Youth Health in Nepal: Levels, Trends, and Determinants

DHS Further Analysis Reports No. 116

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January 2019

[1] Centre for Population and Development, Purbanchal University
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Ministry of Health and Population

Acknowledgments: The authors express their gratitude to Jennifer Yourkavitch (ICF), Sabita Tuladhar (USAID), Kabita Aryal (Family Welfare Division/MoHP), and Tirtha Man Tamang (UNFPA/Nepal) for helpful comments on an earlier draft. We also extend our gratitude to Tom Fish (ICF) for creating a comparable Province indicator for the 2011 Nepal DHS survey and to Jessica Williamson (Avenir Health) and Jennifer Yourkavitch (ICF) for their assistance with the tables and graphics in the report.

Editor: Diane Stoy
Document Production: Natalie Shattuck, Joan Wardell, and Cynthia Kramer

This study was conducted with support provided by the United States Agency for International Development (USAID) through The DHS Program (#AID-OAA-C-13-00095). The views expressed are those of the authors and do not necessarily reflect the views of USAID or the United States Government.

This study is a further analysis of the 2016 Nepal Demographic and Health Survey (2016 NDHS). The 2016 NDHS was implemented by New ERA under the aegis of the Ministry of Health and Population of Nepal. Funding for the survey was provided by USAID. ICF provided technical assistance through The DHS Program, a USAID-funded project providing support and technical assistance in the implementation of population and health surveys in countries worldwide.

Additional information about the 2016 NDHS may be obtained from the Ministry of Health and Population, Ramshahpath, Kathmandu; telephone: +977-1-4262543/4262802; internet: http://www.mohp.gov.np; and New ERA, Rudramati Marg, Kathmandu, P.O. Box 722, Kathmandu 44600, Nepal; telephone: +977-1-4413603; email: info@newera.com.np; Internet: http://www.newera.com.np.

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Recommended citation:

Kafle, Ramesh Babu, Rasmita Paudel, Pragya Gartoulla, and Kerry L. D. MacQuarrie. 2019. *Youth Health in Nepal: Levels, Trends, and Determinants*. DHS Further Analysis Reports No. 116. Rockville, Maryland, USA: ICF.

TABLE OF CONTENTS

TABLES ..... **v**
FIGURES ..... **ix**
FOREWORD ..... **xi**
ACKNOWLEDGMENTS ..... **xiii**
ABSTRACT ..... **xv**
ACRONYMS AND ABBREVIATIONS ..... **xvii**

1 INTRODUCTION **1**
1.1 Background 1
1.2 Rationale 3
1.3 Objectives 3

2 DATA AND METHODS **5**
2.1 Data 5
2.2 Methods 6
2.2.1 Scope of analysis 6
2.2.2 Analytical strategy 6
2.3 Operational Definition of Variables 6
2.3.1 Outcome indicators 6
2.3.2 Background characteristics and other covariates 9
2.4 Data Limitations 10

3 BACKGROUND CHARACTERISTICS OF RESPONDENTS **11**

4 MARRIAGE AND SEXUAL BEHAVIOR **13**
4.1 Background 13
4.2 Marital Status 13
4.2.1 Proportion ever-married by single years 13
4.2.2 Differentials in proportion ever-married by background characteristics 16
4.3 Determinants of Timing (Age) of Marriage 17
4.4 Sexual Behavior 18
4.4.1 Ever had sex 18
4.4.2 Age at initiation of sex 19
4.4.3 Most recent sexual partner 21
4.4.4 Condom use at last sex 21
4.5 Comprehensive Knowledge of HIV Transmission 22
4.6 STIs 25

5 FERTILITY AND FAMILY PLANNING **27**
5.1 Background 27
5.2 Age-Specific Fertility Rate 27
5.3 Initiation of Childbearing among Young Women 28
5.4 Determinants of Adolescent Childbearing 30
5.5 Pregnancy Outcomes 31
5.6 Current Use of Contraception 31
5.6.1 Trends in contraceptive use 31
5.6.2 Differentials in modern contraceptive use by background characteristics 32
5.6.3 Modern contraceptive method mix 34
5.7 Determinants of Modern Contraceptive Use 35

5.8 Need and Demand for Family Planning 37
5.8.1 Trends in need and demand for family planning 37
5.8.2 Unmet need by background characteristics 38
5.8.3 Determinants of unmet need 39

6 MATERNAL HEALTH 41
6.1 Background 41
6.2 Continuum of Maternal Health Care 41
6.3 Antenatal Care 42
6.3.1 Timing of ANC visits 43
6.3.2 Counseling during ANC 45
6.3.3 Determinants of timely ANC visits 46
6.4 Delivery Care 47
6.4.1 Institutional delivery 47
6.4.2 Reasons for not delivering in health institution 48
6.4.3 Birth preparedness 49
6.4.4 Determinants of institutional delivery 50
6.5 Postnatal Care 51
6.5.1 Postnatal care by background characteristics 51

7 OTHER HEALTH OUTCOMES 53
7.1 Background 53
7.2 Spousal Domestic Violence 53
7.3 Anemia among Women 54
7.4 Body Mass Index 56
7.5 Hypertension 57

8 DISCUSSION AND CONCLUSIONS 59
8.1 Marriage and Sexual Activity 59
8.2 Fertility and Family Planning 60
8.3 Maternal Health Care 61
8.4 Other Health Outcomes 62
8.5 Conclusion 62

REFERENCES 65

APPENDICES 71
Background Characteristics 71
Marriage and Sexual Behavior 74
Fertility and Family Planning 76
Maternal Health 79
Other Health Outcomes 83

TABLES

Table 1	Analytic sample size of youth, Nepal DHS 2011-2016	5
Table 2	Sample profile. Percent distribution of youth age 15-24 by background characteristics, Nepal DHS 2016	12
Table 3	Percentage of youth age 15-24 who have ever married by background characteristics, Nepal DHS 2016	16
Table 4	Determinants of marriage: Hazard ratios from a Cox regression among women age 15-24, Nepal DHS 2016	17
Table 5	Trends in the percentage of youth age 15-24 who have ever had sex, Nepal DHS 2011-2016	19
Table 6	Percent distribution of the relationship to the most recent sexual partner among youth age 15-24 who have ever had sexual intercourse, Nepal DHS 2016	21
Table 7	Percentage who used condoms at last sexual intercourse among young men age 15-24 who have had sex in the past 12 months by background characteristics, Nepal DHS 2016	22
Table 8	Trends in the percentage of youth age 15-24 who have comprehensive knowledge of HIV transmission, Nepal DHS 2011-2016	23
Table 9	Percentage of youth age 15-24 who have comprehensive knowledge of HIV transmission by background characteristics, Nepal DHS 2016	23
Table 10	Trends in the percentage who have ever been tested for HIV and received results, among youth age 15-24 who have ever had sex, Nepal DHS 2011-2016	24
Table 11	Percentage who have ever been tested for HIV and received results, among youth age 15-24 who have ever had sex and have ever heard of HIV, by background characteristics, Nepal DHS 2016	25
Table 12	Percentage who ever had any sexually transmitted infection (STI), genital sore/ulcer, or genital discharge among youth age 15-24 who have ever had sex, Nepal DHS 2011-2016	26
Table 13	Age-specific fertility rates for the 3 years preceding the survey among women age 15-24 by background characteristics, Nepal DHS 2016	28
Table 14	Percentage of women age 15-24 who have initiated childbearing by background characteristics, Nepal DHS 2016	29
Table 15	Determinants of adolescent childbearing: Unadjusted and adjusted odds ratios from logistic regressions for having initiated childbearing before reaching age 20 among ever-married women age 20-24, Nepal DHS 2016	30
Table 16	Trends in the percentage of currently married women age 15-24 currently using any method of contraception, Nepal DHS 2011-2016	32
Table 17	Percent distribution of current type of contraceptive method among currently married women age 15-24, Nepal DHS 2016	32
Table 18	Percentage of currently married women age 15-24 currently using a modern method of contraception by background characteristics, Nepal DHS 2016	33

Table 19 Determinants of modern contraceptive use. Odds ratios from logistic regression among currently married, non-pregnant women age 15-24, Nepal DHS 2016 36
Table 20 Need and demand for family planning among currently married women age 15-24 disaggregated by need for spacing and limiting, Nepal DHS 2016 38
Table 21 Need and demand for family planning among currently married women age 15-24 by background characteristics, Nepal DHS 2016 39
Table 22 Determinants of unmet need for family planning: Odds ratios from logistic regressions among currently married women age 15-24, Nepal DHS 2016 40
Table 23 Percentage of women who had at least four antenatal care visits for the most recent birth among women age 15-24 who had a live birth in the 5 years preceding the survey by background characteristics, Nepal DHS 2016 43
Table 24 Timing of antenatal care visits per national protocol: Percentage of women age 15-24 who had antenatal care visits in the fourth, sixth, eighth, and ninth month of their most recent pregnancy per national protocol, among those who have a live birth in the 5 years preceding the survey, by background characteristics, Nepal DHS 2016 45
Table 25 Determinants of timely antenatal care per national protocol: Odds ratios from a multivariate logistic regression for ANC visits in the fourth, sixth, eighth, and ninth month of pregnancy for the last birth among women age 15-24 who had a birth in the 5 years preceding the survey, Nepal DHS 2016 47
Table 26 Percentage of women age 15-24 who delivered their most recent birth in a health facility among women who had a birth in the 5 years preceding the survey, by background characteristics, Nepal DHS 2016 48
Table 27 Determinants of institutional delivery: Odds ratios from a multivariate logistic regression for the most recent birth among women age 15-24 who had a birth in the 5 years preceding the survey, Nepal DHS 2016 50
Table 28 Percentage of women age 15-24 who received postnatal care within 2 days for the most recent birth among women who had a birth in the 5 years preceding the survey, by background characteristics, Nepal DHS 2016 52
Table 29 Trends in the percentage of ever-married women age 15-24 who report any physical, emotional, or sexual spousal violence in the past 12 months, Nepal DHS 2011-2016 53
Table 30 Percentage of ever-married women age 15-24 who report any physical, emotional, or sexual spousal violence in the past 12 months by background characteristics, Nepal DHS 2016 54
Table 31 Trends in the percentage of women age 15-24 with any anemia, Nepal DHS 2011-2016 55
Table 32 Percentage of women age 15-24 with any anemia by background characteristics, Nepal DHS 2016 55
Table 33 Trends in body mass index of women age 15-24, Nepal DHS 2011-2016 56
Table 34 Body mass index of women age 15-24 by background characteristics, Nepal DHS 2016 57

Appendix Table A1 Percent distribution of women age 15-24 by background characteristics and disaggregated by age, Nepal DHS 2016 71
Appendix Table A2 Percent distribution of men age 15-24 by background characteristics and disaggregated by age, Nepal DHS 2016 72
Appendix Table A3 Trends in the distribution of youth age 15-24 by background characteristics, Nepal DHS 2011-2016 73
Appendix Table A4 Percentage of youth age 15-24 ever-married by background characteristics and disaggregated by age, Nepal DHS 2016 74
Appendix Table A5 Percentage who used condoms at last sexual intercourse among young men age 15-24 who have had sex in the past 12 months by background characteristics, disaggregated by age, Nepal DHS 2016 75
Appendix Table A6 Percentage of women age 15-24 who have initiated childbearing by background characteristics and disaggregated by age, Nepal DHS 2016 76
Appendix Table A7 Percentage of currently married women age 15-24 currently using a modern method of contraception by background characteristics and disaggregated by age, Nepal DHS 2016 77
Appendix Table A8 Need and demand for family planning among currently married women age 15-24 by background characteristics and disaggregated by need for spacing and for limiting, Nepal DHS 2016 78
Appendix Table A9 Percentage of women who had at least four antenatal care visits for the most recent birth among women age 15-24 who had a live birth in the 5 years preceding the survey by background characteristics, disaggregated by age, Nepal DHS 2016 79
Appendix Table A10 Timing of antenatal care visits as per national protocol: Percentage of women age 15-24 who had antenatal care visits in the fourth, sixth, eighth, and ninth month of their most recent pregnancy per national protocol, among those who have a live birth in the 5 years preceding the survey, by background characteristics, disaggregated by age, Nepal DHS 2016 80
Appendix Table A11 Percentage of women age 15-24 who delivered in a health facility for the most recent birth among those who had a birth in the 5 years preceding the survey, by background characteristics and disaggregated by age, Nepal DHS 2016 81
Appendix Table A12 Percent of women age 15-24 who received postnatal care within 2 days for the most recent birth among women who had a birth in the 5 years preceding the survey, by background characteristics and disaggregated by age, Nepal DHS 2016 82
Appendix Table A13 Body mass index of women age 15-19 by background characteristics, Nepal DHS 2016 83
Appendix Table A14 Body mass index of women age 20-24 by background characteristics, Nepal DHS 2016 84

FIGURES

Figure 1 Trends in the percentage of ever married among youth age 15-24, Nepal DHS 2011-2016 13

Figure 2 Trends in the percentage of youth age 15-19 and age 20-24 who are ever-married by exact age, Nepal DHS 2011-2016 15

Figure 3 Percentage who ever had sex among never-married youth age 15-24, Nepal DHS 2016 18

Figure 4 Age at first sexual intercourse: Trends in the percentage of youth age 15-19 and age 20-24 who have ever had sexual intercourse by exact age, Nepal DHS 2011-2016 20

Figure 5 Trends in ASFR among women age 15-19 and 20-24, Nepal DHS 2006-2016 27

Figure 6 Percent distribution of pregnancy outcomes among the most recent pregnancy to women age 15-24 who have had a pregnancy in the 5 years preceding the survey, Nepal DHS 2016 31

Figure 7 Trends in the contraceptive method mix among currently married women age 15-24 who are using a modern method, Nepal DHS 2011-2016 34

Figure 8 Duration of contraceptive use among women age 15-24 who are currently using any method of contraception (Kaplan-Meier survival curves), Nepal DHS 2016 35

Figure 9 Trends in the need and demand for family planning among currently married women age 15-24, Nepal DHS 2011-2016 38

Figure 10 Trends in components of maternal care among women age 15-24 who have had a birth in the 5 years preceding the survey, Nepal DHS 2011-2016 42

Figure 11 Timing of first antenatal care visit for the most recent birth among women age 15-24 who have had a birth in the 5 years preceding the survey, Nepal DHS 2016 44

Figure 12 Counseling during antenatal care visits. Percentage of women age 15-24 who were counseled on 5 topics and who were advised to deliver in a health facility, for the most recent birth among those who had a birth in the 5 years preceding the survey and who had at least one ANC visit, Nepal DHS 2016 46

Figure 13 Reasons for not delivering in a health facility among women age 15-24 who had a birth in the 5 years preceding the survey and did not deliver their most recent birth in a health facility, Nepal DHS 2016 49

Figure 14 Percentage of women age 15-24 who made birth preparations among those who had a birth in the 5 years preceding the survey, Nepal DHS 2016 49

Figure 15 Percentage of youth age 15-24 with hypertension, Nepal DHS 2016 58

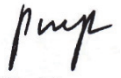
FOREWORD

The 2016 Nepal Demographic and Health Survey (NDHS) is the fifth 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, and support for report production from the United Nations Population Fund (UNFPA).

The standard format of the survey final report included only a descriptive presentation of findings and trends, and did not include analytical methods that can ascertain the significance of change and association among variables. Although largely sufficient, the final report is limited, particularly in providing answers to "why" questions – answers that are essential in reshaping important policies and programs. After the dissemination of the NDHS 2016, the MoHP and its 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, seven further analysis studies have been conducted by technical professionals from the MoHP and its partners who work directly on the given areas, with technical support and facilitation from research agencies.

The primary objective of the further analysis of the 2016 NDHS is to provide more in-depth knowledge and insights into key issues that emerged from the survey. This information provides guidance for planning, implementing, refocusing, monitoring, and evaluating health programs in Nepal. The long-term objective of the further analysis is to strengthen the technical capacity of local institutions and individuals for analyzing and using data from complex national population and health surveys to better understand specific issues related to country need.

The further analysis of the 2016 NDHS is the concerted effort of many individuals and institutions, and it is with great pleasure that I acknowledge the work involved in producing this useful document. The participation and cooperation of the members of the Technical Advisory Committee in the different phases of the survey are highly valued. I would like to extend my appreciation to USAID/Nepal for providing financial support for the further analyses and to the UK Department for International Development (DFID) for additional support it provided through the DFID Nepal Health Sector 3 (NHSP3), Monitoring Evaluation and Operational Research (MEOR) project. I would also like to acknowledge ICF for its technical assistance at all stages. My sincere thanks also go the New ERA team for the overall management and coordination of the entire process. I would also like to thank the Public Health Administration Monitoring and Evaluation Division, as well as the Policy Planning and Monitoring Division, MoHP, for their efforts and dedication to the completion of this further analysis of the 2016 NDHS.



