced Abortion

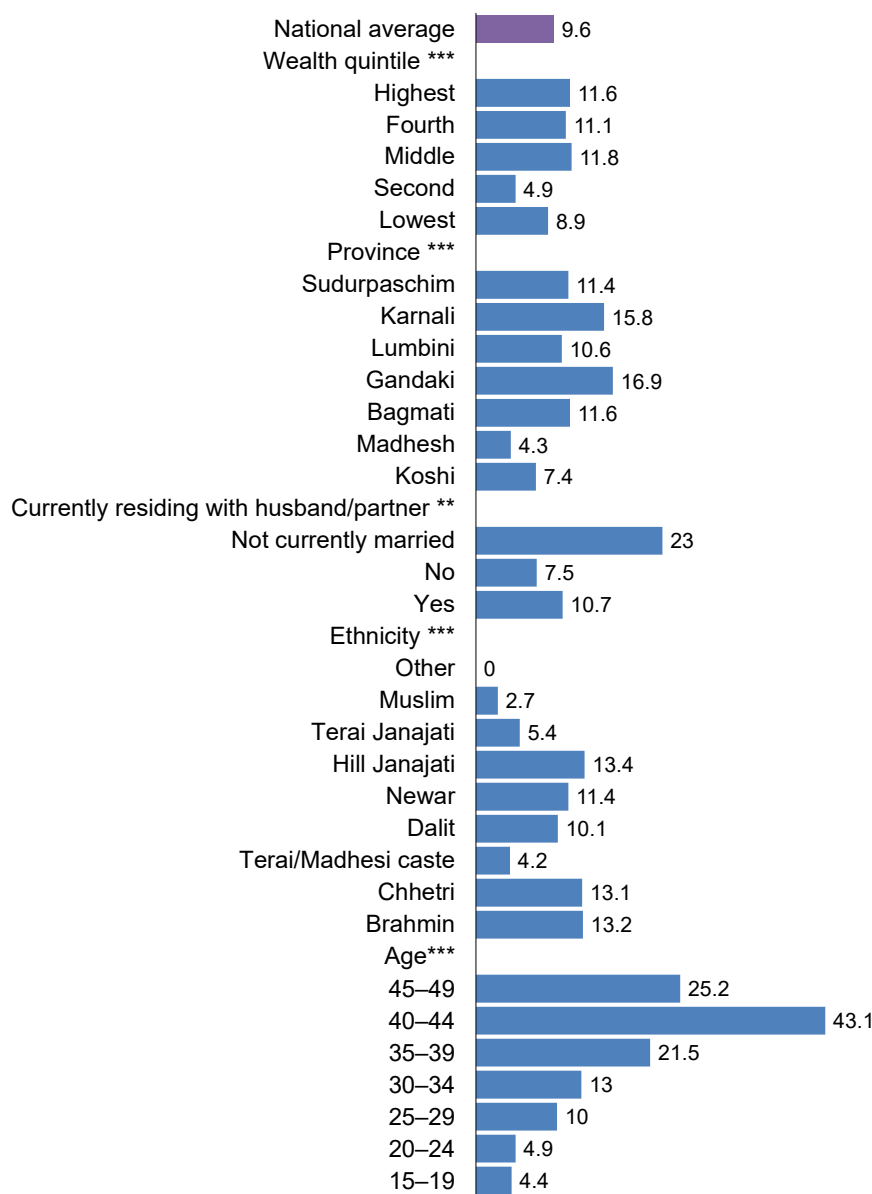
### 3.12.1 Differentials in induced abortion by background variables

Based on pregnancy histories from the 2022 NDHS, 10% of pregnancies that ended within 3 years prior to the survey ended in induced abortion. The differentials in the proportion of women age 15–49 with pregnancies ending in induced abortion, by background variables, are presented in Table A7. Most of the variables were significantly associated with induced abortion; exceptions were education, number of living sons or daughters, and child loss experiences.

Figure 7 shows that the highest rates of induced abortion were observed among women age 40–44; women of Brahmin, Chhetri, or Hill Janajati ethnicity; women exposed to FP messages; women with no living children; and women with two or more sons when compared than their respective counterparts. Similarly, women living in urban areas, women in Gandaki and Karnali provinces, and women from the middle to the highest wealth quintiles had higher rates of induced abortion than their counterparts.

Figure 7 also shows that young women (4.4% of those age 15–19 and 4.9% of those age 20–24), women belonging to the Terai/Madheshi caste (4.2%), women not exposed to FP messages (5.9%), women with no living children (6.8%), women with no living sons (7.7%), women whose husbands/partners were living elsewhere (7.5%), women living in Madhesh province (4.3%), and women from the second wealth quintile (4.9%) had lower rates of induced abortion than their counterparts.

**Figure 7 Proportion of women whose pregnancies ended in induced abortion, among women whose pregnancies ended in the 3 years prior to the survey, by background variables, 2022 Nepal DHS**



\*\*\*  $p < .001$ ; \*\*  $p < .01$

### 3.12.2 Determinants of induced abortion

Table 10 presents the results of logistic regression among all women age 15–49 who had pregnancies that ended in the 3 years prior to the survey. Among the variables used in the bivariate analysis, education and child loss experience were omitted from the multivariate analysis. Women age 25–34 and those age 35 and older, women currently living with their husbands/partners, women living in Karnali province, and women in the middle and fourth wealth quintiles had significantly higher odds of induced abortion than their respective reference groups. For example, the odds of induced abortion were nearly six times higher for women age 35 and older than for women age 15–24. In contrast, women who belonged to the Terai Janajati

ethnic group and those with living children had significantly lower odds of induced abortion than their respective reference groups.

**Table 10** Determinants of induced abortion among women age 15–49 with pregnancies that ended in 3 years prior to the survey, 2022 Nepal DHS

Variable	AOR	p value	95% CI
<b>Age</b>			
15–24 (Ref.)	1.00		
25–34	2.20	***	[1.52–3.19]
≥35	5.98	***	[3.60–9.94]
<b>Ethnicity</b>			
Brahmin (Ref.)	1.00		
Chhetri	1.15		[0.64–2.07]
Terai/Madheshi caste	0.49		[0.23–1.05]
Dalit	1.05		[0.59–1.38]
Newar	1.01		[0.46–2.23]
Hill Janajati	1.50		[0.82–2.75]
Terai Janajati	0.44	*	[0.20–0.96]
Muslim	0.29		[0.07–1.15]
<b>Exposure to FP messages</b>			
No (Ref.)	1.00		
Yes	1.53	**	[1.12–2.09]
<b>Number of living children</b>			
0 (Ref.)	1.00		
1	0.25	***	[0.12–0.52]
2	0.29	**	[0.14–0.62]
3	0.27	**	[0.11–0.64]
4+	0.23	**	[0.09–0.58]
<b>Number of living sons</b>			
0 (Ref.)	1.00		
1	1.33		[0.95–1.85]
2+	1.58	*	[1.02–2.45]
<b>Currently residing with husband/partner</b>			
No (Ref.)	1.00		
Yes	1.32		[0.99–1.76]
Not currently married	4.17	**	[1.51–11.49]
<b>Place of residence</b>			
Urban (Ref.)	1.00		
Rural	0.81		[0.61–1.08]
<b>Province</b>			
Koshi	0.77		[0.35–1.68]
Madhesh (Ref.)	1.00		
Bagmati	0.98		[0.43–2.24]
Gandaki	1.51		[0.67–3.44]
Lumbini	1.46		[0.72–2.95]
Karnali	2.36	*	[1.11–5.01]
Sudurpaschim	1.73		[0.82–3.63]
<b>Wealth quintile</b>			
Lowest (Ref.)	1.00		
Second	0.81		[0.54–1.20]
Middle	2.38	***	[1.61–3.53]
Fourth	1.86	**	[1.24–2.79]
Highest	1.29		[0.80–2.06]

\* $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

AOR = adjusted odds ratio; CI = confidence interval; FP = family planning; Ref. = reference

## 4 DISCUSSION

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### 4.1 Contraception and Spousal Separation Contribute to Fertility Decline

Among the indices of determinants of fertility, the index of contraception and the index of spousal separation contributed the most to limiting fertility in 2022. The most common measure of fertility—the total fertility rate—is projected to stay the same through 2030.<sup>13</sup> The current migration situation in Nepal is unique, as one-third of married women’s husbands are living abroad, resulting in unique fertility issues and desires.<sup>36</sup> Husband-wife separations for less than a year are considered similar to husband-wife pairs living at home in Nepal,<sup>14</sup> yet short husband-wife separations were categorized as spousal separations in the 2022 Nepal Demographic and Health Survey (NDHS). Therefore, a detailed study of this population—including separate evaluations among the women and their husbands to determine whether they have completed their family size or if some women are waiting for their husbands to return to make fertility decisions—could help us understand the needs of couples in Nepal.

**Recommendations:** At the policy and program levels, family planning (FP) services for safer reproductive health, as well as FP programs offered by periphery-level health institutions, should be designed to cover women whose husbands are living abroad and ensure they have easy access to FP methods before or at the time of their husbands’ return. At the service delivery level, different stakeholders are aware of the household members who are living abroad. A special program can be designed by the local health system to offer services to women who are living apart from their husbands but would like to avoid unwanted pregnancies when their husbands return.

### 4.2 Declining Use of Family Planning Methods in Certain Provinces

During the study period (2016–2022), a statistically significant increase (5 percentage points) in use of any FP method was observed. In the multivariate analysis, women from Madhesh and Gandaki provinces had significantly lower odds of using any FP method or using modern FP methods when compared with the reference groups from Bagmati. In contrast, women from Karnali province had significantly lower odds of using traditional FP methods than did the reference group. We did not expect the level of contraceptive use to be the same in all provinces because of different levels of FP demand. However, given low use of FP coupled with high unmet need in Gandaki, these results suggest the need for expanding the provincial mechanism for offering FP services since the Constitution of Nepal has provided concurrent rights to all levels of government.

Wealth quintile had no significant association with modern FP use in multivariate analysis, although a significant association was found in bivariate analysis. The largest significant increase in use of modern FP methods during the study period was among women living in rural areas; however, women of the Newar ethnic group, those living in Bagmati province, and those from the highest wealth quintile had the largest significant increases in use of traditional FP methods. Moreover, women from Dalit, Terai Janajati, and Muslim ethnic groups had significantly lower odds of using traditional FP methods than Newar women.

Declines in use of modern FP methods and traditional FP methods were associated with different socioeconomic factors. The largest significant decline in use of modern FP methods was among women at the end of the reproductive spectrum (i.e., those age 45–49). In contrast, women from the Terai/Madheshi

caste, rural women, women in the lowest wealth quintile, women with three living children, and women with two or more living sons had the smallest significant declines in use of traditional FP methods during the study period.

Among women not residing with their husbands/partners, use of modern FP methods increased significantly between the 2016 and 2022 NDHS surveys. Most of the increase can be attributed to the use of implants (which increased from 1.5% to 4% among these women). Use of Depo-Provera injections increased from 3.5% to 4.7%, and use of traditional method such as withdrawal increased from 1.9% to 4.5%. This suggests that women may be reporting what they use when their husbands are home and they are at risk of pregnancy.

It is important to understand the reasons that the women in Dalit, Terai Janajati, and Muslim ethnic groups had lower rates of use of traditional FP methods than Newar women. Of note, more than one-third of people in these ethnic groups worldwide are living in Nepal. Interestingly, no significant differences in unmet need for FP were found between these groups and the reference group of Newar women, suggesting a lower demand for FP. Women with any number of living children were at significantly increased odds of using any FP method, using modern FP methods, and using traditional FP methods when compared with women with no children. Likewise, women living with their husbands/partners and those exposed to FP messages in the media were at increased odds of using any method of FP when compared with their reference groups.