Dr. Pushpa Chaudhary
Secretary
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ACKNOWLEDGMENTS

The further analysis of the 2016 NDHS was conducted under the aegis of the Public Health Administration Monitoring and Evaluation Division (PHAMED) of the Ministry of Health and Population (MoHP). The United States Agency for International Development (USAID) provided financial support, with technical assistance provided by ICF. Support for report production was provided by the United Nations Population Fund (UNFPA). The UK Department for International Development (DFID) provided additional support to this study through the DFID Nepal Health Sector 3 (NHSP3), Monitoring Evaluation and Operational Research (MEOR) project. Overall coordination, facilitation, administration, and logistic support were provided by New ERA, a local research firm with extensive experience in conducting similar studies. The secondary analysis of the 2016 NDHS data has been conducted by technical professionals from the MoHP and Department of Health Services, USAID, and other partners who work directly on the given areas, with technical support and facilitation from ICF and New ERA.

I would like to express my deep appreciation for the contributions of many different stakeholders and for their valuable input in the various phases of the study and the final report. My sincere gratitude goes to all members of the National Monitoring and Evaluation Technical Advisory Group at MoHP for their valuable input. I appreciate the leadership of Mr. Giri Raj Subedi, Sr. Public Health Administrator, and the entire team of the Policy Planning and Monitoring Division, PHAMED, and the Child Health Division for their contributions during the different phases of the study.

My special gratitude goes to the authors, Dr. Ramesh Kafle, Ms. Rasmita Paudel, Ms. Pragya Gartoulla, and Dr. Kerry MacQuarrie for their hard work in completing this report. I would also like to express my deep appreciation to the peer reviewers, Dr. Jennifer Yourkavitch (ICF), Ms. Sabita Tuladhar (USAID), Ms. Kabita Aryal (Family Welfare Division/MoHP), and Mr. Tirtha Man Tamang (UNFPA/Nepal), for their time and efforts.

The technical support provided by ICF is highly appreciated and acknowledged. My special thanks go to Dr. Kerry MacQuarrie for her technical support throughout the period.

My appreciation goes to the staff of New ERA, Mr. Yogendra Prasai, and the entire team of New ERA for excellently managing the further analysis activities.

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ABSTRACT

Given the importance of health policy and strategies for youth, this further analysis of the 2016 Nepal Demographic and Health Survey examines the levels, trends, and determinants of the health of youth in Nepal. The analysis includes health indicators in four areas: marriage and sexual behavior, fertility and family planning, maternal health care, and other health outcomes such as domestic violence, nutritional status, and hypertension. The results show inconsistent progress in improving the health of young women and men in Nepal. There are increases in the utilization of maternal health services and use of contraceptive methods and there are reductions in unmet need for family planning. However, there has been no significant decrease in either domestic spousal violence or adolescent marriage. Comprehensive knowledge of HIV transmission has declined significantly, and nutritional status has worsened in terms of anemia and low BMI. Youth who reside in Provinces 2 and 6, belong to Terai/Madhesi other ethnic group, or are Muslim consistently exhibit poorer health across a range of health outcomes. Although there have been improvements in some indicators, focused interventions are needed, particularly for underserved groups.

KEY WORDS: marriage, family planning, maternal health, youth, adolescents, Nepal

ACRONYMS AND ABBREVIATIONS

ANC	antenatal care
aOR	adjusted odds ratio
ASFR	age-specific fertility rate
BMI	body mass index
CI	confidence interval
DHS	Demographic and Health Survey
HR	hazard ratio
HIV/AIDS	human immunodeficiency virus/acquired immunodeficiency syndrome
MoH	Ministry of Health
MoHP	Ministry of Health and Population
NDHS	Nepal Demographic and Health Survey
OR	odds ratio
PNC	postnatal care
SBA	skilled birth attendant
SLC	school-leaving certificate
STI	sexually transmitted infection
TFR	total fertility rate
uOR	unadjusted odds ratio
WHO	World Health Organization

1 INTRODUCTION

At present, 16% of the world's population are young people age 15-24 (United Nations 2017). The highest proportion of young women and men age 15-24 in the world is in Africa (19%), with 16% in Asia, and the least in Europe (11%) and Northern America (13%) (United Nations 2017). Nepal more closely resembles Africa, with youth representing about one-fifth of the total population (CBS 2014; Ministry of Health – MOH/Nepal, New ERA/Nepal, and ICF 2017). Understanding the health status of such a large part of the population can provide meaningful evidence for health programming, particularly within Nepal's new administrative structure.

1.1 Background

Before 1994, adolescent- and youth-friendly sexual and reproductive health services were rare in Nepal. Nepal's commitments to the sexual and reproductive health of adolescents and youth were reflected in the 1998 National Reproductive Health Strategy, after the country had endorsed the Programme of Action, which was ratified at the International Conference on Population and Development in 1994, and again at the fourth World Women's Conference in 1995. After realizing the importance of policy and programs to such a large section of the population and engaging in rigorous discussions with stakeholders, the National Adolescent Health and Development Strategy was endorsed by the high-level policy committee in 2000. The goals of the strategy were improving the health and socioeconomic status of female and male adolescents and young adults and increasing the accessibility and utilization of adolescent health and counseling services (MoH 2000). Although adolescent and youth programs have continued through different ministries in Nepal, there is a need for better understanding of youth health and development issues (Pradhan and Strachan 2003).

The Ministry of Health and Population (MoHP) conducted a national representative survey on adolescence and youth in 2010/2011. This survey was designed to generate adolescent- and youth-specific data that would be useful for formulating policies, plans, and program interventions for adolescents and youth (MoHP 2011). The National Health Policy 2014 and the Nepal Health Sector Strategy (2016-2021) also provided strategic directions for adolescent health and development programs with a specific focus on sexual and reproductive health. At a global level, the UN Global Strategy for Women's, Children's, and Adolescents' Health, 2016-2030 has been a roadmap for ending preventable deaths of women, children, and adolescents.

Despite different policies, programs, and commitments, Nepal has yet to fulfill its goal of improving the health status of adolescents and youth. Fertility and marriage, sexual and reproductive health including the use of modern contraceptives, and maternity care are major concerns of adolescents and youth that must be addressed.

Among Asian countries, Nepal has one of the highest rates of child marriage for both girls and boys (UNICEF and UNFPA 2017). Although the legal minimum age for marriage for girls and boys is age 20 (Nepal Law Commission [NLC] 2017), many marry before age 18. Sexual violence, early childbearing, girls' dropping out of school, and boys' beginning work for family support and leaving school are common among those who marry at an early age. Early childbearing also puts young Nepalese women at a higher risk of death or injury during childbirth (UNICEF and UNFPA 2017).

Although the overall prevalence of HIV infection in Nepal has dropped since the 1988 onset of HIV in Nepal, the prevalence is higher among youth age 15-24 (Department of Health Services (DoHS) 2011).

Among all persons who have developed HIV infection as of July 2017, nearly 15% are boys and girls age 15-24 (NCASC 2017). Many factors increase the risk of HIV in youth such as injecting drugs, sex trafficking, changing values among young people, rising rates of migration and mobility, and decreasing awareness among transgender individuals, male sex workers, and their clients (Karmacharya et al. 2012; World Bank 2012).

The beginning of childbearing changes the lives of adolescents in profound ways. Although fertility rates have declined in Nepal over the past 3 decades, estimates indicate that a high proportion of youth initiate childbearing before age 20 (MacQuarrie 2016; MacQuarrie, Mallick, and Allen 2017). Moreover, an early age pattern of fertility is persistent in Nepal (Kafle 2016). Studies show that the use of contraception can prevent unintended pregnancy and early childbearing, and can stimulate positive changes in a young person's health and wellbeing. In Nepal, knowledge of family planning among youth is almost universal. However, the use of modern contraceptives is relatively low, and there is a substantial unmet need (MacQuarrie 2014).

Along with high rates of adolescent marriage in Nepal, there is pressure to bear a child immediately after marriage. This pressure hinders the empowerment and freedom of youth, and is associated with adverse health outcomes for women and children (Human Rights Watch 2016). Babies born to adolescent mothers are more likely to be born preterm or at low birth weight, and are more vulnerable to neonatal death (Vogel et al. 2014). Early childbearing also challenges a young person's engagement in education and employment opportunities (Watts, Liamputtong, and Mcmichael 2015).

The Government of Nepal has given priority in ensuring youth's access to complete antenatal (ANC) care (at least four ANC visits during pregnancy). The 4th, 6th, 8th, and 9th months of pregnancy are the recommended months for ANC visits (World Health Organization (WHO) 2002). The Nepal government has adopted these recommended months for ANC visits as the national protocol for ANC care (MoH 2009). The government has rewarded complete ANC visits with incentives that have been continued in the current fiscal year (Ministry of Finance [MoF] Nepal 2018). Early recognition of pregnancy and prompt initiation of ANC helps women complete the recommended number of ANC visits. A woman's initiation of pregnancy care for the first time reflects her concern about her health care during the special period of pregnancy (Dulal 2016).

Studies have shown that one-third of maternal deaths could be averted by the interventions of skilled birth attendants (SBA) (Graham, Bell, and Bullough 2001; Lawn et al. 2005). The Government of Nepal has integrated an education and counseling component in ANC visits, which includes utilizing the assistance by attendants skilled in delivery, going to health facilities for delivery, knowing the danger signs and possible complications of pregnancy, identifying where to go if a complication arises, and receiving advice on postnatal care (PNC) checkups and nutrition (MoH 2009). Analysis of this educational approach is important for a country like Nepal where a substantial proportion of births take place at home. Because women younger than age 18 are at an increased risk of adverse pregnancy outcomes, birth preparedness, delivery at a health facility, and PNC are particularly important.

There are other health risks that affect young women and men in Nepal that are less frequently described in published literature and national public health programs. These risks include anemia, obesity, hypertension, substance use, and domestic violence.

Nepal has a new federal structure and is restructuring government institutions and power sharing among federal, provincial, and local governments. The Constitution of Nepal ensures basic health service as a citizen's fundamental right (Nepal Law Commission [NLC] 2015). After promulgation of the new

constitution in 2015, the health sector remained in the domain of federal government, although state and local governments play a large role. Formulation of health policy is the domain of federal government, while provision of health service is the domain of all three levels of government—federal, provincial, and local. Family planning falls in the list of concurrent powers of the federal and provincial governments (Nepal Law Commission [NLC] 2015). All health-related programs, which were already being executed by the central level government before promulgation of the new constitution, will now continue with the active involvement of the federal government, as well as the provincial and local governments.

1.2 Rationale

Global strategies and the Government of Nepal's understanding of the health status of youth require broader policies and programs at both the national and provincial level. The world community has adjusted many programs related to adolescents and youth to align them with the Sustainable Development Goals. Since the Government of Nepal is focusing its policies and programs to achieve these goals, it is seeking to strengthen existing adolescent- and youth-related policies and programs. Planners at the provincial and national level need a broader understanding of the health issues of youth and more specifically, how different health needs, including sexual and reproductive health needs, vary across provinces and over time.

The Government of Nepal has identified adolescents and youth as a most vulnerable, underserved group. Nepal's new administration at the federal, provincial, and local levels needs a comprehensive study of the trends and determinants of youth health so that the programs and policies in the context of newly constructed federal structure can be tailored to meet the health needs of young women and men. This study will provide a comprehensive analysis that will be useful to planners, policymakers, program managers, researchers, and all other stakeholders who are working to improve the health of youth in Nepal.

1.3 Objectives

The main objective of this further analysis of the 2016 NDHS is to understand levels, trends, and determinants of health among youth in Nepal. Specifically, the study highlights the changes during 2011-2016 in the key indicators of youth's sexual and reproductive health, including marriage and sexual behavior, contraceptive use, adolescent motherhood, and other health issues. The study highlights the sociodemographic differentials in the selected health indicators of youth.

2 DATA AND METHODS

2.1 Data

This analysis uses data from Nepal Demographic and Health Survey (NDHS) 2011 and 2016. In both surveys, a nationally representative sample of households was used for data collection. Personal interviews of eligible women and men age 15-49 in the sampled households were conducted with structured questionnaires. This study uses data collected through two of six questionnaires administered in the survey: the Woman's Questionnaire and the Man's Questionnaire.[1] The Woman's Questionnaire, which was administered to all women age 15-49, included topics related to background characteristics, reproductive history and child mortality, family planning methods, fertility preferences, delivery care, child health, women's work, husband's characteristics, domestic violence, HIV/AIDS, and other health issues. The Man's Questionnaire was administered to all men age 15-49 in the subsample of households selected for the male survey. This questionnaire collected information that was similar to the Woman's Questionnaire, although it was shorter because it did not include a detailed reproductive history or questions on maternal and child health. Unlike the 2011 NDHS, the 2016 NDHS involved measuring the height and weight of men and blood pressure of all men and women age 15 and above from the sampled household. With data from both surveys, this report analyzes the changes over time at the national level in the selected indicators for youth age 15-24, disaggregated by two age groups of age 15-19 and 20-24. The differentials and determinants of selected indicators include data from only the 2016 NDHS.

Both surveys interviewed women and men age 15-49 from the sampled households, irrespective of their marital status. In both surveys, the Men's Questionnaire was administered in every second household of the sample selected for the women's interview, which resulted in smaller samples for the men. The 2011 NDHS is representative at the national level for the major ecological zones and the urban and rural areas, while the 2016 NDHS is representative of these levels and the provincial level as well.

This report examines a number of indicators for young women and men age 15-24 and uses several different denominators in the various analyses. For example, information on family planning is collected only for currently married women, maternal health care is analyzed for those women who had a birth in the 5 years before the survey, and the domestic violence module is administered to only one eligible woman per household for ethical reasons. Table 1 shows the sample sizes used in analysis.

Table 1 Analytic sample size of youth, Nepal DHS 2011-2016

Population and age	Survey year	
	2011	2016
	N	*N*
Women		
15-19	*2,753*	*2,598*
20-24	*2,297*	*2,251*
15-24	*5,050*	*4,849*
Men		
15-19	*978*	*931*
20-24	*685*	*649*
15-24	*1,663*	*1,580*

[1] The other questionnaires in the survey are the Household Questionnaire, the Biomarker Questionnaire, the Fieldworker Questionnaire, and the Verbal Autopsy Questionnaire. Survey questionnaires are available at www.dhsprogram.com.

2.2 Methods

2.2.1 Scope of analysis

This study analyzes three major components of reproductive health—marriage and sexual behavior, fertility and family planning, and maternal health—and includes a separate section for other relevant health outcomes. Outcomes in these sections include:

- Marriage and sexual behavior: Proportion married, age at marriage, sexual activity, and comprehensive knowledge of HIV/AIDS
- Fertility and family planning: Age-specific fertility rate (ASFR), adolescent childbearing, use of family planning, and unmet need for family planning
- Maternal health: ANC, institutional delivery, and PNC
- Other health outcomes: Domestic violence, anemia, body mass quintile, and hypertension

2.2.2 Analytical strategy

The analysis is limited to young women and men age 15-24. The prevalence of several reproductive health indicators and other relevant health indicators is first calculated for young women and men age 15-24, and then disaggregated by separate age groups 15-19 and 20-24. Changes over time between the 2011 and 2016 NDHS in the respective outcomes and differences between women and men in the selected indicators are examined through significance testing. Cross tabulations with Chi-square tests determine the differentials and significance of the associations between outcomes and selected background characteristics. The differentials are examined only for the 2016 survey.

The primary background characteristics used in the analysis include place of residence (urban/rural), province, educational attainment, household wealth quintile, and caste/ethnicity. However, depending upon the health outcomes and their potential associated factors, secondary covariates in the analysis may include age, number of children, birth order, fertility preferences, exposure to mass media, women's decision making, and husband's residential status. Multivariate analyses examine the association of the dependent variables with background characteristics. The statistical methods include logistic regression and Cox regression. Results of the logistic regressions are presented with odds ratios (OR), while the results of the Cox regression are expressed as hazard ratios (HR) to ease interpretation. Cox regression is used when the outcome is the time to an event, as in age at marriage, and to account for right-hand censoring because not the entire sample (age 15-24) have reached the end of the observation period (age 24) by the time of the survey. Standard NDHS sample weights are applied in the data analysis to account for the unequal probability of selection in the sample and nonresponse. Therefore, all figures and tables in the report depict weighted numbers and percentages.

This study used Stata Version 15 for the data analysis. The complex survey design of the NDHS is accounted for by using 'svy' commands in Stata, which includes individual sample weight, strata, and cluster. All tests results are considered significant at $p<0.05$.

2.3 Operational Definition of Variables

2.3.1 Outcome indicators

Currently married: Those respondents who are married, either in a formal marital union or living with a cohabiting partner as if married at the time of survey.