**Recommendations:** To improve the current rate of use of FP methods, policies and programs should focus on those in need, such as husbands and wives living together. Technical competency of care providers is essential, and information related to the quality and effectiveness of FP methods can be circulated in areas where rates of traditional method use are high.<sup>37</sup> Similarly, intensification of contraceptive awareness and utilization for women of all reproductive ages was found to be effective in Ghana.<sup>38</sup> The Government of Nepal can consider these approaches to increase the use of modern FP methods. Nepal should also investigate why so many more married couples are using withdrawal now than in the past. At the service delivery level, local health institutions should expand their current level of programming to solve many supply side issues, including the availability of contraceptive methods, and train FP care providers in their respective regions. The use of traditional methods is increasing, especially among advantaged groups and in urban areas. In the context of spousal separation, short stays of returnee migrants at home could be a reason for use of traditional FP methods. The FP program should design specific interventions targeting returnee migrants who stay home for a short time and again migrate abroad for work. Additionally, a qualitative study could explore the relationship between returnee migrants and the use of traditional FP methods.

### 4.3 High Unmet Need for Family Planning

Unmet need for FP was significantly lower among women living in Koshi province (compared with the reference group in Bagmati province) and among women with one child (compared with women with no living children). Similarly, women living in Gandaki province, women with basic or secondary education, women with any living children, women with no child loss experience, and women living with their husbands/partners had significantly higher chances of having unmet need than their reference groups. Results from a similar study using data from the 2016 NDHS<sup>15</sup> conflict with our results. Among women who had lost one or two children, unmet need declined significantly between two surveys, and women whose husbands were away from home had a higher unmet need for FP in 2016.<sup>15</sup> To reduce unmet need,

the government should closely examine which groups have the highest levels of unmet need. Reducing unmet need should be a priority, so that FP methods can be effectively used to regulate fertility and so that quality FP and reproductive health services can be provided. These efforts could help the FP program reach the target of reducing unmet need for FP to 10% by 2030.<sup>15</sup>

**Recommendations:** At the policy and program levels, modern FP efforts should give special attention to specific population groups with high unmet need. A culture of incorporating evidence-based programs into policy may help in reaching government goals. The role of similar organizations in providing FP services can be utilized. At the service delivery level, local bodies and health stakeholders can focus on reducing unmet need by promoting modern FP methods more effectively through basic health services. Additionally, evidence from routine information systems such as health management information systems and logistics management information systems could provide important insights, especially at the local level, for ensuring service utilization and maintaining a smooth supply of FP commodities in public health facilities.

#### **4.4 Induced Abortion Among Older Women, Women Living with Husbands/Partners, and Women in Karnali**

In the 2022 NDHS, education, number of living sons or daughters, and child loss experience were not associated with pregnancies ending in induced abortion. However, pregnancies ending in induced abortions were observed in a higher proportion of women age 40–44 than in women age 15–24. As of 2022, the proportion of pregnancies ending in induced abortion, as reported in the NDHS reproductive calendar, had reached nearly 10%. Results from multivariate analysis showed that women of older reproductive ages, women currently living with their husbands/partners, and those living in Karnali province had significantly higher odds of having induced abortion when compared with their reference groups. In contrast, women of Terai Janajati ethnicity and women with any number of living children had significantly lower odds of induced abortion when compared with their reference groups. We were unable to determine from the available data whether abortions were being used as a means of FP. Further research, especially qualitative research, could focus on this topic.

**Recommendations:** At the policy and program levels, an in-depth further analysis is needed to understand why women of certain backgrounds are more likely to have induced abortion and whether women who undergo induced abortion are interested in postabortion family planning. Expanding access to postabortion FP services would also be beneficial. Annual research at all levels of health facilities is suggested. At the service delivery level, programs designed and implemented at local-level health facilities could address many issues related to women living in Karnali province.

#### **4.5 Role of Wealth in Demand for Family Planning and Demand Satisfied**

Between 2016 and 2022, demand for FP significantly increased among women in the lowest wealth quintile, women living in rural areas, women with no sons, and women with two living children. An earlier study reported higher rates of demand satisfaction among women from wealthier households.<sup>15</sup>

In the bivariate analysis, wealth quintile was not significantly associated with demand satisfied by FP methods. However, demand satisfied by modern methods declined most significantly among Terai Janajati women, women living in Bagmati province, and women in the fourth wealth quintile during the study period.

**Recommendations:** Programs should prioritize women with the lowest levels of demand satisfied, with the caveat that high use of traditional FP methods can lead to lower demand satisfaction. At the service delivery level, to address declining rates of satisfied demand, the provincial government in Bagmati could work with local bodies to strengthen FP programs offering modern methods.

## 4.6 Study Limitations

Contraceptive use and births among nonmarried women were not captured in the study. The education variable was categorized differently for the trend analyses and for the analyses of determinants, as secondary education was considered up to the School Leaving Certificate in the 2016 NDHS and up to class 12 in the 2022 NDHS. Another limitation is that we could not replicate the proximate determinant analysis described in the 2016 NDHS further analysis report<sup>15</sup> because of a change in how the spousal separation question was framed. In the 2016 report, husbands/partners were considered to be living elsewhere if they were apart for a year (based on a question in the 2016 NDHS on duration of the husband's absence from home). In contrast, the duration of absence was not asked about in the 2022 NDHS; respondents were simply asked whether husbands/partners were living with them or living elsewhere. Thus, for the analyses of proximate determinants, results on the role of spousal separation should be cautiously interpreted since the data captured only the residential status of the husband/partners at the time of the survey in 2022. Further studies on how long husbands/partners stay out of the country, couples' childbirth plans, and whether some women migrate while their husbands/partners stay in Nepal would give more insight into how migration to foreign countries contributes to declining fertility in Nepal.



## 5 CONCLUSION

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### 5.1 Key Findings

Four variables—province, ethnicity, number of children, and a couple’s separation status—are most pertinent in explaining the family planning (FP) situation in Nepal. In particular, our study showed:

- Of all the indices of determinants of fertility examined, the index of contraception and the index of spousal separation contributed the most to the current replacement level of fertility in Nepal.
- Women living in Madhesh and Gandaki provinces were significantly less likely to use modern FP methods than women living in Bagmati province.
- Key determinants of traditional FP method use included spousal separation status (women living with their husbands/partners), education (basic to higher levels), and household wealth (middle and higher wealth quintiles).
- Women living in Gandaki province, women with basic or secondary education, women with children, women with no child loss experience, and women living with their husbands/partners were significantly more likely to have unmet need for FP when compared with their respective reference groups.
- The largest significant declines in demand satisfied by modern FP methods were among Terai Janajati women, women living in Bagmati province, and women in the fourth wealth quintile.
- Pregnancies ending in induced abortion were significantly more likely among older women, women living with their husbands/partners, those living in Karnali province, and those in the middle and fourth wealth quintiles when compared with their respective reference groups.

### 5.2 Key Recommendations

More than 50% of Nepal’s population lives in the Terai ecoregion, and the ethnic groups living there vary from east to west. Specific evidence-based programs can support increases in FP use and declines in unmet need in this region. The observed provincial-level variations in the utilization of FP services suggest potential discrepancies between health policies and programs at the provincial level and those mandated by the federal government. Further analysis could investigate the implementation of specific policies and resource allocations across provinces and uncover the underlying reasons for these discrepancies. Nepal’s fifteenth 5-year plan mentioned that FP and population management programs were the concurrent power of the federal and state governments.<sup>40</sup> However, during the planned period, this matter remained unnoticed. To further help the FP program address Nepal’s current level of fertility and the complex situation regarding FP use:

- Specific FP programs should be revised/added annually. For example, rates of FP use and unmet need vary by ethnicity, for example among Terai Janajati versus Madheshi versus Muslim women. Even within each of these ethnic groups, regardless of whether the women are living with their husbands/partners, levels of FP use vary. Therefore, focused and contextual FP programs should be included in the budgets and programs each fiscal year.
- High-level policy dialogue is needed to establish institutional arrangements according to the fifteenth 5-year plan. Current federal programs can be decentralized to provincial programs so that the expected population can promptly obtain FP services at the local level.

- Historically, FP programs started with the private sector's role. The National Health Policy 2019 has also accepted the role of the nonprofit sector. Therefore, partnerships can be strengthened by mentioning these roles and the roles of other sectors in policy and program documents.
- Multisectoral collaborations should be established to conduct research and development activities. The findings of these activities should be central to policy and program formulation to help achieve FP goals.
- A qualitative study on pregnancies ending in induced abortion is recommended to explore the underlying explanatory factors.
- Specific activities to create demand for FP should be included in the policies and programs at all levels of government. Annual programs should be designed to encourage use of modern FP methods instead of traditional methods. Similarly, programs for specific groups, such as those at risk for unintended pregnancies, could target traditional FP users.
- All available non-permanent FP methods should be offered in local-level health facilities. Specifically, services should be provided in coordination with the three layers of government institutions and with health care providers working in health facilities managed by the nongovernmental sector.
- The use of traditional FP methods is increasing, especially among advantaged groups and in urban areas. In the context of high rates of spousal separation, short stays of returnee migrants could explain some of this increase. The FP program should design specific interventions targeting returnee migrants who stay home for short periods and then again migrate abroad for work. Additionally, a qualitative study could explore the relationship between returnee migrants and the use of traditional methods.
- In Nepal, the use of contraceptives is also influenced by collective gender and fertility norms (for example, community norms, individual use of modern FP methods, and decision-making and contraceptive beliefs). Further qualitative investigation could unpack the role of collective gender and cultural norms on the fertility behaviors of respondents in Nepal.

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## APPENDIX

**Table A1a Details of calculation for the index of marriage**

Age	Proportion of women currently married g(a)	ASFR (per 1,000 women)	ASFR for all women f(a)	Marital ASFR	Remark
15–19	0.21	71	0.071	0.333	0.177 Adjusted for 15–19
20–24	0.68	16	0.16	0.237	0.237
25–29	0.90	11	0.11	0.122	0.122
30–34	0.95	57	0.057	0.060	0.060
35–39	0.94	17	0.017	0.018	0.018
40–44	0.93	5	0.005	0.005	0.005
45–49	0.89	1	0.001	0.001	0.001
All	0.75	TFR=	2.1	TMFR=	3.10
<b>Cm = index of marriage = CM = TFR/TF</b>					<b>0.678</b>

ASFR = age-specific fertility rate; TF = total fecundity; TFR = total fertility rate; TMFR = total marital fertility rate

**Table A1b Details of calculation for the index of spousal separation**

Age	Proportion of women currently married whose husbands not away	Marital ASFR	Marital ASFR when husband not away	Remark
15–19	0.62	0.177	0.287	0.310 Adjusted for 15–19
20–24	0.57	0.237	0.413	0.413
25–29	0.61	0.122	0.199	0.199
30–34	0.62	0.060	0.098	0.098
35–39	0.68	0.018	0.027	0.027
40–44	0.76	0.005	0.007	0.007
45–49	0.82	0.001	0.001	0.001
All	0.66	3.10	TMFR_HST	5.3

ASFR = age-specific fertility rate; TMFR = total marital fertility rate

**Table A1c Details of calculation for the index of contraception, the index of induced abortion, and the index of postpartum infecundability**

Indicator	Value	
TFR	2.1	
TAR	0.3	Table 5.15 of 2022 NDHS
U	0.57	
<b>Ca</b>	<b>0.918</b>	<b>Ca = TFR/(TFR+0.4*(1+U) *TAR</b>
PPI (average, months)	10.9	Table 5.6 of 2022 NDHS
<b>Ci</b>	<b>0.680</b>	<b>Ci = 20/(18.5+PPI)</b>
Prop. Users (U)	0.57	
Effectiveness (E)	0.64	
<b>Cc</b>	<b>0.603</b>	<b>Cc = 1-(1.08*U*E)</b>

Ca = index of induced abortion; Cc = index of contraception; Ci = index of postpartum infecundability; NDHS; Nepal Demographic and Health Survey; TAR = total abortion rate; TFR = total fertility rate

**Table A2 Distribution of current use of modern family planning methods among currently married women age 15–49, by background variables, 2016–2022 Nepal DHS surveys**