Ever-married: Respondents who are currently married or formerly married (widowed, divorced, or separated) at the time of the survey.

Sexually active/ever had sex: Those respondents who reported that they have ever had sexual intercourse, irrespective of their marital status. This term is used synonymously for those who were sexually active, regardless of recent sexual activity.

Comprehensive knowledge of HIV transmission: Correct knowledge of two facts and rejection of two misconceptions about HIV that include knowing that consistent use of a condom during sexual intercourse and having just one uninfected faithful sexual partner reduce the risk of getting HIV, knowing that a healthy-looking person can have HIV, and knowing that it is not true that HIV can be transmitted through mosquito bites, or that a person can be infected by sharing food with someone who has HIV. Respondents who respond correctly to all four items are considered to have comprehensive knowledge and are coded as yes.

Ever been tested for HIV and received results: Among those respondents who ever had sexual intercourse and ever heard of HIV/AIDS, this includes respondents who reported that they had ever been tested for HIV and received the results. Respondents are not asked to disclose the results of their HIV test.

Sexually transmitted infection (STI): Among respondents who ever had sex, this includes respondents who reported having any STIs or having any symptoms (genital sore/ulcer or discharge) in the 12 months before the survey.

Age-specific fertility rate (ASFR): The number of births per 1,000 women years of exposure during age 15-19 and 20-24, for the 3 years before survey. Births at each age and their person years of exposure are used in the calculation.

Adolescent fertility: Experience of a birth before the woman reaches age 20.

Pregnancy outcome: Any pregnancy that ends in a live birth or miscarriage, induced abortion, or stillbirth. In the DHS standard questionnaire, pregnancies that do not end in a live birth are classified as terminated pregnancies and are not differentiated by miscarriage, induced abortion, or stillbirth. However, the NDHS includes a country-specific question that differentiates among pregnancy outcomes, which are classified as live birth, miscarriage, abortion, and stillbirth.

Current use of modern contraception: Current users of modern contraceptives include women who said that they or their partner are currently using any of the following modern methods of contraception: female sterilization, male sterilization, pill, injectables, intrauterine device, implant, condom, lactational amenorrhea method, and emergency contraception at the time of survey.

Unmet need for family planning: Unmet need for family planning includes fecund, sexually active women who want to delay or prevent pregnancy but are not using a method of contraception. This study calculates the unmet need for family planning with the revised definition described in Bradley et al. (2012). Unmet need is further disaggregated into unmet need for spacing (wants to delay a birth for 2 years or more) and unmet need for limiting (wants no or no more children).

Antenatal care (ANC): Women who have had a birth in the past 5 years are asked about their experience with ANC during the pregnancy leading to their most recent birth. This study analyzes number of ANC visits as measured in two categories: At least four ANC visits and fewer than four ANC

visits, since four is the minimum number of visits recommended by the MoHP Nepal (MoHP 2009). In addition, we examine the timing of ANC visits, and whether a woman received ANC service in the recommended fourth, sixth, eighth, and ninth months of pregnancy, per the national protocol for maternal care in Nepal.

Counseling during ANC: Counseling during ANC is assessed among the same women as the number and timing of ANC. Women are considered to have received counseling during ANC if they were counseled on receiving assistance by a skilled birth attendant (SBA) during delivery, going to a health facility for delivery, knowing the possible complications during pregnancy, understanding where to go if problems arise, and completing a PNC checkup.

Skilled Birth Attendant (SBA): MoHP Nepal endorsed the SBA policy in 2006 in order to reduce the maternal mortality rate (MoHP 2006b, 2006a). SBA is defined as an accredited health professional, such as doctor, nurse, or auxiliary nurse midwife, who has been educated and trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancies, childbirth, and the postnatal period and in the identification, management, and referral of complications in women and newborns (MoHP 2012). Health assistants/auxiliary health workers, maternal and child health workers, female community health volunteers, village health workers, traditional birth attendants, relatives, or friends are not considered as SBAs.

Institutional delivery: This includes women age 15-24 who had a live birth in the 5 years before the survey and delivered the most recent birth in a health facility in the government, private, or non-government sectors or outside Nepal, where delivery services are provided.

Postnatal care (PNC): Among women who have had a birth in the 5 years before the survey and for the most recent birth, women who received a checkup within 2 days of delivery are considered to have received postnatal care, regardless of the place of delivery.

Domestic (spousal) violence: The NDHS used a module on domestic violence and administered the questions to a subsample of households that were selected for the men's survey. Only one randomly selected eligible woman in the selected household was interviewed with this module. Physical spousal violence includes acts of pushing, shaking, or throwing something at the wife; twisting or pulling her hair; punching her with a fist or something that can hurt her; kicking her, dragging her, or beating her up; trying to choke her or burn her on purpose; or threatening or attacking her with a knife, gun, or any other weapon.

Sexual spousal violence also includes a husband physically forcing his wife to have sexual intercourse with him even if his wife does not want to; physically forcing her to perform other sexual acts that his wife did not want to; and forcing her with threats or in any other way to perform any other sexual acts she did not want to.

Emotional spousal violence incorporates a husband saying or doing something to humiliate his wife in front of others; threatening, hurting, or harming his wife or someone close to her; and insulting his wife or making her feel bad about herself. Among ever-married women age 15-24 who responded to the domestic violence module in the survey, spousal violence includes those respondents who experienced any kind of physical, emotional, or sexual violence in the past 12 months.

Anemia: This includes woman age 15-24 with any anemia (mild, moderate, or severe). A hemoglobin level of less than 12 gm/dl for non-pregnant women and less than 11 gm/dl for pregnant women defines any anemia. The data on hemoglobin is adjusted for smoking and altitude of the enumeration area.

Body mass quintile (BMI): A numerical value obtained by dividing a person's weight (in Kg) by the square of height (in meters), and categorized as either underweight (BMI < 18), normal (BMI between 18 and 25), or overweight (BMI >25).

Hypertension: A person is said to have hypertension if he/she has an average systolic blood pressure level more than 140 mmHg and/or average diastolic blood pressure level more than 90 mmHg at the time of survey, or has average blood pressure less than 140/90 mmHg and is currently using antihypertensive medicine to control blood pressure.

2.3.2 Background characteristics and other covariates

Age: Age of respondent at the time of survey as measured in completed years and categorized according to conventional 5-year age groups. The two age groups in this study are age 15-19 and age 20-24.

Number of living children: The numerical variable that indicates the number of children a woman had given birth to in her lifetime and are still alive. For analytical purposes, this variable is categorized into three categories as 0, 1, and 2 or more.

Birth order: An ordinal variable that counts the birth order of a child, as measured in two categories of first order birth and higher order births.

Fertility preference: A categorical variable constructed from the information on whether a woman wants to have another child, as measured in three categories: Wants them (within 2 years), wants later (after 2 or more years or time is undecided or undecided) and wants no more (no more, declared infecund, or sterilized).

Place of residence: In this study, place of residence is a categorical variable with two categories of either urban or rural. Reclassification of urban municipalities between 2011 and 2016 preclude analysis of trends disaggregated by rural/urban residence.

Province: This variable indicates the seven provinces per the newly constructed federal governance system of the country. This study uses the nomenclature Provinces 1, 2, 3, 4, 5, 6, and 7, since these are the province names that were in effect at the time of the survey.[2]

Household wealth quintile: This is the standard DHS variable that is widely used as proxy for the economic condition of a household (Rutstein and Johnson 2004), and which includes five ordinal categories corresponding to quintiles of the de jure household population, described as: poorest, poorer, middle, richer, and richest.

Caste/ethnicity: This categorical variable is obtained from the question on caste/ethnic affiliation that includes seven categories: Brahmin/Chhetri, Terai/Madhesi other caste, Dalit, Janajati, Newar, Muslim, and Others as suggested by Bennet et al. (Bennet, Dahal, and Govindasamy 2008).

Exposure to media: This is a dichotomous variable constructed on information on women's exposure to radio, TV, and newspapers. Respondents exposed to at least one of these three media at least once a

[2] Province 4 has since changed its name to Gandaki Province (July 2018), Province 6 to Karnali Province (February 2018), and Province 7 to Sudurpashchim Province (September 2018). The remaining four provinces have not adopted permanent names as of the time of this publication.

week are considered to have high media exposure, and those exposed to none are considered to have a low level of media exposure.

Women's decision making: This variable, available for only currently married women, is a composite of three items: women's involvement in decisions about the use or non-use of contraception, women's ability to refuse sex with her husband if she doesn't want to have sex, and women's involvement in decisions about her own health care. A woman who can refuse sex and is involved in decisions (either makes the decision jointly with her husband or alone) about her own health care and the use/non-use of contraception is considered as having high decision-making power, and if not involved, low decision-making power.

Spousal separation: This dichotomous variable indicates whether husband of a currently married woman age 15-49 lives away from home.

Education: Education is measured in four ordinal categories: No education, primary (up to standard 5), secondary (standard 6 and up to School Leaving Certificate, or SLC), and higher (greater than SLC). However, these categories do not represent completed education. For example, someone with some primary education but less than standard 5 is categorized as "primary," not "no education," while someone with some secondary education but not SLC is categorized as "secondary," not "primary." In the Nepalese education system prevailing at the time of survey, SLC is the final examination in the secondary school system of Nepal, which is administered as the final evaluation of grade 10. Although grade 12 has now been declared as the highest level of school education, SLC is grade 10 for the respondents in the survey.

2.4 Data Limitations

For some indicators such as domestic violence, the data are not disaggregated further by age because of small sample size. In addition, fine disaggregation of some outcomes by background characteristics with multiple categories may result in a small number of youth in some categories. This may impair our ability to detect significant associations, either differences or change, for some indicators.

Hypertension data are presented only for survey year 2016, which was the first survey to collect these data. Thus, no trends analysis is possible. As with any cross-sectional data, the results of multivariate analysis using NDHS data can only be interpreted as association between various background characteristics with the health indicators considered for analysis. Causality cannot be established.

3 BACKGROUND CHARACTERISTICS OF RESPONDENTS

This chapter describes the distribution of young women and men by selected background characteristics. Table 2 presents these data for the survey year 2016. Two-thirds of men and 61% of women live in urban areas. The majority of young men and women (56% of women and 60% of men) have some secondary education. The differences in educational attainment between the sexes are statistically significant. A significantly higher proportion of young men have some secondary or higher level of educational attainment as compared to young women, and a significantly lower proportion of young men have no education or primary education as compared to young women. (Test statistics are not displayed.) Provincial and ethnicity/caste characteristics are similar for young men and women, who are more likely to live in Provinces 1, 2, 3, and 5, than in Provinces 4, 6, and 7; and more likely to belong to Brahmin/Chhetri or Janajati caste and least likely to be Newar, Muslim, or other. Both young men and young women are more likely to live in a household in one of the middle three quintiles than in either the poorest or richest quintile. However, the proportions of women in richer and the richest wealth quintile are significantly lower compared to men, and significantly higher than men in the poorest and poorer quintiles. (Test statistics are not displayed.)

The distribution of young women and men across various background characteristics disaggregated by the two age groups (age 15-19 and 20-24) exhibits similar patterns for each age group except for education. The most common level of educational attainment for both age groups is some secondary education. Details are shown in Appendix Tables A1 and A2.

Table 2 **Sample profile.** **Percent distribution of youth age 15-24 by background characteristics, Nepal DHS 2016**

Background characteristics	Women		Men	
	%	*N*	%	*N*
Age				
15-19	53.6	*2,598*	58.9	*931*
20-24	46.4	*2,251*	41.1	*649*
Place of residence				
Urban	61.7	*2,991*	66.6	*1,053*
Rural	38.3	*1,858*	33.4	*528*
Province				
Province 1	16.9	*817*	16.3	*258*
Province 2	20.5	*996*	19.3	*304*
Province 3	19.6	*952*	24.7	*391*
Province 4	9.5	*460*	10.0	*158*
Province 5	18.4	*892*	16.0	*253*
Province 6	6.1	*293*	5.5	*87*
Province 7	9.1	*440*	8.2	*129*
Education				
No education	10.0	*483*	2.8	*45*
Primary	14.3	*696*	12.3	*194*
Some secondary	55.6	*2,696*	60.4	*954*
SLC and above	20.1	*974*	24.6	*388*
Caste/ethnicity				
Brahmin/Chhetri	29.3	*1,420*	28.8	*455*
Terai/Madhesi other	15.2	*737*	15.6	*247*
Dalit	13.2	*641*	12.9	*203*
Janajati	31.9	*1,545*	32.1	*507*
Newar	4.3	*210*	4.9	*77*
Muslim	5.8	*281*	5.5	*87*
Others	0.3	*15*	0.3	*5*
Wealth Index				
Poorest	17.5	*847*	15.0	*237*
Poorer	20.5	*994*	16.9	*267*
Middle	20.9	*1,015*	18.7	*296*
Richer	22.8	*1,104*	26.5	*419*
Richest	18.4	*890*	22.9	*361*
Total		***4,849***		***1,580***

Changes that have occurred between 2011 and 2016 in the distribution of background characteristics are presented in detail in Appendix Table A3.[3] Education levels have increased between the two surveys for both young women and men; otherwise, the samples are similar in both surveys.

It appears as though there has been a dramatic increase in urban residence from 14% for young women and 17% for men in 2011 to more than 60% in 2016. However, this drastic increase in the proportion characterized as urban is due to a reclassification of areas as municipalities that had previously been defined as rural areas, rather than a process of urbanization as such (Ministry of Health – MOH/Nepal, New ERA/Nepal, and ICF 2017). Because of this reclassification, no conclusions can be drawn about trends in health outcomes by place of residence between these two surveys.

[3] Rural/urban residence cannot be directly compared between the Nepal DHS 2011 and 2016 due to a change in classification criteria between surveys that resulted in an increase from 58 designated municipalities in 2011 to 263 municipalities by 2016.

4 MARRIAGE AND SEXUAL BEHAVIOR

4.1 Background

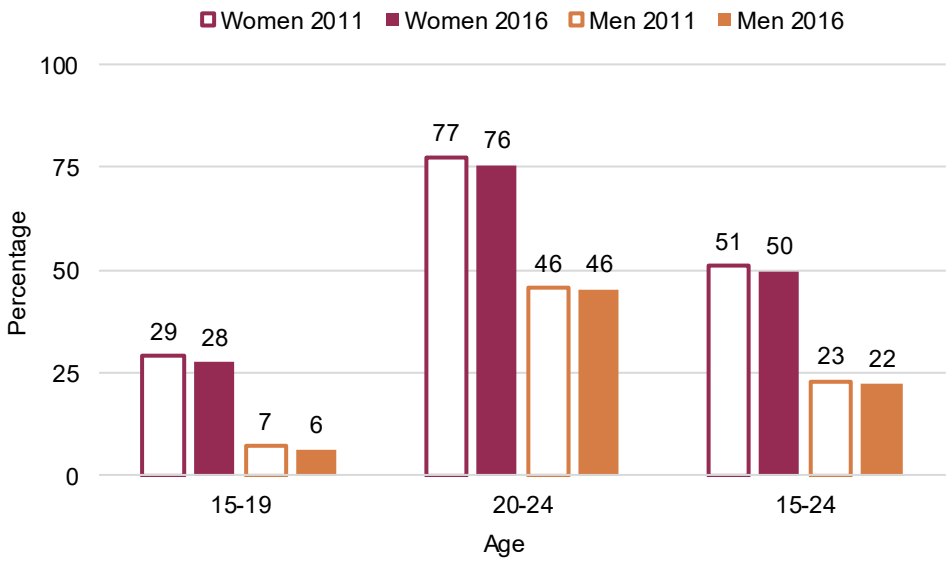
Understanding patterns of marriage, sexual behavior, knowledge of HIV, and use of condoms is crucial in assessing current needs and implementing programs or policies that encourage healthier choices about sex and safe behavior.

Young people are of particular interest because those age 15-24 are often making their first decisions about marriage and sexual activity. Nonetheless, they may fail to obtain adequate information on healthy, safe sexual practices—the basis for informed decision making—due to social stigma and cultural norms associated with sexuality and sexual activity. Understanding the needs of young people regarding sex and sexual activity will guide programs that can help youth make wise choices that they can carry into their adult lives. This section discusses the marital status of young men and women age 15-24, disaggregated by background characteristics, proportions married by exact age and determinants of marriage, and sexual behavior-related indicators. The latter includes ever had sex, sexual behavior by marital status, condom use, knowledge of HIV transmission, testing for HIV, and results received.

4.2 Marital Status

Figure 1 shows the trend between 2011 and 2016 in the proportions of young women and men who have ever married. The proportion of ever-married women age 15-24 has not decreased significantly between 2011 (51%) and 2016 (50%). The lack of declining trend is similar among ever-married men age 15-24. There are significantly higher proportions of women age 15-24 that are ever-married (50%) as compared to men of same age (23%). When disaggregated by age, a similar pattern is observed in both the age groups: 15-19 and 20-24.