Variable	2016 NDHS			2022 NDHS			Change (2016–2022)	
	%	p value	N=9,875	%	p value	N=11,180	% points	p value
<b>Age</b>		***			***			
15–19	14.5		701	14.2		559	-0.3	
20–24	23.9		1,689	24.9		1,778	1.0	
25–29	37.0		1,955	37.4		2,202	0.4	
30–34	47.5		1,728	45.3		2,024	-2.2	
35–39	57.4		1,511	55.6		1,912	-1.8	
40–44	58.4		1,284	56.1		1,509	-2.3	
45–49	55.5		1,007	50.0		1,185	-5.5	*
<b>Education</b>		***			***			
No education	51.5		4,098	54.2		3,544	2.7	
Basic education	40.6		3,032	42.2		3,634	1.6	
Secondary or higher	32.2		2,745	32.9		4,002	0.7	
<b>Ethnicity</b>		***			***			
Brahmin	40.8		1,116	37.7		1,062	-3.1	
Chhetri	40.4		1,797	40.6		1,968	0.2	
Terai/Madheshi caste	43.4		1,758	44.6		1,834	1.2	
Dalit	42.7		1,264	44.0		1,733	1.3	
Newar	47.0		454	42.2		391	-4.8	
Hill Janajati	40.5		2,005	41.4		2,482	0.9	
Terai Janajati	60.0		958	55.2		1,174	-4.8	
Muslim	24.6		504	27.6		525	3.0	
Other	(72.4)		30	(47.0)		11	-25.4	
<b>Exposure to FP messages</b>								
No	41.4		3,022	42.9		3,723	1.5	
Yes	43.4		6,853	42.5		7,457	-0.9	
<b>Number of living children</b>		***			***			
0	8.0		1,027	8.3		1,051	0.3	
1	24.8		2,123	27.8		2,694	3.0	
2	49.2		2,923	49.0		3,756	-0.2	
3	58.0		1,896	56.4		2,113	-1.6	
4+	56.6		1,906	57.7		1,554	1.1	
<b>Number of living sons</b>		***			***			
0	18.7		2,617	21.1		3,052	2.4	
1	42.4		4,009	44.1		4,852	1.7	
2+	62.6		3,249	60.6		3,276	-2.0	
<b>Number of living daughters</b>		***			***			
0	33.6		3,358	34.0		3,980	0.4	
1	45.9		3,664	46.3		4,338	0.4	
2+	49.5		2,854	49.2		2,862	-0.3	
<b>Child loss experience</b>		***			***			
No	41.3		8,433	41.6		9,961	0.3	
Yes	51.6		1,442	51.6		1,219	0.0	
<b>Currently residing with husband/partner</b>		***			***			
Yes	53.8		6,518	51.8		7,390	-2.0	
No	21.4		3,358	24.8		3,790	3.4	*
<b>Place of residence</b>		*			***			
Urban	44.2		6,034	40.7		7,558	-3.5	*
Rural	40.6		3,841	46.8		3,622	6.2	***

Continued...



Table A2—Continued

Variable	2016 NDHS			2022 NDHS			Change (2016–2022)	
	%	p value	N=9,875	%	p value	N=11,180	% points	p value
<b>Province</b>		***			**			
Koshi	40.1		1,659	43.5		1,889	3.4	
Madhesh	42.2		2,173	40.5		2,415	-1.7	
Bagmati	49.2		1,916	44.6		2,158	-4.6	
Gandaki	37.3		948	35.1		1,051	-2.2	
Lumbini	38.9		1,748	43.0		2,024	4.1	
Karnali	44.5		583	45.9		693	1.4	
Sudurpaschim	48.1		849	47.0		961	-1.1	
<b>Wealth quintile</b>					***			
Lowest	41.8		1,689	44.7		2,035	2.9	
Second	44.8		1,945	46.9		2,214	2.1	
Middle	42.6		2,084	44.4		2,325	1.8	
Fourth	41.7		2,103	38.7		2,381	-3.0	
Highest	43.0		2,044	39.0		2,225	-4.0	
<b>Total</b>	<b>42.8</b>		<b>9,875</b>	<b>42.7</b>		<b>11,180</b>	<b>-0.1</b>	

\* p<.05, \*\* p<.01, \*\*\* p<.001  
FP = family planning; NDHS = Nepal Demographic and Health Survey

Table A3 Distribution of current use of traditional family planning methods among currently married women age 15–49, by background variables, 2016–2022 Nepal DHS surveys

Variable	2016 NDHS			2022 NDHS			Change (2016–2022)	
	%	p value	N=9,875	%	p value	N=11,180	% points	p value
<b>Age</b>								
15–19	8.6		701	14.0		559	5.4	**
20–24	8.1		1,689	13.7		1,778	5.6	***
25–29	8.7		1,955	14.7		2,202	6.0	***
30–34	11.1		1,728	15.8		2,024	4.7	**
35–39	11.0		1,511	14.3		1,912	3.3	*
40–44	10.9		1,284	15.0		1,509	4.1	*
45–49	9.7	*	1,007	13.7		1,185	4.0	*
<b>Education</b>								
No education	6.4		4,098	7.9		3,544	1.5	*
Basic education	8.7		3,032	12.9		3,634	4.2	***
Secondary or higher	16.0	***	2,745	22.0	***	4,002	6.0	***
<b>Ethnicity</b>								
Brahmin	17.6		1,116	27.0		1,062	9.4	***
Chhetri	11.1		1,797	16.8		1,968	5.7	***
Terai/Madheshi caste	8.0		1,758	10.5		1,834	2.5	*
Dalit	4.7		1,264	8.6		1,733	3.9	***
Newar	13.5		454	25.0		391	11.5	**
Hill Janajati	11.2		2,005	17.2		2,482	6.0	***
Terai Janajati	6.2		958	9.9		1,174	3.7	*
Muslim	4.8		504	5.6		525	0.8	
Others	3.9	***	30	14.4		11		
<b>Exposure to FP messages</b>								
No	6.9		3,022	10.2		3,723	3.3	***
Yes	11.1	***	6,853	16.8	***	7,457	5.7	***
<b>Number of living children</b>								
0	7.4		1,027	12.6		1,051	5.2	**
1	12.0		2,123	18.2		2,694	6.2	***
2	10.1		2,923	16.3		3,756	6.2	***
3	9.1		1,896	11.4		2,113	2.3	*
4+	8.8	*	1,906	9.6	***	1,554	0.8	

Continued...