Figure 1 Trends in the percentage of ever married among youth age 15-24, Nepal DHS 2011-2016



4.2.1 Proportion ever-married by single years

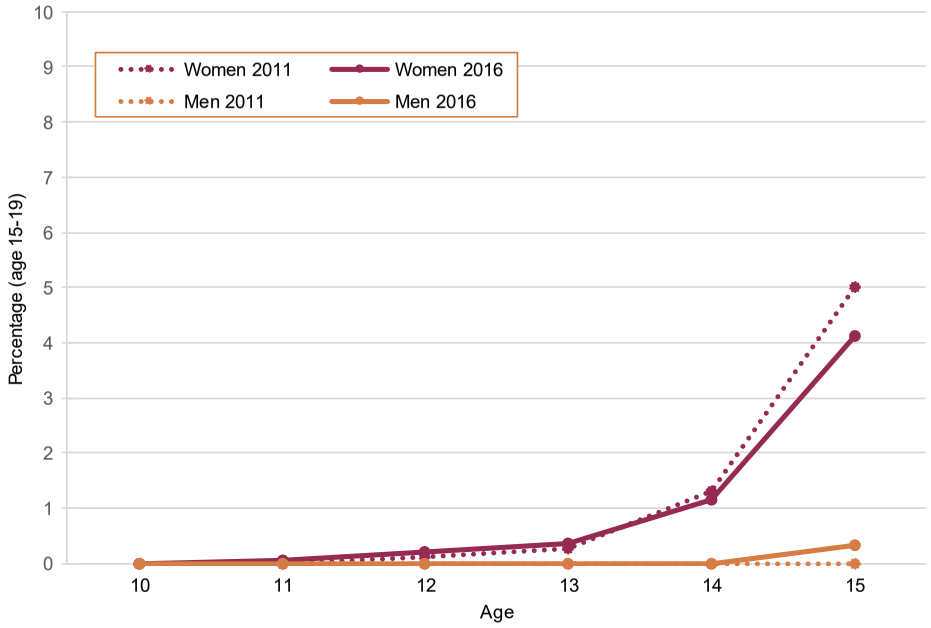
To better understand the age dynamics of marriage, it is important to examine the proportion of ever-married by the exact single year of age. The cumulative proportion of ever-married men and women by

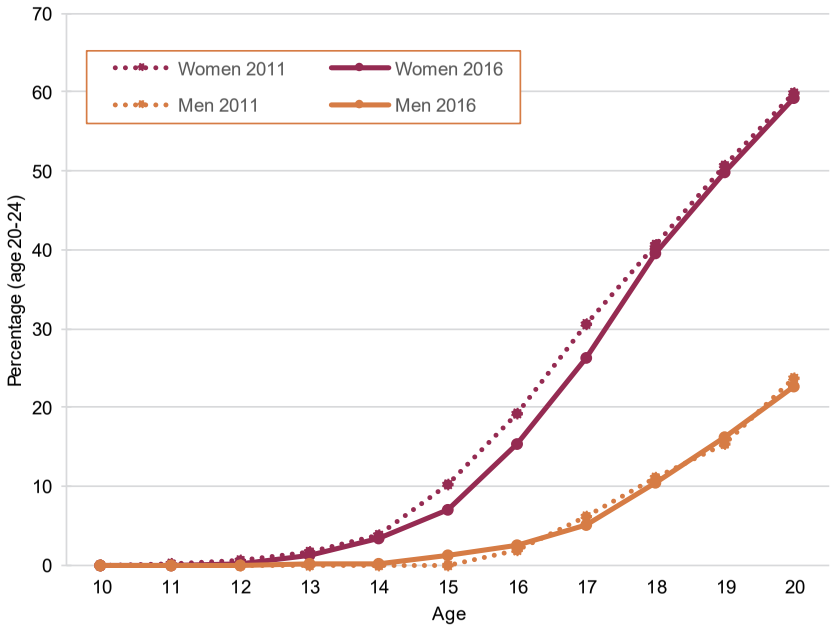
exact age was computed for respondents of current age 15-19 and 20-24. Figure 2 shows that marriage among women is rare before age 15 but increases rapidly thereafter. For example, at the time of the 2016 survey, 7% of women age 20-24 had married by age 15, although this rapidly increases to 59% by age 20. This is similar for women age 20-24 in 2011 survey.

Men follow the same pattern as women, but at much lower levels of marriage at each age. A very small proportion of men age 20-24 (1%) have married by age 15 in 2016, whereas none did so by the same age in 2011.

There has been no substantial change in the cumulative proportion of ever-married by age 20 in the past 5 years, for either men or women. This proportion has remained the same in both survey years, about 60% for women and 23-24% for men.

Figure 2 Trends in the percentage of youth age 15-19 and age 20-24 who are ever-married by exact age, Nepal DHS 2011-2016





15

4.2.2 Differentials in proportion ever-married by background characteristics

Table 3 shows the differentials in the proportion of youth (both women and men) who have ever married by selected background characteristics in 2016. The proportion of ever-married youth varies significantly with place of residence, province, educational attainment, and household wealth quintile. However, the pattern is similar for both women and men. The proportion of youth who have ever married is higher for those living in rural areas than in urban areas. These differences by residence are wider for women than for men. The likelihood of ever having married is highest in Provinces 2 and 6 and lowest in Provinces 3 and 4 for both young women and men. For young women and men, the likelihood of ever having married is higher among those with no education or only primary education and among the poorest to middle wealth quintiles, and is lowest among those with higher education and in the richest wealth quintile. Caste/ethnicity is also associated with marriage for young women, but not for young men. Young women who belong to Terai/Madhesi other caste are most likely to have married whereas women who belong to Newar caste are the least likely to have married. Overall, the proportion of young men who are ever-married (23%) is less than one-half the proportion among women (50%).

Table 3 Percentage of youth age 15-24 who have ever married by background characteristics, Nepal DHS 2016

Background characteristics	Women			Men		
	%	*N*	*p-value*	%	*N*	*p-value*
Age						
15-19	27.5	*2,598*	***	6.4	*931*	***
20-24	75.6	*2,251*		45.5	*649*	
Place of residence						
Urban	44.3	*2,991*	***	20.23	*1,053*	*
Rural	58.7	*1,858*		26.9	*527*	
Province						
Province 1	47.8	*817*		20.0	*258*	
Province 2	65.1	*996*		25.7	*304*	
Province 3	36.0	*952*		18.5	*391*	
Province 4	47.8	*460*	***	17.5	*158*	**
Province 5	50.2	*892*		23.9	*253*	
Province 6	60.2	*293*		38.9	*87*	
Province 7	43.5	*440*		23.8	*130*	
Education						
No education	83.5	*483*		[58.3]	*45*	
Primary	70.8	*696*	***	40.4	*194*	***
Some secondary	44.0	*2,696*		19.7	*954*	
SLC and above	34.4	*974*		16.1	*388*	
Caste/ethnicity						
Brahmin/Chhetri	43.3	*1,420*		17.2	*455*	
Terai/Madhesi other	63.4	*737*		23.5	*247*	
Dalit	57.6	*641*		31.9	*204*	
Janajati	47.5	*1,545*	***	24.1	*507*	
Newar	31.7	*210*		16.4	*77*	
Muslim	56.7	*281*		21.9	*87*	
Others	-	*15*		-	*5*	
Wealth quintile						
Poorest	52.7	*847*		31.41	*237*	
Poorer	53.5	*994*		26.15	*267*	
Middle	58.4	*1,015*	***	26.14	*296*	***
Richer	50.3	*1,104*		22.46	*419*	
Richest	32.6	*890*		10.81	*361*	
Total	**49.8**	***4,849***		**22.45**	***1,580***	

*** p<0.001, **p<0.01, * p<0.05
- indicates the figure is based on fewer than 25 unweighted cases and has been suppressed.
[ ] indicates the figure is based on 25-50 unweighted cases and should be interpreted with caution.

The differentials for both men and women show a similar pattern when disaggregated by age (see Appendix Table A4).

4.3 Determinants of Timing (Age) of Marriage

In this section, we analyze determinants of age of marriage among women age 15-24 by using multivariate Cox regression, which takes into account the right-censored cases that are lost due to truncation by age at survey. This method allows us to make use of all data, including from respondents who have not reached age 24 by the time of the survey. The commonly used background characteristics that are included in the regression model include residence, province, education, caste/ethnicity, and wealth quintile. Age at survey is also used to examine cohort effects. The results are expressed as hazard ratios, as shown in Table 4. A higher hazard of marriage is interpreted as a lower age at marriage.

Table 4 Determinants of marriage: Hazard ratios from a Cox regression among women age 15-24, Nepal DHS 2016

Background characteristics	HR	95% CI
Age		
15-19	Ref	
20-24	1.06	1.03-1.08
Place of residence		
Urban	Ref	
Rural	1.19**	1.05-1.33
Province		
Province 1	1.11	0.88-1.40
Province 2	1.60***	1.24-2.06
Province 3	Ref	
Province 4	1.34*	1.06-1.70
Province 5	1.13	0.90-1.43
Province 6	1.95	1.52-2.49
Province 7	1.14	0.89-1.46
Education		
No education	Ref	
Primary	1.03	0.87-1.22
Some secondary	0.58***	0.49-0.69
SLC and above	0.21***	0.17-0.25
Caste/ethnicity		
Brahmin/Chhetri	Ref	
Terai/Madhesi other	1.55***	1.28-1.88
Dalit	1.32**	1.13-1.55
Janajati	0.92	0.97-1.06
Newar	0.93	0.60-1.15
Muslim	1.04	0.78-1.38
Others	1.15	0.58-2.30
Wealth quintile		
Poorest	Ref	
Poorer	0.98	0.83-1.15
Middle	0.97	0.83-1.13
Richer	0.92	0.78-1.10
Richest	0.74*	0.58-0.93

*** p<0.001, **p<0.01, * p<0.05

Controlling for other factors, young women age 15-24 who reside in rural areas have a 20% significantly higher hazard of getting married earlier in comparison to those who reside in urban areas. With Province 3 as the reference, young women from Province 6 have 95%, Province 2 60%, and Province 4 have 34% significantly higher hazard of getting married earlier. Young women from the Terai/Madhesi other and Dalit caste groups have a 32%-55% higher hazard of getting married at younger ages as compared to Brahmin/Chhetri young women. Education and wealth are protective against marriage among young women. Young women who had attained some secondary education have a 42% lower hazard and those with an SLC and above education have a 79% lower hazard of getting married at younger ages as compared to those with no education. Women in the richest wealth quintile have a 26% lower hazard of

getting married earlier as compared to those in the poorest quintile. There is no statistical difference in the age at marriage among women age 15-19 and those age 20-24.

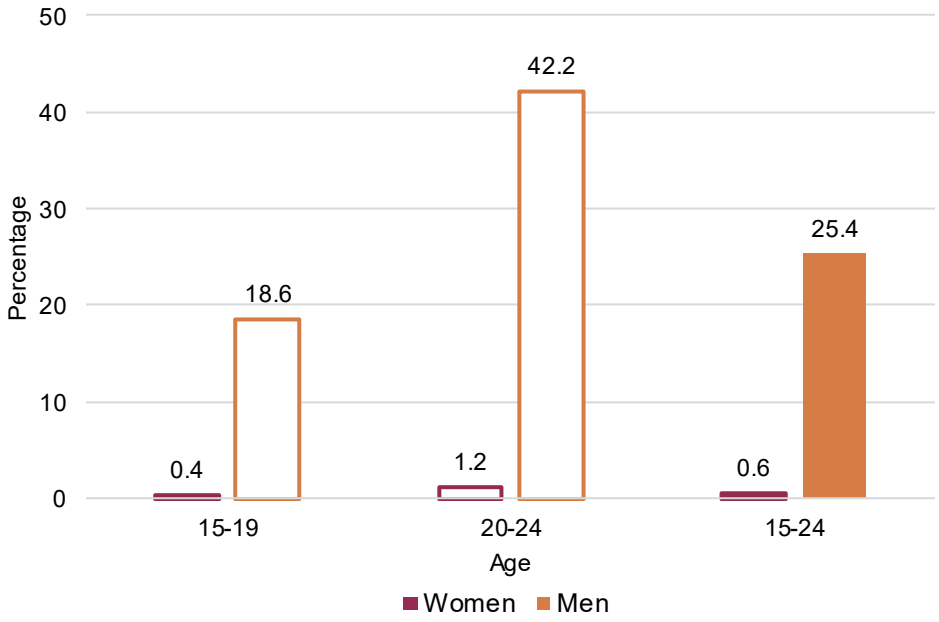
4.4 Sexual Behavior

It is important to know more about the sexual behavior of youth because risky sexual behavior is associated with adverse reproductive health outcomes. This section discusses the sexual behavior of young men and women by using a number of indicators that include the proportion that ever had sex, age at initiation of sex, most recent sexual partner, and condom use during the last sex.

4.4.1 Ever had sex

Figure 3 presents trends in the percent of young women and men who have ever had sex by age group. The proportion of women who ever had sex has not significantly decreased from 2011 to 2016. Although the proportion of men who have ever had sex appears to have marginally increased from 2011 to 2016 among men age 15-24, the increase is not statistically significant. The difference between women and men in 2016 is statistically significant for all age groups. Overall, 50% of young women age 15-24 have ever had sex compared to 42% of young men of the same age.

Figure 3 Percentage who ever had sex among never-married youth age 15-24, Nepal DHS 2016



Another aspect of sexual activity is sexual activity among never-married young women and men. This is relevant in the Nepalese context because premarital sex remains taboo. Table 5 shows the percent of never-married women and men age 15-24 who ever had sex. Our results show this to be a gendered experience. A very small proportion of never-married women age 15-24 (and age 15-19 or age 20-24) have ever had sex in 2016. This figure is significantly higher for never-married men. Among never-married men, one-fourth of men age 15-24 have ever had sex, which when disaggregated by age, is about 19% of men age 15-19 and 42% of men age 20-24. There have been no significant changes over time for either young women or young men.

Table 5 Trends in the percentage of youth age 15-24 who have ever had sex, Nepal DHS 2011-2016

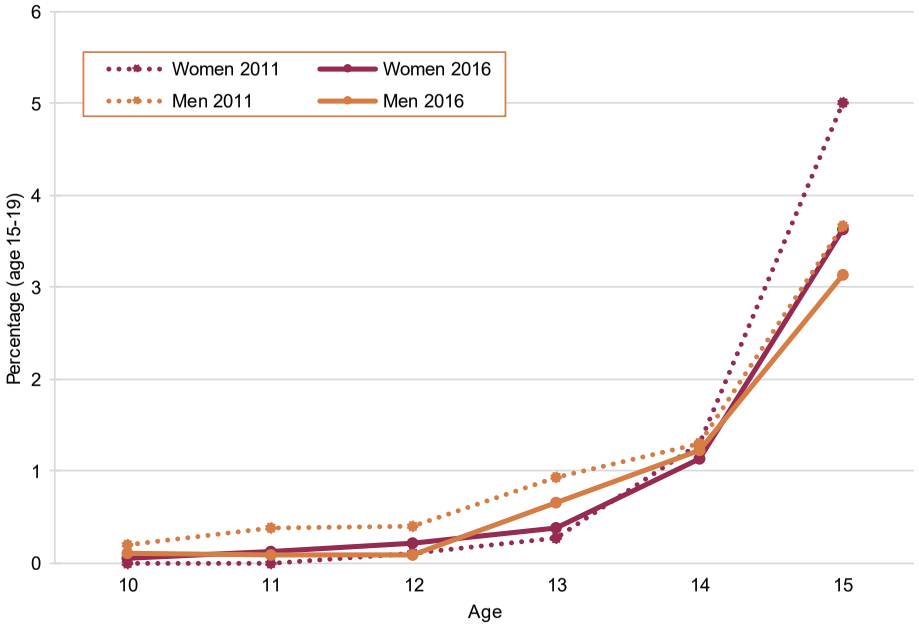
Age	Women			Men			Difference women - men, 2016 (% point)
	2011	2016	Difference 2016 - 2011 (% point)	2011	2016	Difference 2016 - 2011 (% point)	
15-19	29.0	27.7	-1.3	20.8	23.8	3.0	3.2*
20-24	77.4	75.8	-1.6	67.6	68.5	0.9	7.3***
15-24	51.0	50.0	-1.0	40.1	42.2	2.1	7.8***

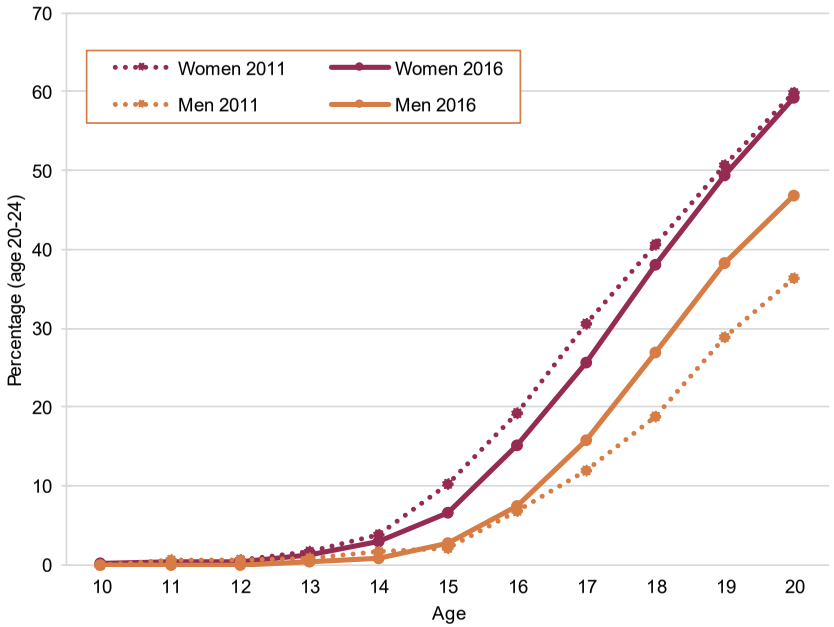
*** p<0.001, **p<0.01, * p<0.05

4.4.2 Age at initiation of sex

Age at initiation of sex is another important aspect of sexuality. Figure 4 shows the cumulative proportion of men and women who have initiated sexual intercourse by exact age. Results are shown for the 2011 and 2016 surveys, irrespective of marital status of young men and women. Among women currently age 15-19, the proportion who have had sexual intercourse by age 15 declined from 5% in 2011 to 4% in 2016, and for women age 20-24 the proportion decreased from 10% in 2011 to 7% in 2016. This trend is not markedly different for men, in which there is a slight decrease in very early sex, but not for sex at older ages. For those age 20-24, the proportion of women who ever had sex by age 20 has remained constant around 59%, and for men this increased from 36% to 47%.

Figure 4 **Age at first sexual intercourse: Trends in the percentage of youth age 15-19 and age 20-24 who have ever had sexual intercourse by exact age, Nepal DHS 2011-2016**





4.4.3 Most recent sexual partner

Table 6 shows the distribution of the relationship to last sexual partner among young women and men who ever had sex for the 2016 survey. As reported by young women, almost all sexual intercourse took place with their spouse. In rare cases (less than 1%), young women report that a boyfriend, casual acquaintance, or relative was their most recent sexual partner. This pattern is quite different for men, with non-spouse partners much more common. The majority of men (60%) also report that their most recent sexual partner was their spouse, followed by a girlfriend (37%), and a casual acquaintance (3%).

Table 6 Percent distribution of the relationship to the most recent sexual partner among youth age 15-24 who have ever had sexual intercourse, Nepal DHS 2016

	Women	Men
	%	%
Relationship		
Spouse	99.5	60.1
Boyfriend/girlfriend	0.3	36.5
Casual acquaintance	0.2	2.7
Relative	0.0	na
Commercial sex worker	na	0.4
Live-in partner	na	0.4
Total	**100.0**	**100.0**
Number of cases	**2,046**	***567***

4.4.4 Condom use at last sex

The results in Table 7 show the proportion of those who used a condom during last sex among young men age 15-24 who had sex in the last 12 months of the 2016 survey by background characteristics. Appendix Table A5 shows these data disaggregated by 5-year age groups.

Table 7 Percentage who used condoms at last sexual intercourse among young men age 15-24 who have had sex in the past 12 months by background characteristics, Nepal DHS 2016

Background characteristics	Men		
	%	*N*	*p-value*
Age			
15-19	50.0	*175*	***
20-24	30.6	*392*	
Marital status			
Never married	71.0	*216*	***
Ever married	15.4	*351*	
Place of residence			
Urban	37.2	*351*	
Rural	35.5	*216*	
Province			
Province 1	33.2	*79*	
Province 2	23.5	*108*	
Province 3	29.3	*113*	
Province 4	48.6	*54*	**
Province 5	48.0	*119*	
Province 6	32.3	*46*	
Province 7	50.9	*47*	
Education			
No education	[22.5]	*37*	
Primary	11.5	*94*	***
Some secondary	38.6	*307*	
SLC and above	54.1	*128*	
Wealth quintile			
Poorest	34.3	*106*	
Poorer	27.5	*101*	
Middle	42.0	*129*	**
Richer	30.1	*142*	
Richest	51.8	*89*	
Total	**36.5**	***567***	

*** p<0.001, **p<0.01, * p<0.05
Numbers in brackets [ ] are based on fewer than 50 unweighted cases and should be interpreted with caution.

Condom use is significantly associated with marital status, with higher proportions of never-married men in both age groups using condoms during their last sex. In addition, highly educated men had higher proportions of condom use during the last sex. Similarly, the richest men had the highest proportion of condom use during their last intercourse in both age groups. Residence is not significantly associated with young men's condom use.

4.5 Comprehensive Knowledge of HIV Transmission

Table 8 shows trends in the percent of young women and men age 15-24 who had comprehensive knowledge on HIV transmission according to the 2011 and 2016 NDHS. The proportion of young men and women with comprehensive knowledge of HIV transmission has decreased significantly from 2011 to 2016. There is a similar pattern when the data are disaggregated by age, although the decline is not significant for men age 20-24. The decline among men is driven by men age 15-19. The decline in comprehensive knowledge of HIV transmission among men is slightly more pronounced than for women. Gender differences in comprehensive knowledge of HIV transmission are also significant for all age groups, with significantly higher proportions of men having comprehensive knowledge of HIV transmission as compared to women.

Table 8 Trends in the percentage of youth age 15-24 who have comprehensive knowledge of HIV transmission, Nepal DHS 2011-2016

Age	Women			Men			Difference women - men, 2016 (% point)
	2011	2016	Difference 2016 – 2011 (% point)	2011	2016	Difference 2016 – 2011 (% point)	
15-19	25.0	18.3	-6.7***	32.7	24.4	-8.3***	-6.1***
20-24	26.7	23.5	-3.2*	35.6	31.1	-4.5	-7.6***
15-24	25.8	20.7	-5.1***	33.9	27.1	-6.8***	-6.4***

*** p<0.001, **p<0.01, * p<0.05

Table 9 shows the percent of young women and men age 15-24 who had comprehensive knowledge of HIV transmission by background characteristics. The proportion who had comprehensive knowledge of HIV transmission varies with all characteristics, including marital status, place of residence, province, education, caste/ethnicity, household wealth quintile, and exposure to media. Comprehensive knowledge of HIV transmission is the highest among never-married women (26%) and men (29%), and urban women (25%) and men (31%). As expected, those women and men with high educational attainment and from the richest wealth quintile are more knowledgeable about HIV transmission. Likewise, those who had exposure to at least one media source weekly have higher rates of comprehensive knowledge of HIV transmission (23% for women and 28% for men), as compared to just 6% and 16%, respectively, among young women and men with no weekly exposure to media.

Table 9 Percentage of youth age 15-24 who have comprehensive knowledge of HIV transmission by background characteristics, Nepal DHS 2016

Background characteristics	Women			Men		
	%	*N*	*p-value*	%	*N*	*p-value*
Marital status						
Never married	26.3	*2,433*	***	29.3	*1,226*	**
Ever married	15.2	*2,416*		19.7	*355*	
Place of residence						
Urban	24.7	*2,991*	***	31.0	*1,053*	***
Rural	14.3	*1,858*		19.4	*528*	
Province						
Province 1	21.2	*817*	***	27.7	*258*	***
Province 2	5.8	*996*		14.2	*304*	
Province 3	32.0	*952*		34.7	*391*	
Province 4	27.2	*460*		35.4	*158*	
Province 5	19.4	*892*		26.0	*253*	
Province 6	18.4	*293*		23.7	*87*	
Province 7	26.8	*440*		27.6	*129*	
Education						
No education	1.9	*483*	***	[6.2]	*45*	***
Primary	6.9	*696*		12.1	*194*	
Some secondary	19.8	*2,696*		22.8	*954*	
SLC and above	42.5	*974*		47.5	*388*	
Caste/ethnicity						
Brahmin/Chhetri	30.6	*1,420*	***	36.1	*455*	**
Terai/Madhesi other	6.5	*737*		21.4	*247*	
Dalit	15.3	*641*		24.8	*203*	
Janajati	21.4	*1,545*		25.0	*507*	
Newar	34.0	*210*		25.9	*77*	
Muslim	5.9	*281*		15.7	*87*	
Others	-	*15*		-	*5*	

(Continued…)

Table 9—Continued

Background characteristics	Women			Men		
	%	*N*	*p-value*	%	*N*	*p-value*
Wealth quintile						
Poorest	134.0	*847*		20.7	*237*	
Poorer	17.7	*994*		17.7	*267*	
Middle	13.4	*1,015*	***	22.8	*296*	***
Richer	21.2	*1,104*		28.2	*419*	
Richest	38.3	*890*		40.5	*361*	
Exposure to media						
Low	5.9	*596*	***	15.9	*80*	*
High	22.8	*5,253*		27.7	*1,501*	
Total	**20.74**	***4,849***		**27.1**	***1,580***	

*** p<0.001, **p<0.01, * p<0.05
- indicates the figure is based on fewer than 25 unweighted cases and has been suppressed.
[ ] indicates the figure is based on 25-50 unweighted cases and should be interpreted with caution.

Table 10 shows trends in the percentage of young women and men age 15-24 who have ever been tested for and have received the results of an HIV test, among those who have ever had sex and have ever heard of HIV, based on the 2011 and 2016 NDHS. Among women and men in both surveys, HIV testing and receiving results is more common in the 20-24 age group than in the 15-19 age group. However, rates of testing for women and men across all age ranges are low, ranging from 8%-24% in 2016 survey and 5%-23% in 2011 survey. For all age groups, there has been a significant increase in the proportion of women who had a test for HIV and received results during the survey period 2011-2016. However, for men, there was no significant trend observed. The gender differential in testing for HIV and receiving the result shows that a significantly higher proportion of men age 15-24 have tested for HIV and received results in 2016.

Table 10 Trends in the percentage who have ever been tested for HIV and received results, among youth age 15-24 who have ever had sex, Nepal DHS 2011-2016

Age	Women			Men			Difference women - men, 2016 (% point)
	2011	2016	Difference 2016 - 2011 (% point)	2011	2016	Difference 2016 - 2011 (% point)	
15-19	5.1	9.4	4.3**	9.2	7.6	-1.6	1.8
20-24	8.0	16.8	8.8*	22.9	23.0	0.1	-6.2**
15-24	7.1	14.6	7.5***	18.7	17.9	-0.8	-3.3*

*** p<0.001, **p<0.01, * p<0.05

Based on 2016 NDHS data, Table 11 shows the proportion who ever have been tested for HIV and received results among young women and men age 15-24 who ever had sex and heard of HIV, by background characteristics. For both women and men, HIV testing varies with wealth. The young men and women in the richest wealth quintiles are significantly more likely to have had an HIV test and received the results compared to those in the poorest wealth quintiles. Beyond wealth, the proportion who had ever been tested for HIV and received results for young women is positively associated with urban residence, educational attainment, and exposure to media. The proportions of young women who had been tested for HIV and received results are significantly higher in urban areas and Province 7 and among the Brahmin/Chhetri caste group. There are no significant associations with any of these factors among men. For men, beyond wealth, the only other factor associated with HIV testing is marital status. The proportion of men who had an HIV test and received the results is about 10 percentage points higher among ever-married young men (23% versus 13%). The association of HIV testing and receiving the

results with comprehensive knowledge is significantly positive for young women but not for young men. An insufficient number of never-married young women who have ever had sex make it impossible to estimate the prevalence of HIV testing or assess differentials with ever-married young women.

Table 11 Percentage who have ever been tested for HIV and received results, among youth age 15-24 who have ever had sex and have ever heard of HIV, by background characteristics, Nepal DHS 2016

Background characteristics	Women			Men		
	%	*N*	*p-value*	%	*N*	*p-value*
Marital status						
Never married	-	*15*		12.9	*311*	**
Ever married	14.6	*2,410*		22.2	*355*	
Place of residence						
Urban	17.3	*1,336*	**	19.8	*409*	
Rural	11.3	*1,089*		14.8	*258*	
Province						
Province 1	10.8	*391*		15.2	*98*	
Province 2	5.3	*645*		24.5	*135*	
Province 3	19.0	*350*		18.5	*130*	
Province 4	18.0	*220*	***	11.2	*66*	
Province 5	22.2	*449*		17.2	*135*	
Province 6	13.4	*177*		13.6	*48*	
Province 7	25.0	*193*		18.3	*54*	
Education						
No education	6.0	*399*		[10.2]	*37*	
Primary	8.7	*492*	***	13.3	*109*	
Some secondary	14.8	*1,193*		18.7	*352*	
SLC and above	32.6	*341*		20.7	*167*	
Caste/ethnicity						
Brahmin/Chhetri	22.8	*619*		20.3	*166*	
Terai/Madhesi other	6.4	*465*		23.8	*108*	
Dalit	12.0	*369*		19.0	*103*	
Janajati	15.9	*741*	***	14.9	*228*	
Newar	11.3	*67*		-	*24*	
Muslim	7.2	*157*		[11.9]	*36*	
Others	-	*5*		-	*1*	
Wealth quintile						
Poorest	10.8	*448*		14.0	*122*	
Poorer	13.7	*533*		9.0	*114*	
Middle	11.7	*589*	***	13.3	*141*	**
Richer	13.4	*561*		24.3	*182*	
Richest	30.3	*294*		26.9	*106*	
Exposure to media						
Low	4.2	*407*	***	[9.1]	*38*	
High	16.7	*2,018*		18.4	*628*	
Comprehensive knowledge of HIV						
Yes	29.3	*373*	***	19.7	*161*	
No	11.9	*2,052*		17.3	*505*	
Total	**14.6**	***2,425***		**17.9**	***666***	

*** p<0.001, **p<0.01, * p<0.05

- indicates the figure is based on fewer than 25 unweighted cases and has been suppressed.

[ ] indicates the figure is based on 25-50 unweighted cases and should be interpreted with caution.

4.6 STIs

Table 12 shows the percentage of sexually active young women and men age 15-24 who report having an STI or symptoms of an STI (genital sore/ulcer or bad-smelling genital discharge) in the 12 months

before the survey. In all age groups, there is a similar proportion of women (around 15%) who reported experiencing any STI symptoms while only a very small proportion of men (3% to 5%) reported such symptoms. The positive difference observed between women and men across all age groups is statistically significant.

Table 12 Percentage who ever had any sexually transmitted infection (STI), genital sore/ulcer, or genital discharge among youth age 15-24 who have ever had sex, Nepal DHS 2011-2016

Age	Women	Men	Difference women – men (% point)
15-19	15.0	2.7	12.3***
20-24	15.6	4.2	11.2***
15-24	15.4	3.9	11.5***

*** p<0.001, **p<0.01, * p<0.05

5 FERTILITY AND FAMILY PLANNING

5.1 Background

Nepal has been undergoing a fertility transition since at least the 1980s (Kafle 2016), with the total fertility rate (TFR) reaching 2.3 in 2013-2015 (MoHP, New ERA, ICF 2016). The age pattern of fertility in Nepal is still characterized by an early start and an early peak (Kafle 2016). Results of the 2016 NDHS show that the contribution of adolescent fertility to total fertility is nearly one-fifth, with fertility peaking from age 20 to 24. Childbearing among youth, especially among adolescents, may have health consequences for the mother and the child such as low birth weight, neonatal mortality, pregnancy complications, and maternal morbidity and mortality. According to the World Health Organization (WHO), an estimated 16 million adolescent girls age 15-19 give birth around the world each year. Complications during pregnancy are the leading cause of death among adolescents, who have a higher risk of eclampsia and puerperal endometritis (World Health Organization 2018). Adolescents also face different kinds of barriers to access and use of contraceptives (World Health Organization 2018). In this context, this section discusses fertility levels, differentials and determinants, status of modern contraceptive use and its differentials and determinants, and the need and demand for family planning among Nepalese young women.

5.2 Age-Specific Fertility Rate

Figure 5 shows the change in the age-specific fertility rate for the survey period 2006-2016. The rates are calculated for the 3 years before each survey. In both age groups (age 15-19 and 20-24), there is a substantial decline in the ASFR from 2006 to 2011. The ASFR fell from 234 births per 1,000 women age 20-24 in 2006 to 172 births per 1,000 women in 2016, with the decline slowing between 2011 and 2016. For 2011-2016, there appears to be a decline in ASFR for women age 20-24. For women age 15-19, there appears to be a slight increase in ASFR from 81 to 88 births per 1,000 women.