Table A3—Continued

Variable	2016 NDHS			2022 NDHS			Change (2016–2022)	
	%	<i>p</i> value	N=9,875	%	<i>p</i> value	N=11,180	% points	<i>p</i> value
<b>Number of living sons</b>								
0	9.7		2,617	15.5		3,052	5.8	***
1	11.3		4,009	17.0		4,852	5.7	***
2+	7.9	**	3,249	10.2	***	3,276	2.3	**
<b>Number of living daughters</b>								
0	9.3		3,358	15.1		3,980	5.8	***
1	10.3		3,664	15.3		4,338	5.0	***
2+	9.6		2,854	12.7	*	2,862	3.1	**
<b>Child loss experience</b>								
No	10.0		8,433	15.1		9,961	5.1	***
Yes	8.4		1,442	10.5	***	1,219	2.1	
<b>Currently residing with husband/partner</b>								
Yes	13.7		6,518	19.5		7,390	5.8	***
No	2.0	***	3,358	5.0	***	3,790	3.0	***
<b>Place of residence</b>								
Urban	10.6		6,034	16.2		7,558	5.6	***
Rural	8.5	*	3,841	11.2	***	3,622	2.7	**
<b>Province</b>								
Koshi	14.9		1,659	18.0		1,889	3.1	
Madhesh	5.4		2,173	8.5		2,415	3.1	**
Bagmati	11.4		1,916	21.5		2,158	10.1	***
Gandaki	11.2		948	16.4		1,051	5.2	**
Lumbini	9.0		1,748	13.6		2,024	4.6	*
Karnali	6.6		583	9.3		693	2.7	
Sudurpaschim	9.3	***	849	11.6	***	961	2.3	
<b>Wealth quintile</b>								
Lowest	7.3		1,689	9.6		2,035	2.3	*
Second	8.5		1,945	9.5		2,214	1.0	
Middle	7.0		2,084	11.8		2,325	4.8	***
Fourth	8.4		2,103	17.9		2,381	9.5	***
Highest	17.3	***	2,044	23.4		2,225	6.1	***
<b>Total</b>	<b>9.8</b>		<b>9,875</b>	<b>14.6</b>		<b>11,180</b>	<b>4.8</b>	<b>***</b>

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ 

FP = family planning; NDHS = Nepal Demographic and Health Survey

**Table A4 Distribution of unmet need for family planning among currently married women age 15–49, by background variables, 2016–2022 Nepal DHS surveys**

Variable	2016 NDHS			2022 NDHS			Change (2016–2022)	
	%	p value	N=9,875	%	p value	N=11,180	% points	p value
<b>Age</b>								
15–19	34.9		701	30.9		559	4.0	
20–24	32.6		1,689	29.1		1,778	3.5	
25–29	30.0		1,955	23.5		2,202	6.5	***
30–34	24.6		1,728	22.0		2,024	2.6	
35–39	17.1		1,511	17.2		1,912	-0.1	
40–44	13.6		1,284	14.4		1,509	-0.8	
45–49	10.3	***	1,007	10.2	***	1,185	0.1	
<b>Education</b>								
No education	18.0		4,098	16.5		3,544	1.5	
Basic education	28.4		3,032	23.7		3,634	4.7	***
Secondary or higher	27.1	***	2,745	22.0	***	4,002	5.1	***
<b>Ethnicity</b>								
Brahmin	22.1		1,116	16.8		1,062	5.3	*
Chhetri	27.0		1,797	22.8		1,968	4.2	*
Terai/Madheshi caste	19.6		1,758	17.6		1,834	2.0	
Dalit	27.7		1,264	25.5		1,733	2.2	
Newar	19.9		454	14.8		391	5.1	
Hill Janajati	27.4		2,005	22.0		2,482	5.4	**
Terai Janajati	14.8		958	16.7		1,174	-1.9	
Muslim	26.5		504	24.7		525	1.8	
Other	14.8	***	30	26.2	***	11		
<b>Exposure to FP messages</b>								
No	22.5		3,022	20.5		3,723	2.0	
Yes	24.3		6,853	21.0		7,457	3.3	***
<b>Number of living children</b>								
0	19.7		1,027	16.0		1,051	3.7	
1	32.5		2,123	25.7		2,694	6.8	***
2	26.2		2,923	22.3		3,756	3.9	**
3	19.8		1,896	17.8		2,113	2.0	
4+	16.3	***	1,906	16.1	***	1,554	0.2	
<b>Number of living sons</b>								
0	25.7		2,617	22.6		3,052	3.1	*
1	27.9		4,009	22.0		4,852	5.9	***
2+	17.0	***	3,249	17.4	***	3,276	-0.4	
<b>Number of living daughters</b>								
0	24.7		3,358	21.1		3,980	3.6	**
1	25.4		3,664	21.0		4,338	4.4	***
2+	20.5	***	2,854	20.2		2,862	0.3	
<b>Child loss experience</b>								
No	25.0		8,433	21.4		9,961	3.6	***
Yes	16.2	***	1,442	16.0	***	1,219	0.2	
<b>Currently residing with husband/partner</b>								
Yes	10.4		6,518	8.0		7,390	2.4	***
No	49.6	***	3,358	45.6	***	3,790	4.0	*
<b>Type of place of residence</b>								
Urban	22.7		6,034	20.7		7,558	2.0	*
Rural	25.3	*	3,841	21.1		3,622	4.2	***

Continued...