Figure 5 Trends in ASFR among women age 15-19 and 20-24, Nepal DHS 2006-2016

Differentials in ASFR for women age 15-19 and 20-24 for selected background characteristics are shown in Table 13. Fertility rates are higher in rural areas than urban areas for both age groups. The urban-rural differential is wider among the younger age group, age 15-19. There are provincial differences as well. Province 2 has the highest fertility followed by Province 6, with Province 3 the lowest. The ASFR in age 20-24 group is roughly double that of age 15-19. The relative difference between the ASFRs between these age groups is smaller in Province 2, where early fertility is high, and the difference greatest (nearly three times higher in age 20-24 than age 15-19) in Province 3, where there is lower early fertility.

Educational differences are also noticeable in both age groups, with lower fertility rates among those with increasing levels of education. The fertility rate among young women age 20-24 with an SLC or above is less than one-half of those with no education. Among women age 15-19, the rate is less than one-sixth that of women with no education. Similar declines in fertility rates are seen with increasing household wealth. For example, among women age 20-24, the ASFR in the poorest wealth quintile is 220 per 1,000 women, compared to 107 among those in the richest wealth quintile.

Table 13 Age-specific fertility rates for the 3 years preceding the survey among women age 15-24 by background characteristics, Nepal DHS 2016

Background characteristics	ASFR (per 1,000 women)	
	15-19	20-24
Place of residence		
Urban	66	150
Rural	125	209
Province		
Province 1	80	172
Province 2	146	232
Province 3	44	115
Province 4	81	151
Province 5	81	178
Province 6	101	212
Province 7	79	156
Education		
No education	178	235
Primary	148	217
Some secondary	82	168
SLC and above	28	109
Wealth Index		
Poorest	110	220
Poorer	100	188
Middle	105	196
Richer	84	164
Richest	38	107
Total	**88**	**172**

5.3 Initiation of Childbearing among Young Women

Table 14 shows the proportion of young women who have begun childbearing, either having given birth to a child or being currently pregnant, including differentials by background characteristics. Among women age 15-24, 38% have already begun childbearing. When disaggregated by age, 16% women age 15-19 and 63% age 20-24 have already begun childbearing. A significantly higher proportion of women in rural areas have initiated childbearing as compared to those in urban areas. Provincial differences are also evident, with Provinces 2 and 6 having the highest proportions of young women who had begun childbearing. A negative association of childbearing initiation with women's education and wealth is

also evident. In addition, some ethnic differentials are pronounced, with the Terai/Madhesi other caste group having the highest proportion of young women who have already begun childbearing, followed by Dalit and Muslim women. Overall, these patterns are similar to the patterns observed for marriage.

Table 14 Percentage of women age 15-24 who have initiated childbearing by background characteristics, Nepal DHS 2016

Background characteristics	%	N	p-value
Age			
15-19	16.4	*2,598*	***
20-24	62.8	*2,251*	
Place of residence			
Urban	33.1	*2,991*	***
Rural	45.7	*1,858*	
Province			
Province 1	37.3	*817*	
Province 2	50.6	*996*	
Province 3	25.8	*952*	
Province 4	36.9	*460*	***
Province 5	37.8	*892*	
Province 6	44.4	*293*	
Province 7	33.8	*440*	
Education			
No education	68.0	*483*	
Primary	56.9	*696*	***
Some secondary	33.0	*2,696*	
SLC and above	23.2	*974*	
Caste/ethnicity			
Brahmin/Chhetri	32.5	*1,420*	
Terai/Madhesi other	50.4	*737*	
Dalit	41.4	*641*	
Janajati	37.0	*1,545*	***
Newar	21.5	*210*	
Muslim	42.6	*281*	
Others	-	*15*	
Wealth Index			
Poorest	41.7	*847*	
Poorer	41.2	*994*	
Middle	45.3	*1,015*	***
Richer	37.7	*1,104*	
Richest	22.7	*890*	
Total	**38.0**	***4,849***	

Note: *** p<0.001, ** p<0.01, * p<0.05

- indicates the figure is based on fewer than 25 unweighted cases and has been suppressed

When disaggregated by age, the pattern of childbearing across characteristics for women age 15-19 is similar to that among women age 20-24, with the magnitude of childbearing consistently higher in this older age group. Initiation of childbearing among women age 15-19 is more prevalent in rural areas (22%), in Province 2 (27%), among uneducated women (32%), and among the Terai/Madhesi other caste group (26%). These details are presented in Appendix Table A6.

5.4 Determinants of Adolescent Childbearing

We examine socioeconomic determinants of childbearing before age 20 by performing logistic regression on an analytical subsample of women who were age 20-24 at the time of survey. This age restriction is necessary to ensure women's total exposure to the risk of childbearing during adolescence, because logistic regression models do not account for censored cases. The results are presented in terms of unadjusted and adjusted odds ratios (Table 15).

In bivariate regression, residence, province, education, caste/ethnicity, and wealth all exhibit some association with adolescent childbearing, although residence and wealth quintile lose their significance after other factors are included in the multivariate regression model. Education retains a negative association with adolescent childbearing, with women with some secondary education having 40% lower odds and those with an SLC or above having 90% lower odds of giving birth before age 20 than women with no education. After controlling for the other factors, the odds of childbearing during adolescence are more than double for women of the Terai/Madhesi other caste group (as compared to Brahmin/Chhetri women) and for women in Province 6 (compared to Province 3, where adolescent childbearing is least common).

Table 15 Determinants of adolescent childbearing: Unadjusted and adjusted odds ratios from logistic regressions for having initiated childbearing before reaching age 20 among ever-married women age 20-24, Nepal DHS 2016

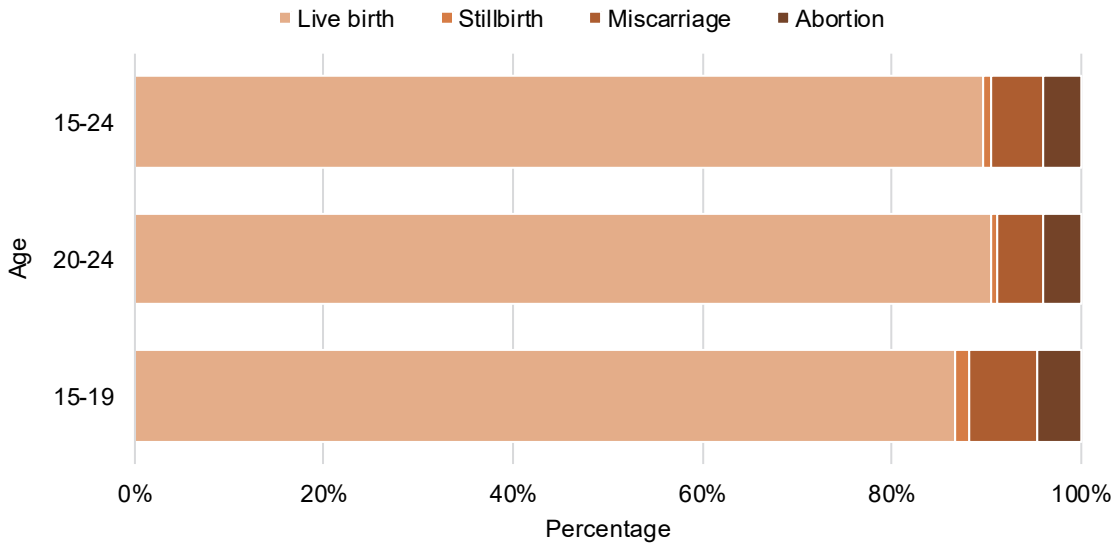
Background characteristics	OR	95% CI	aOR	95% CI
Place of residence				
Urban	Ref		Ref	
Rural	1.72***	1.35-2.19	1.00	0.78-1.27
Province				
Province 1	1.39	0.84-2.29	0.95	0.61-1.49
Province 2	4.04***	2.52-6.47	1.23	0.75-2.01
Province 3	Ref		Ref	
Province 4	1.50	0.93-2.42	1.34	0.87-2.07
Province 5	1.54	0.97-2,46	0.84	0.54-1.31
Province 6	3.06***	1.90-4.92	2.19**	1.36-1.54
Province 7	1.67*	1.04-2.70	1.29	0.86-1.95
Education				
No education	Ref		Ref	
Primary	1.07	0.76-1.52	1.36	0.93-1.99
Some secondary	0.44***	0.33-0.58	0.61**	0.44-0.83
SLC and above	0.06***	0.04-0.09	0.09***	0.06-0.14
Caste/ethnicity				
Brahmin/Chhetri	Ref		Ref	
Terai/Madhesi other	4.39***	3.16-6.09	2.41***	1.57-3.69
Dalit	2.40***	1.65-3.41	1.14	0.78-1.67
Janajati	1.36*	1.06-1.75	0.91	0.69-1.19
Newar	0.70	0.29-1.57	0.83	0.36-1.88
Muslim	2.89***	1.86-4.51	1.28	0.71-2.30
Others	1.11	0.93-6.37	1.67	0.36-7.77
Wealth Index				
Poorest	Ref		Ref	
Poorer	0.76	0.56-1.04	0.99	0.71-1.39
Middle	0.84	0.63-1.13	0.82	0.58-1.18
Richer	0.72*	0.52-0.98	0.98	0.67-1.44
Richest	0.25***	0.16-0.40	0.78	0.47-1.30
Number of women	***2,551***			

Note: *** p<0.001, ** p<0.01, * p<0.05
OR = Odds Ratio (unadjusted), aOR = Adjusted Odds Ratio;
Ref = Reference Category

5.5 Pregnancy Outcomes

Figure 6 shows the distribution of pregnancy outcomes for women age 15-24 in the 5 years before the survey. The majority of pregnancies (9 in 10) end in a live birth. Although it appears that stillbirth, miscarriage, and induced abortion are more prevalent among adolescents age 15-19 than among women age 20-24, these differences are not statistically significant. Some 10% of total pregnancies among women age 15-24 did not end in live birth in the past 5 years, with miscarriages more common than either induced abortions or stillbirths.

Figure 6 Percent distribution of pregnancy outcomes among the most recent pregnancy to women age 15-24 who have had a pregnancy in the 5 years preceding the survey, Nepal DHS 2016



5.6 Current Use of Contraception

It is important to analyze modern contraceptive use from the national program perspective and the national and international targets. This section analyzes the level and trends in use of contraceptive methods among currently married young women,[4] the differentials in the use of modern contraceptive methods, and the method mix. All currently married women irrespective of their pregnancy status are included in this analysis.

5.6.1 Trends in contraceptive use

Table 16 shows the percentage of currently married young women age 15-24 who are currently using any method of contraception. Among currently married young women, the proportion of users of any method has significantly increased by 4 percentage points during the survey period from 2011 to 2016. This increase is due primarily to the increase of nearly 6 percentage points in contraceptive use among adolescent women age 15-19. The change in contraceptive use is not statistically significant for women age 20-24.

[4] The Nepal DHS asks questions regarding contraceptive use only to currently married women.

Table 16 Trends in the percentage of currently married women age 15-24 currently using any method of contraception, Nepal DHS 2011-2016

Age	2011		2016		Difference 2016 - 2011 (% point)
	%	*N*	%	*N*	
15-19	17.6	*792*	23.1	*704*	5.5**
20-24	29.6	*1,761*	32.0	*1,684*	2.4
15-24	25.8	*2,553*	29.4	*2,389*	3.6**

Note: *** p<0.001, ** p<0.01, * p<0.05
N includes all currently married women irrespective of their pregnancy status.

Table 17 shows the level of contraceptive use among currently married young women by method type. There are 21% of young women using modern methods, while 8% use a traditional method. Use of modern methods is statistically significantly higher among women age 20-24 than among women age 15-19, while the use of traditional methods is similar in both age groups. Since there is a smaller proportion of users of traditional methods and most national and international targets are based on modern methods, a detailed analysis of only modern methods of contraception is offered in the following sections.

Table 17 Percent distribution of current type of contraceptive method among currently married women age 15-24, Nepal DHS 2016

Age	Not using	Using modern method	Using traditional method	Total	
	%	%	%	%	*N*
15-19	76.9	14.5	8.6	100	*704*
20-24	68.0	23.9	8.1	100	*1,684*
15-24	70.6	21.1	8.3	100	*2,389*

Note: N includes all currently married women irrespective of their pregnancy status.

5.6.2 Differentials in modern contraceptive use by background characteristics

Table 18 shows the differentials in modern contraceptive use for currently married women age 15-24 for selected background characteristics. Provincial and caste/ethnic differences in the proportion of modern contraceptive users are significant for young women. The lowest proportions of modern contraceptive users among currently married women age 15-24 are from Province 2 (11%) and the Muslim community (7%), while the highest proportions of users are women from Province 3 (28%) and the Janajati community (29%).

Table 18 Percentage of currently married women age 15-24 currently using a modern method of contraception by background characteristics, Nepal DHS 2016

Background characteristics	%	N	p-value
Age			
15-19	14.5	*704*	***
20-24	23.9	*1,684*	
Place of residence			
Urban	22.9	*1,311*	
Rural	19.0	*1,077*	
Province			
Province 1	27.9	*386*	
Province 2	10.8	*640*	
Province 3	27.6	*339*	
Province 4	23.0	*219*	***
Province 5	22.6	*439*	
Province 6	20.4	*176*	
Province 7	25.7	*190*	
Education			
No education	15.9	*396*	
Primary	20.4	*486*	
Some secondary	22.7	*1,176*	
SLC and above	23.1	*330*	
Caste/ethnicity			
Brahmin/Chhetri	22.4	*608*	
Terai/Madhesi other	13.5	*463*	
Dalit	17.4	*366*	
Janajati	29.4	*728*	***
Newar	19.8	*67*	
Muslim	7.3	*152*	
Others	-	*5*	
Wealth			
Poorest	22.5	*440*	
Poorer	22.8	*526*	
Middle	18.7	*589*	
Richer	19.6	*548*	
Richest	23.9	*286*	
Exposure to media			
Low	14.1	*406*	**
High	22.6	*1,983*	
Decision-making status			
Low	23.1	*1,327*	
High	27.0	*732*	
Living together with partner			
Yes	31.3	*1,347*	***
No	8.0	*1,042*	
Number of living children			
0	8.5	*754*	
1	23.8	*1,099*	***
2+	33.6	*535*	
Total	**21.1**	***2,389***	

Note: *** p<0.001, ** p<0.01, * p<0.05
N includes all currently married women irrespective of their pregnancy status.
- indicates the figure is based on fewer than 25 unweighted cases and has been suppressed.

Exposure to mass media seems to have significant positive association with modern contraceptive use among currently married young women. A husband's absence from home for foreign employment has

become a typical characteristic of current Nepalese society, which has great influence on contraceptive use (Dev Pant and Bietsch 2018; Khanal et al. 2013). Among young women, the proportion of modern contraceptive users is significantly higher for those whose husband is residing with her at home, as compared to those whose husband lives elsewhere. In addition, the proportion of contraceptive users significantly increases with age and as the number of living children increases.

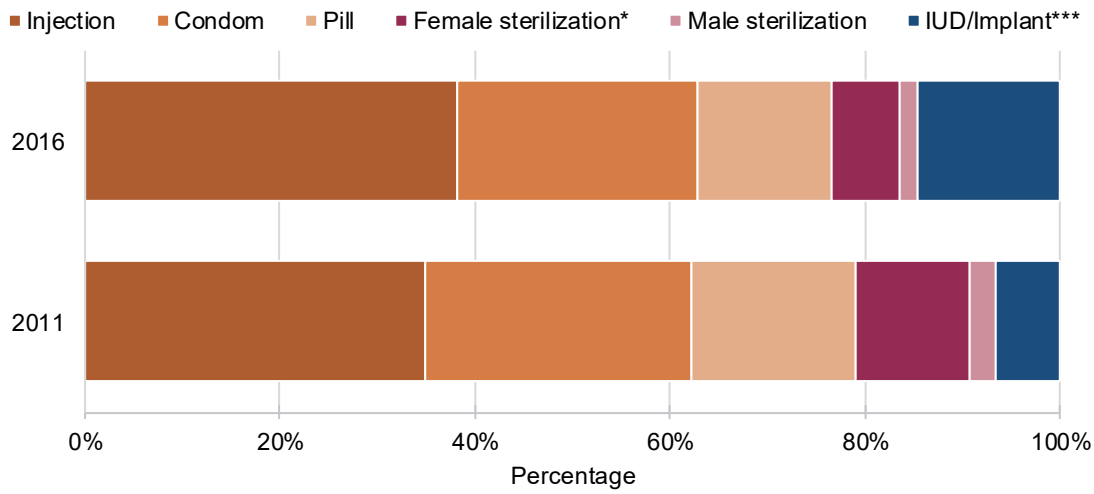
In contrast, women's education, place of residence, household wealth quintile, and decision-making status do not show significant association with modern contraceptive use among currently married young women.

Age-disaggregated differentials in modern contraceptive use are presented in Appendix Table A7. The pattern of differentials for age 15-19 and 20-24 is similar to that for age 15-24.

5.6.3 Modern contraceptive method mix

Figure 7 shows the different types of contraceptives among users of any modern method of contraception for 2011 and 2016. There is slight change in the pattern of use over time. The share of female sterilization among all modern methods for women age 15-24 has significantly declined by nearly 5 percentage points, while use of long-acting contraceptive methods (intrauterine devices and implants) has significantly increased by 8 percentage points from 2011 to 2016. The observed shifts in the prevalence of short-term methods (injection, condom, and pill) are not statistically significant.

Figure 7 Trends in the contraceptive method mix among currently married women age 15-24 who are using a modern method, Nepal DHS 2011-2016

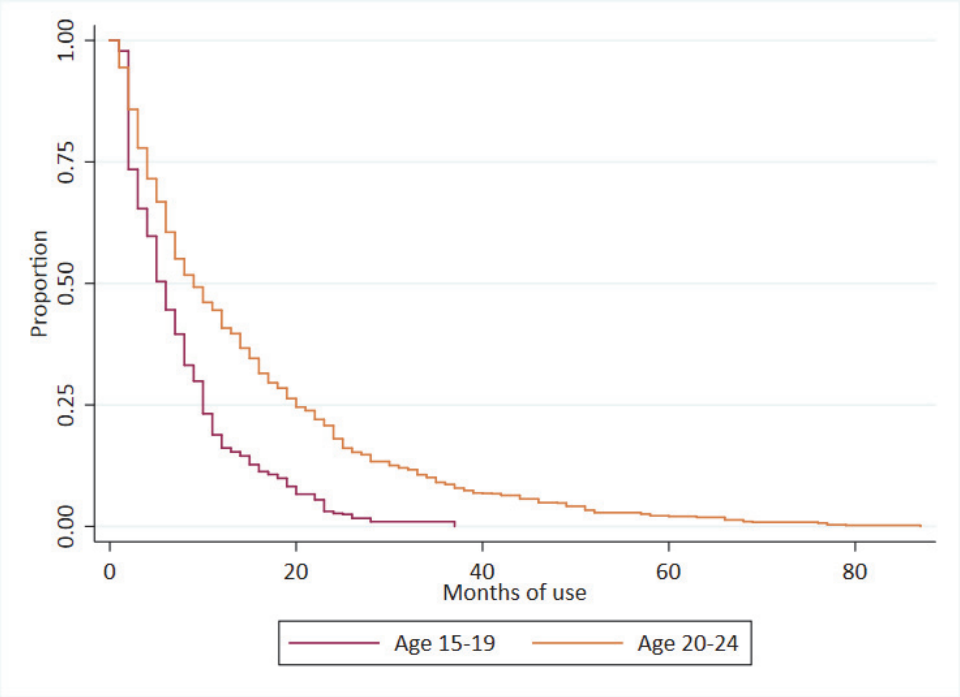


Note: *** p<0.001, ** p<0.01, * p<0.05

Another aspect of contraceptive use analyzed in this study is the duration of contraceptive use. Figure 8 shows the Kaplan-Meier estimates for duration of use among all current users. As we move right along the horizontal axis, time goes back from the survey date and duration increases. The two distinct curves for the two age groups (age 15-19 and 20-24) show the significant differences in the duration of use for the two age groups. Young women age 20-24 are more likely to have been using modern contraception for longer than those age 15-19. For example, about 20% of the current users among women age 20-24 have been using the method for 24 months, compared with about 5% of the current users among women age 15-19. Similarly, more than 50% of the current users among women age 20-24 are using the method for 12 months, while only about 25% of the current users among women age 15-19 are using the method.

It is rare for either group of young women to have been using contraception for more than 36 months, with almost no differences between age groups after this point.

Figure 8 Duration of contraceptive use among women age 15-24 who are currently using any method of contraception (Kaplan-Meier survival curves), Nepal DHS 2016



5.7 Determinants of Modern Contraceptive Use

Table 19 shows the unadjusted and adjusted ORs for modern contraceptive use among young women for selected characteristics. The sample for the regression analysis is currently married, non-pregnant women age 15-24, and (if ever pregnant) whose last pregnancy ended at least 3 months before the survey. In the bivariate regression, education, caste/ethnicity, exposure to media, fertility preference, husband's presence at home, number of living children, and age emerge as significant factors influencing modern contraceptive use.

Table 19 Determinants of modern contraceptive use. Odds ratios from logistic regression among currently married, non-pregnant women age 15-24, Nepal DHS 2016

Background characteristics	OR	95% CI	aOR	95% CI
Province				
Province 1	0.95	0.59-1.54	0.95	0.52-1.75
Province 2	0.31***	0.18-0.54	0.59	0.30-1.18
Province 3	Ref		Ref	
Province 4	0.71	0.43-1.17	0.72	0.38-1.35
Province 5	0.74	0.44-1.24	0.91	0.48-1.71
Province 6	0.66	0.40-1.06	0.79	0.41-1.53
Province 7	0.92	0.50-1.71	1.15	0.54-2.45
Education				
No education	Ref		Ref	
Primary	1.40	0.96-2.05	1.04	0.64-1.69
Some secondary	1.57*	1.10-2.24	1.15	0.74-1.78
SLC and above	1.62*	1.07-2.47	1.26	0.71-2.24
Caste/ethnicity				
Brahmin/Chhetri	Ref		Ref	
Terai/Madhesi other	0.55*	0.34-0.88	0.76	0.42-1.38
Dalit	0.76	0.49-1.19	1.05	0.64-1.72
Janajati	1.38*	1.02-1.87	1.51	0.99-2.27
Newar	0.94	0.43-2.04	0.90	0.36-2.30
Muslim	0.27**	0.13-0.58	0.48	0.19-1.25
Others	5.19	0.88-30.61	2.39	0.43-13.32
Exposure to media				
Low	Ref		Ref	
High	1.82**	1.22-1.72	1.40	0.89-2.22
Living together with partner				
Yes	6.72***	4.98-9.06	8.63***	6.27-11.87
No	Ref		Ref	
Fertility preference				
Wants then	Ref		Ref	
Wants later	5.31***	3.45-8.17	5.00***	3.02-8.29
Wants no more	12.15***	7.72-19.14	7.67***	4.20-14.00
Number of living children				
0	Ref		Ref	
1	3.02***	2.11-4.33	1.78*	1.15-2.77
2+	5.14***	3.38-7.80	2.78***	1.60-4.84
Current age				
Current Age	1.16***	1.10-1.22	1.05	0.97-1.13
Number of women	***1,913***		***1,913***	

Note: *** p<0.001, ** p<0.01, * p<0.05 ;
OR = Odds Ratio (unadjusted), aOR = Adjusted Odds Ratio;
Ref = Reference Category
The multivariate model excluded residence, wealth, and decision making because they neither had significant associations with the outcome in bivariate regression nor influenced the behavior of other covariates in the final model; the bivariate results for these variables are not shown in the table.

We exclude residence, wealth, and decision making from the multivariate regression because they did not have significant associations with the outcome variable in the bivariate regression and they did not influence the behavior of other covariates in the final model. We retain all remaining variables with a significant bivariate association in the multivariate model. In the multivariate model after controlling for other factors, age, province of residence, caste/ethnicity, education, and exposure to media lose their significance and are not associated with modern contraceptive use among young women. Only

husband's residential status, fertility preference, and number of living children continue to show significant association with modern contraceptive use after controlling for other factors.

The odds of modern contraceptive use are 8.6 times higher for women whose husband is living with her as compared to those whose husband lives elsewhere. Similarly, the odds of using modern contraception is 5 times higher for those who want their next child later and 7.7 times higher for those who want no more children compared to those women who want their next child within 2 years. The odds of modern contraceptive use are 1.8 times and 2.8 times higher for women with one and two or more living children, respectively, than for those with no living children.

5.8 Need and Demand for Family Planning

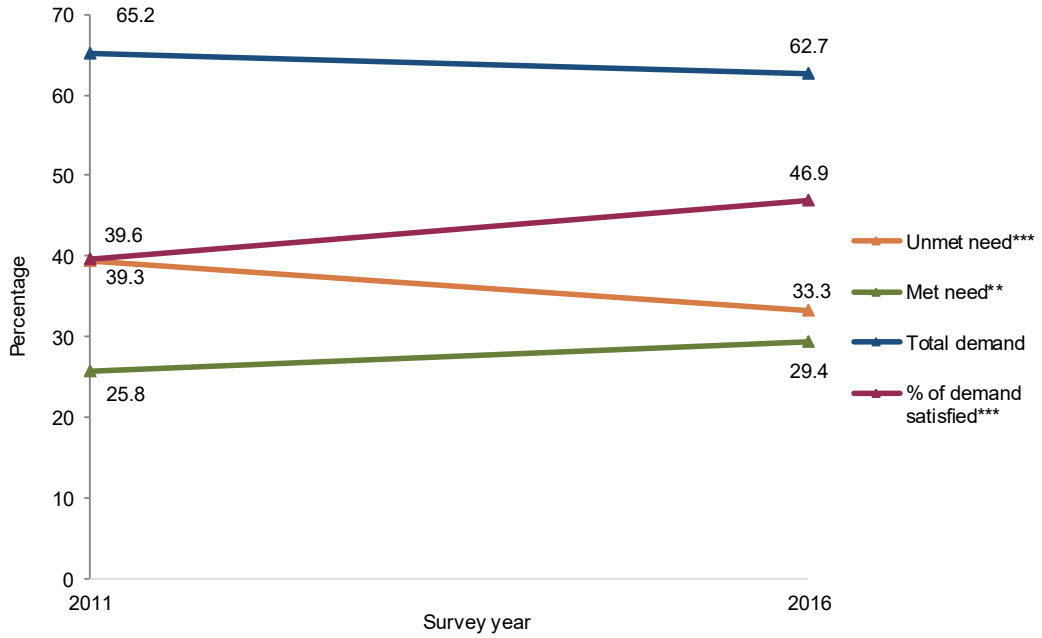
This section analyzes the level of and trends in unmet need and demand for family planning, differentials in unmet need, and the determinants of unmet need. The algorithm we use to calculate unmet need and demand (Bradley et al. 2012) considers use of modern and traditional methods, alike, to constitute met need for family planning.

5.8.1 Trends in need and demand for family planning

Figure 9 shows the status of unmet need, met need, total demand, and percent of demand satisfied with family planning among currently married young women and the changes on each of these indicators in 2011-2016. Although nearly 4 in 10 young women have no need for family planning,[5] more than 6 in 10 women have a need for family planning (total demand). Unmet need for family planning among young women has significantly declined from 39% in 2011 to 33% in 2016. Meanwhile, the met need has significantly increased and the proportion of demand satisfied has also significantly increased from 2011 to 2016. If only modern contraceptive methods are considered for meeting family planning needs and use of traditional methods (8%) were excluded, unmet need among young women would increase to 42% and the percent of demand satisfied by modern contraception would be 34%.

[5] Women who have no need for family planning are those who would like to have a child soon (within 2 years), are infecund, menopausal, or post-partum amenorrheic.

Figure 9 **Trends in the need and demand for family planning among currently married women age 15-24, Nepal DHS 2011-2016**



Note: *** p<0.001, ** p<0.01, * p<0.05

Table 20 disaggregates unmet need into need for spacing and need for limiting. The data show that total demand for spacing (41%) is approximately twice that for limiting (22%) among young women. Both unmet need for spacing (24%) and met need for spacing (17%) exceed that for limiting (9% and 13%, respectively). However, the proportion of demand satisfied is lower for young women who want to space (40%) than for those who want to limit (60%).

Table 20 **Need and demand for family planning among currently married women age 15-24 disaggregated by need for spacing and limiting, Nepal DHS 2016**

	Unmet need	Met need	Total demand	% of demand satisfied
Spacing	24.4	16.5	41.0	40.3
Limiting	8.8	12.9	21.7	59.4
Total	**33.3**	**29.4**	**62.7**	**46.9**

5.8.2 Unmet need by background characteristics

Table 21 presents details of the unmet need, met need, total demand, and proportion of demand satisfied for family planning by various background characteristics. Unmet need is higher among women whose husband is not living with them[6] (57%) and who have at least two living children (38%). Unmet need is lowest among women in the richest wealth quintile (26%).

Among all the provinces, Province 2 shows the lowest and Province 3 the highest proportion of demand satisfied. The proportion of demand satisfied is high among women who are currently residing with

[6] The algorithm for unmet need (Bradley et al. 2012) does not consider husband's residential status; all currently married women are considered to be sexually active and potentially at risk of pregnancy, regardless of the regular presence or absence of the husband. As such, unmet need and demand for family planning may be overestimated among women whose husbands are living apart from them (Dev Pant and Bietsch 2018; Khanal et al. 2013).

their husband (75%) and those from the richest wealth quintile (63%). These data are disaggregated by need for spacing and for limiting in Appendix Table A8.

Table 21 Need and demand for family planning among currently married women age 15-24 by background characteristics, Nepal DHS 2016

Background characteristics	Total unmet need	Total met need	Total demand	Demand satisfied	
	%	%	%	%	*N*
Place of residence					
Urban	30.4	21.5	51.9	41.4	*1,311*
Rural	36.7	25.9	62.7	41.4	*1,077*
Province					
Province 1	33.2	38.7	71.9	53.9	*386*
Province 2	33.2	16.9	50.1	33.8	*640*
Province 3	27.8	38.6	66.4	58.1	*338*
Province 4	39.5	33.3	72.8	45.7	*219*
Province 5	32.6	29.6	62.1	47.6	*439*
Province 6	39.1	26.3	65.4	40.3	*176*
Province 7	32.4	34.1	66.5	51.3	*190*
Education					
No education	27.8	21.5	49.3	43.6	*396*
Primary	35.4	25.1	60.5	41.5	*486*
Some secondary	34.7	32.4	67.1	48.3	*1,176*
SLC and above	31.6	34.4	66.0	52.1	*330*
Caste/ethnicity					
Brahmin/Chhetri	35.4	31.3	66.7	47.0	*608*
Terai/Madhesi other	32.0	21.4	53.4	40.1	*463*
Dalit	35.9	22.3	58.2	38.4	*366*
Janajati	30.9	38.9	69.8	55.8	*728*
Newar	34.2	40.7	74.9	54.4	*67*
Muslim	34.2	11.2	45.3	24.6	*152*
Others	-	-	-	-	*5*
Wealth quintile					
Poorest	39.5	27.6	67.1	41.1	*440*
Poorer	32.8	30.0	62.8	47.7	*526*
Middle	35.4	23.9	59.3	40.3	*589*
Richer	30.3	29.2	59.5	49.1	*548*
Richest	25.7	43.0	68.7	62.6	*286*
Exposure to media					
Low	34.0	19.2	53.2	36.1	*405*
High	33.1	31.5	64.6	48.8	*1,983*
Living together with partner					
Yes	15.2	44.9	60.2	74.7	*1,347*
No	56.6	9.3	65.9	14.1	*1,042*
Decision-making status					
Low	31.8	35.3	67.0	52.6	*1,771*
High	50.0	26.9	76.8	35.0	*288*
Number of living children					
0	24.7	15.9	40.5	39.1	*754*
1	36.9	33.6	70.5	47.7	*1,099*
2+	38.0	39.8	77.8	51.2	*535*
Age					
15-19	34.9	23.1	58.1	39.8	*704*
20-24	32.6	32.0	64.6	49.6	*1,684*
Total	**33.3**	**29.4**	**62.7**	**46.9**	***2,389***

- indicates the figure is based on fewer than 25 unweighted cases and has been suppressed.

5.8.3 Determinants of unmet need

After assessing the differentials in unmet need, this study analyzes the determinants of unmet need for family planning because there is a substantial amount of unmet need among young women age 15-24. Association of any unmet need (for spacing or limiting) with selected background characteristics is obtained through logistic regression. In the bivariate analysis (Table 22), unmet need is found to be

significantly associated with residence, two provinces (Provinces 4 and 6), wealth quintile, husband's residential status, and number of children.