Table A4—Continued

Variable	2016 NDHS			2022 NDHS			Change (2016–2022)	
	%	p value	N=9,875	%	p value	N=11,180	% points	p value
<b>Province</b>								
Koshi	24.9		1,659	17.6		1,889	7.3	***
Madhesh	20.6		2,173	21.1		2,415	-0.5	
Bagmati	19.8		1,916	16.0		2,158	3.8	*
Gandaki	30.0		948	28.1		1,051	1.9	
Lumbini	27.9		1,748	23.3		2,024	4.6	*
Karnali	25.7		583	23.4		693	2.3	
Sudurpaschim	21.3	***	849	22.1	***	961	-0.8	
<b>Wealth quintile</b>								
Lowest	27.0		1,689	24.7		2,035	2.3	
Second	23.7		1,945	21.4		2,214	2.3	
Middle	24.3		2,084	20.4		2,325	3.9	*
Fourth	23.8		2,103	20.9		2,381	2.9	
Highest	20.5	**	2,044	16.9		2,225	3.6	
<b>Total</b>	<b>23.7</b>		<b>9,875</b>	<b>20.8</b>	<b>***</b>	<b>11,180</b>	<b>2.9</b>	<b>***</b>

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$   
FP = family planning; NDHS = Nepal Demographic and Health Survey

Table A5 Distribution of total demand for family planning among currently married women age 15–49, by background variables, 2016–2022 Nepal DHS surveys

Variable	2016 NDHS			2022 NDHS			Change (2016–2022)	
	%	p value	N=9,875	%	p value	N=11,180	% points	p value
<b>Age</b>								
15–19	58.0		701	59.1		559	1.1	
20–24	64.6		1,689	67.8		1,778	3.2	
25–29	75.9		1,955	75.7		2,202	-0.2	
30–34	83.2		1,728	83.2		2,024	0.0	
35–39	85.6		1,511	87.1		1,912	1.5	
40–44	82.9		1,284	85.5		1,509	2.6	
45–49	75.7	***	1,007	74.0	***	1,185	-1.7	
<b>Education</b>								
No education	76.0		4,098	78.6		3,544	2.6	
Basic education	77.7		3,032	78.8		3,634	1.1	
Secondary or higher	75.3		2,745	76.8		4,002	1.5	
<b>Ethnicity</b>								
Brahmin	80.5		1,116	81.5		1,062	1.0	
Chhetri	78.5		1,797	80.3		1,968	1.8	
Terai/Madheshi caste	71.1		1,758	72.7		1,834	1.6	
Dalit	75.2		1,264	78.1		1,733	2.9	
Newar	80.5		454	81.9		391	1.4	
Hill Janajati	79.2		2,005	80.5		2,482	1.3	
Terai Janajati	80.9		958	81.8		1,174	0.9	
Muslim	56.2		504	58.0		525	1.8	
Other	91.1	***	30	87.6	***	11	3.5	
<b>Exposure to FP messages</b>								
No	70.9		3,022	73.5		3,723	2.6	
Yes	78.7	***	6,853	80.3	***	7,457	1.6	

Continued...

Table A5—Continued

Variable	2016 NDHS			2022 NDHS			Change (2016–2022)	
	%	<i>p</i> value	N=9,875	%	<i>p</i> value	N=11,180	% points	<i>p</i> value
<b>Number of living children</b>								
0	35.1		1,027	37.0		1,051	1.9	
1	69.4		2,123	71.7		2,694	2.3	
2	85.4		2,923	87.7		3,756	2.3	*
3	86.9		1,896	85.6		2,113	-1.3	
4+	81.9	***	1,906	83.3	***	1,554	1.4	
<b>Number of living sons</b>								
0	54.1		2,617	59.2		3,052	5.1	**
1	81.7		4,009	83.1		4,852	1.4	
2+	87.6	***	3,249	88.1	***	3,276	0.5	
<b>Number of living daughters</b>								
0	67.6		3,358	70.2		3,980	2.6	
1	81.6		3,664	82.6		4,338	1.0	
2+	79.9	***	2,854	82.1	***	2,862	2.2	
<b>Child loss experience</b>								
No	76.4		8,433	78.0		9,961	1.6	
Yes	76.3		1,442	78.1		1,219	1.8	
<b>Currently residing with husband/partner</b>								
Yes	78.0		6,518	79.4		7,390	1.4	
No	73.1	***	3,358	75.5	***	3,790	2.4	
<b>Place of residence</b>								
Urban	77.5		6,034	77.5		7,558	0.0	
Rural	74.5	*	3,841	79.1		3,622	4.6	**
<b>Province</b>								
Koshi	80.0		1,659	79.1		1,889	-0.9	
Madhesh	68.3		2,173	70.1		2,415	1.8	
Bagmati	80.5		1,916	82.2		2,158	1.7	
Gandaki	78.5		948	79.6		1,051	1.1	
Lumbini	75.9		1,748	79.9		2,024	4.0	
Karnali	76.8		583	78.6		693	1.8	
Sudurpaschim	78.7	***	849	80.7	***	961	2.0	
<b>Wealth quintile</b>								
Lowest	76.1		1,689	79.0		2,035	2.9	*
Second	77.2		1,945	77.7		2,214	0.5	
Middle	73.9		2,084	76.6		2,325	2.7	
Fourth	73.9		2,103	77.6		2,381	3.7	
Highest	80.8	***	2,044	79.4		2,225	-1.4	
<b>Total</b>	<b>76.3</b>		<b>9,875</b>	<b>78.0</b>		<b>11,180</b>	<b>1.7</b>	

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ 

FP = family planning; NDHS = Nepal Demographic and Health Survey

**Table A6 Distribution of demand satisfied by modern family planning methods among currently married women age 15–49, by background variables, 2016–2022 Nepal DHS surveys**

Variable	2016 NDHS			2022 NDHS			Change (2016–2022)	
	%	p value	N=7,539	%	p value	N=8,724	% points	p value
<b>Age</b>								
15–19	24.9		409	24.0		333	-0.9	
20–24	37.0		1,088	36.8		1,208	-0.2	
25–29	48.8		1,485	49.4		1,663	0.6	
30–34	57.0		1,436	54.5		1,685	-2.5	
35–39	67.1		1,293	63.8		1,660	-3.3	
40–44	70.4		1,064	65.6		1,295	-4.8	
45–49	73.4	***	765	67.6	***	879	-5.8	*
<b>Education</b>								
No education	67.7		3,118	69.0		2,787	1.3	
Basic education	52.2		2,352	53.5		2,860	1.3	
Secondary or higher	42.8	***	2,068	42.8	***	3,076	0.0	
<b>Ethnicity</b>								
Brahmin	50.7		896	46.2		864	-4.5	
Chhetri	51.4		1,408	50.6		1,582	-0.8	
Terai/Madheshi caste	61.1		1,252	61.4		1,334	0.3	
Dalit	56.7		952	56.4		1,355	-0.3	
Newar	58.5		364	51.5		316	-7.0	
Hill Janajati	51.2		1,584	51.4		2,000	0.2	
Terai Janajati	74.1		773	67.5		958	-6.6	*
Muslim	43.8		283	47.6		306	3.8	
Other	79.5	***	29	53.7	***	10		
<b>Exposure to FP messages</b>								
No	58.4		2,145	58.3		2,740	-0.1	
Yes	55.1	*	5,394	53.0	***	5,983	-2.1	
<b>Number of living children</b>								
0	22.8		359	22.5		390	-0.3	
1	35.8		1,472	38.8		1,932	3.0	
2	57.5		2,496	55.9		3,290	-1.6	
3	66.8		1,650	65.9		1,813	-0.9	
4+	69.1	***	1,561	69.2	***	1,299	0.1	
<b>Number of living sons</b>								
0	34.5		1,413	35.6		1,803	1.1	
1	51.9		3,278	53.1		4,031	1.2	
2+	71.5	***	2,848	68.7	***	2,889	-2.8	
<b>Number of living daughters</b>								
0	49.7		2,272	48.5		2,792	-1.2	
1	56.3		2,988	56.1		3,579	-0.2	
2+	62.0	***	2,279	59.9	***	2,352	-2.1	
<b>Child loss experience</b>								
No	54.1		6,441	53.3		7,773	-0.8	
Yes	67.6	***	1,098	66.1	***	951	-1.5	
<b>Currently residing with husband/partner</b>								
Yes	68.9		5,089	65.3		5,862	-3.6	**
No	29.3	***	2,450	32.9	***	2,862	3.6	*
<b>Place of residence</b>								
Urban	57.0		4,676	52.4		5,855	-4.6	**
Rural	54.5		2,863	59.2	***	2,869	4.7	*

Continued...

Table A6—Continued

Variable	2016 NDHS			2022 NDHS			Change (2016–2022)	
	%	<i>p</i> value	N=7,539	%	<i>p</i> value	N=8,724	% points	<i>p</i> value
<b>Province</b>								
Koshi	50.1		1,324	55.1		1,493	5.0	
Madhesh	61.8		1,481	57.8		1,695	-4.0	
Bagmati	61.2		1,545	54.3		1,771	-6.9	*
Gandaki	47.5		746	44.2		833	-3.3	
Lumbini	51.3		1,327	53.8		1,613	2.5	
Karnali	57.9		450	58.4		544	0.5	
Sudurpaschim	61.1	***	666	58.2	**	775	-2.9	
<b>Wealth quintile</b>								
Lowest	55.0		1,284	56.5		1,606	1.5	
Second	58.1		1,502	60.3		1,723	2.2	
Middle	57.7		1,542	58.0		1,780	0.3	
Fourth	56.4		1,557	49.9		1,847	-6.5	**
Highest	53.2		1,655	49.2		1,768	-4.0	
<b>Total</b>	<b>56</b>		<b>7,539</b>	<b>54.7</b>		<b>8,724</b>	<b>-1.3</b>	

\* *p*<.05, \*\* *p*<.01, \*\*\* *p*<.001  
FP = family planning; NDHS = Nepal Demographic and Health Survey

Table A7 Distribution of pregnancies ending in induced abortion among all women age 15-49 whose pregnancies ended in the 3 years prior to the survey, by background variables, 2022 Nepal DHS

Variable	Pregnancy ended in included abortion (%)	N=3,833	<i>p</i> value
<b>Age</b>			***
15–19	4.4	321	
20–24	4.9	1,368	
25–29	10.0	1,171	
30–34	13.0	627	
35–39	21.5	264	
40–44	43.1	64	
45–49	25.2	18	
<b>Education</b>			
No education	7.3	771	
Basic education	10.0	1,321	
Secondary or higher	10.3	1,741	
<b>Ethnicity</b>			***
Brahmin	13.2	299	
Chhetri	13.1	694	
Terai/Madheshi caste	4.2	705	
Dalit	10.1	710	
Newar	11.4	104	
Hill Janajati	13.4	733	
Terai Janajati	5.4	348	
Muslim	2.7	237	
Other	0.0	2	
<b>Exposure to FP messages</b>			***
No	5.9	1,206	
Yes	11.3	2,627	
<b>Number of living children</b>			**
0	16.5	133	
1	6.8	1,494	
2	10.8	1,333	
3	11.1	553	
4+	11.9	318	

Continued...

Table A7—Continued

Variable	Pregnancy ended in included abortion (%)	N=3,833	p value
<b>Number of living sons</b>			*
0	7.7	1,271	
1	9.7	1,813	
2+	12.6	749	
<b>Number of living daughters</b>			
0	9.9	1,305	
1	9.3	1,604	
2+	9.7	924	
<b>Child loss experience</b>			
None	9.8	3,475	
One or more	7.2	358	
<b>Currently residing with husband/partner</b>			**
Yes	10.7	2,350	
No	7.5	1,448	
Not currently married	23.0	35	
<b>Place of residence</b>			*
Urban	10.4	2,524	
Rural	8.0	1,309	
<b>Province</b>			***
Koshi	7.4	644	
Madhesh	4.3	965	
Bagmati	11.6	612	
Gandaki	16.9	273	
Lumbini	10.6	667	
Karnali	15.8	314	
Sudurpaschim	11.4	358	
<b>Wealth quintile</b>			***
Lowest	8.9	869	
Second	4.9	769	
Middle	11.8	795	
Fourth	11.1	771	
Highest	11.6	629	
<b>Total</b>	<b>9.6</b>	<b>3,833</b>	

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

FP = family planning; NDHS = Nepal Demographic and Health Survey