Table 22 Determinants of unmet need for family planning: Odds ratios from logistic regressions among currently married women age 15-24, Nepal DHS 2016

Background characteristics	OR	95% CI	aOR	95% CI
Place of residence				
Urban	Ref		Ref	
Rural	1.33**	1.07-1.65	1.18	0.93-1.50
Education				
No education	Ref		Ref	
Primary	1.42	0.95-2.13	1.61*	1.03-2.54
Some secondary	1.38	0.96-1.97	1.82**	1.23-2.69
SLC and above	1.20	0.79-1.82	1.79*	1.09-2.93
Wealth quintile				
Poorest	Ref		Ref	
Poorer	0.75*	0.58-0.96	0.68*	0.50-0.91
Middle	0.84	0.66-1.07	0.75	0.56-1.01
Richer	0.67**	0.51-0.88	0.76	0.55-1.05
Richest	0.53**	0.36-0.77	0.81	0.53-1.23
Living together with partner				
Yes	Ref		Ref	
No	7.25***	5.77-9.10	7.67***	6.02-9.77
Number of living children				
0	Ref		Ref	
1	1.78***	1.43-2.22	2.03***	1.59-2.60
2+	1.87***	1.43-2.44	2.86***	1.99-4.11
Current age				
Current age	0.98	0.95-1.02	0.91**	0.86-0.96
Number of women	***2,389***		***2,389***	

Note: *** p<0.001, ** p<0.01, * p<0.05
The variables province, caste/ethnicity, media exposure, and decision making were also tested but excluded from the final model because they neither had significant associations with the outcome in bivariate analysis nor influenced the behavior of other covariates in the full model.

Among the variables used in the bivariate models, residence, education, wealth quintile, husband's residential status, number of living children, and current age are used in the multivariate model. The number of living children, education, and husband not living with wife are positively associated with unmet need for family planning, while current age and household wealth are negatively associated. The odds of unmet need for family planning are 7.7 times higher for women whose husband is not living at home than those whose husband is living with her. Similarly, the odds of unmet need for young women is double (OR=2.0) for young women with one child and nearly triple (OR=2.9) for young women with two or more children, as compared to those with no children.

6 MATERNAL HEALTH

6.1 Background

The four-visit ANC model outlined in the WHO clinical guidelines recommends that a pregnant woman should have at least four ANC visits (Abou-Zahr and Wardlaw 2003). Studies have shown that having an SBA present during delivery, facilitated by delivering in a health institution, can reduce maternal deaths by one-third (Graham, Bell, and Bullough 2001; Lawn et al. 2005). The national protocol for maternal health in Nepal has adopted focused ANC visits in which at least four goal-oriented ANC visits are recommended in the 4th, 6th, 8th, and 9th months of pregnancy (MoHP 2009). The protocol also emphasizes education and counseling about nutrition, birth preparedness, and birth complication readiness for prospective mothers during ANC visits.

The next important stage in the continuum of care is delivery care. It is very essential for a woman and her family to be well aware of caring and choosing the right place to give birth (Dulal 2016). To save the lives of young women who marry early and experience early childbearing, delivery care at a health institution is the most recommended choice.

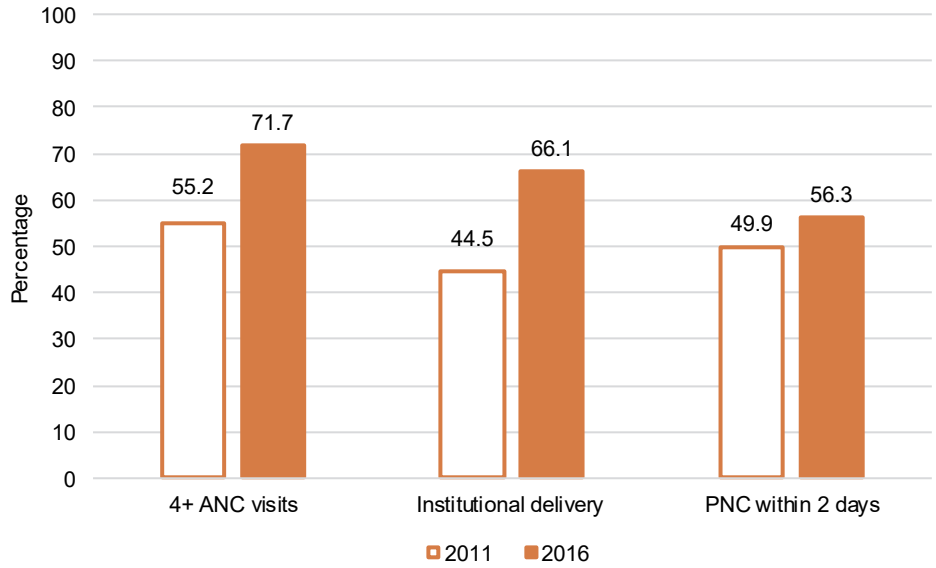
The postnatal period is a critical time for the health of a mother and her newborn (Matthews, Severin, and Jelka 2010). Lack of care at this time may deprive a mother of the opportunity for promoting healthy behaviors, and may also result in death and disability (Abou-Zahr and Wardlaw 2003; World Health Organization 2014). The Government of Nepal recommends at least three PNC visits for all women who have given birth, with the first within 24 hours of delivery, the second on the third day after delivery, and the third on the 7th day after delivery (Department of Health Services (DoHS) 2011). The Government of Nepal is striving to raise the use of ANC, institutional delivery, and PNC to 90% by 2030 (National Planning Commission 2015). Thus, it is important to better understand the use of different components of maternal health care by young women.

This chapter describes overall trends in ANC, institutional delivery, and PNC service; differentials and determinants of timely ANC and institutional delivery; and differentials in PNC service. Counseling during ANC about many important issues and components of birth preparedness is also provided.

6.2 Continuum of Maternal Health Care

Of all young women surveyed in the 2016 NDHS, one-third had a live birth in the 5 years before the survey. This accounts for 40% of the total births to women of all ages that occurred in the past 5 years. Figure 10 presents trends in all three stages in the continuum of maternal health care: ANC, institutional delivery, and PNC. All three maternal health care outcomes have significantly increased during 2011-2016. About 72% of young women of Nepal had four or more ANC visits during their last pregnancy in 2016, up from 55% in 2011. Figure 9 shows that 66% of young women have given birth to their last child at a health facility in 2016, up from 44% in 2011. However, only 56% of young women had their PNC visit within 2 days of delivery in 2011. This increased by 6 percentage points in 2016.

Figure 10 Trends in components of maternal care among women age 15-24 who have had a birth in the 5 years preceding the survey, Nepal DHS 2011-2016



6.3 Antenatal Care

This section describes the analysis of receiving at least four ANC visits, the timing of the initiation of ANC, counseling received during ANC visits, and the determinants of receiving timely ANC. Differentials in the proportion of women who received at least four ANC visits by background characteristics are presented in Table 23. Significant differences in at least four ANC visits among the young women are observed for all study variables, with the exception of age. More than 7 in 10 young women receive four or more ANC visits, with no statistical difference between those age 15-19 and 20-24.

Table 23 Percentage of women who had at least four antenatal care visits for the most recent birth among women age 15-24 who had a live birth in the 5 years preceding the survey by background characteristics, Nepal DHS 2016

Background Characteristics	%	*N*	*p*-value
Age			
15-19	73.5	*334*	
20-24	71.4	*1,272*	
Place of residence			
Urban	76.9	*842*	**
Rural	66.0	*764*	
Province			
Province 1	80.3	*267*	
Province 2	58.4	*451*	
Province 3	77.2	*210*	
Province 4	78.2	*148*	***
Province 5	78.2	*293*	
Province 6	55.9	*109*	
Province 7	82.4	*128*	
Education			
No education	54.1	*307*	
Primary	63.0	*350*	***
Some secondary	77.5	*759*	
SLC and above	93.3	*190*	
Caste/ethnicity			
Brahmin/Chhetri	82.2	*399*	
Terai/Madhesi other	63.6	*334*	
Dalit	67.2	*241*	
Janajati	72.4	*477*	***
Newar	[84.4]	*41*	
Muslim	59.7	*109*	
Others	-	*5*	
Wealth quintile			
Poorest	64.6	*314*	
Poorer	70.1	*371*	
Middle	69.9	*397*	**
Richer	77.6	*355*	
Richest	80.2	*169*	
Decision-making status[1]			
Low	71.0	*916*	*
High	76.4	*540*	
Total	**71.7**	***1,606***	

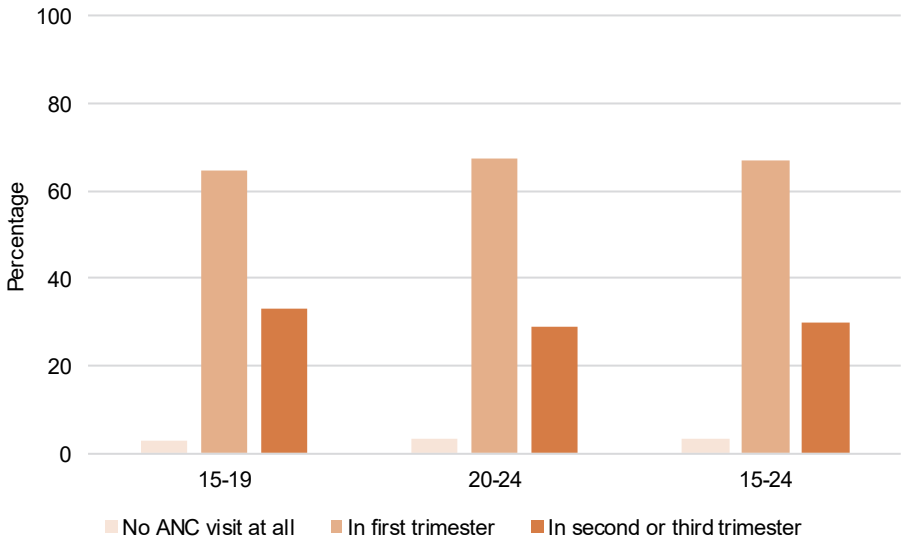
Note: ***p<0.001, **p<0.01*, *p<0.05
- indicates the figure is based on fewer than 25 unweighted cases and has been suppressed.
[ ] indicates the figure is based on 25-50 unweighted cases and should be interpreted with caution.
[1] Data on decision making are not available for 149 cases.

The likelihood of completing four or more ANC visits increases with urban residence, education, wealth, greater decision making, and for Brahmin/Chhetri and Janajati women. Use of at least four ANC visits is lower for young women in Provinces 2 and 6. With age disaggregated, the pattern for women age 20-24 is similar to that for women age 15-19. For adolescent women age 15-19, differentials in ANC are significant only for education (see Appendix Table A9).

6.3.1 Timing of ANC visits

Figure 11 shows the timing of the first ANC visit among young women who had a live birth in the 5 years before the 2016 survey. Although only 72% of young women completed the recommended four or more ANC visits, nearly all young women (97%) had at least one ANC visit during their pregnancy. Nearly two-thirds of the young women had their first ANC visit during the first trimester, although 30% of the women initiated an ANC visit beyond the first trimester. Similar results are observed among women age 15-19 and 20-24.

Figure 11 Timing of first antenatal care visit for the most recent birth among women age 15-24 who have had a birth in the 5 years preceding the survey, Nepal DHS 2016



For the first time in the history of DHS surveys in Nepal, there is now information available on ANC visits at the recommended months of pregnancy per Nepal's protocol. The results observed for young women age 15-24 are presented in Table 24 and those with the age disaggregation (ages 15-19 and 20-24) are presented in the Appendix Table A10.

Significant differentials in the timing of ANC visits as per the recommended protocol are observed among all study variables, except for the wealth quintile. For example, a significantly higher proportion of young women living in urban areas have completed ANC visits as per protocol as compared to their rural counterparts. Similarly, women living in Province 7 have the highest proportion of ANC visits per protocol, with the smallest proportion found among young women who reside in Province 2. For women age 15-24, the lowest proportion of ANC use per protocol is observed among women from Terai/Madhesi other caste and the Muslim community. Women age 20-24 are more likely than those age 15-19 to complete ANC visits per the protocol. Details of age-disaggregated results are shown in Appendix Table A10.

Table 24 Timing of antenatal care visits per national protocol: Percentage of women age 15-24 who had antenatal care visits in the fourth, sixth, eighth, and ninth month of their most recent pregnancy per national protocol, among those who have a live birth in the 5 years preceding the survey, by background characteristics, Nepal DHS 2016

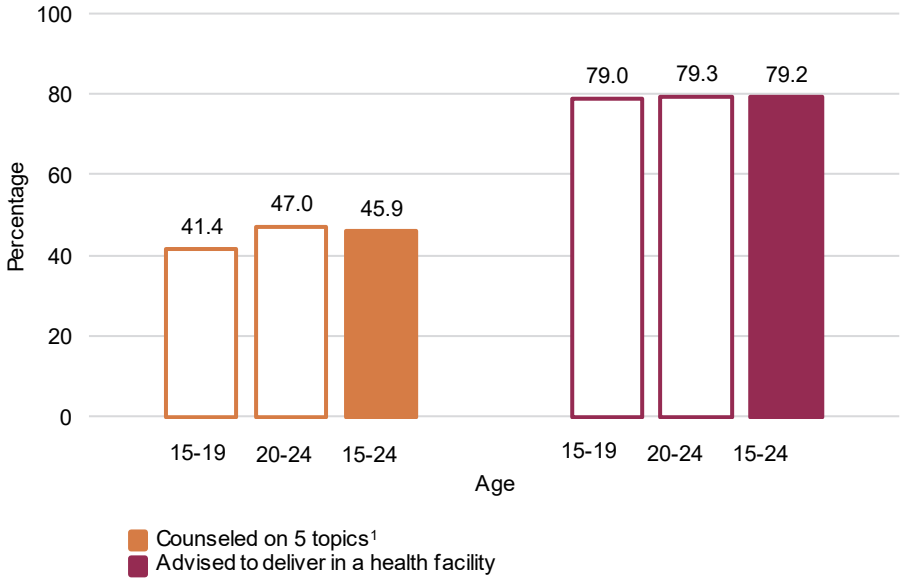
Background characteristics	%	*N*	*p*-value
Age			
15-19	50.8	*326*	**
20-24	58.9	*1,228*	
Place of residence			
Urban	62.8	*824*	**
Rural	50.9	*729*	
Province			
Province 1	59.3	*264*	***
Province 2	36.3	*435*	
Province 3	67.3	*205*	
Province 4	69.0	*140*	
Province 5	69.0	*284*	
Province 6	48.7	*99*	
Province 7	75.6	*127*	
Education			
No education	36.5	*292*	***
Primary	53.4	*333*	
Some secondary	62.1	*740*	
SLC and above	76.8	*189*	
Caste/ethnicity			
Brahmin/Chhetri	70.9	*391*	***
Terai/Madhesi other	42.5	*320*	
Dalit	52.8	*230*	
Janajati	60.1	*457*	
Newar	[69.9]	*41*	
Muslim	42.3	*109*	
Others	-	*5*	
Wealth quintile			
Poorest	55.2	*290*	
Poorer	56.5	*355*	
Middle	53.3	*387*	
Richer	59.5	*354*	
Richest	66.5	*168*	
Total	**57.2**	***1,553***	

Note: ***p<0.001, **p<0.01*, *p<0.05
- indicates the figure is based on fewer than 25 unweighted cases and has been suppressed.
[ ] indicates the figure is based on 25-50 unweighted cases and should be interpreted with caution.

6.3.2 Counseling during ANC

Guidelines for ANC providers emphasize that counseling should be given to pregnant women during their ANC visits. This counseling should include knowledge of danger signs, complication readiness, birth preparedness including place of delivery and service provider, and importance of PNC visits (MoHP 2009). The Nepal DHS has collected information from women on five topics related to counseling during ANC visits: importance of having an institutional delivery, using an SBA during delivery, knowing the possible danger signs during pregnancy, knowing where to go if danger signs are seen during pregnancy, and the understanding the importance of a PNC checkup. Figure 12 shows that 46% of the young women (age 15-24) received all five types of counseling during their ANC visits. However, the proportion of adolescent women age 15-19 who received such counseling was lower than women age 20-24.

Figure 12 Counseling during antenatal care visits. Percentage of women age 15-24 who were counseled on 5 topics and who were advised to deliver in a health facility, for the most recent birth among those who had a birth in the 5 years preceding the survey and who had at least one ANC visit, Nepal DHS 2016



[1] The 5 topics are: to have a skilled birth attendant during delivery, deliver at health facility, possible complications during pregnancy, w here to go if problems arise, and to get postnatal checkup.

An important aspect of ANC counseling is the promotion of institutional delivery. Figure 12 also shows that nearly four-fifths of prospective mothers were advised to go to a health facility for delivery. There is no apparent difference by age group in receiving this advice.

6.3.3 Determinants of timely ANC visits

To explore the factors associated with the recommended timing of ANC visits, Table 25 presents the results of the multivariate logistic regression among the young women who have had a birth in the 5 years before the survey. The outcome variable is a dichotomous variable with an affirmative response (1) for those women who made ANC visits according the recommended timing per the national protocol, and a negative response (0) for those with no ANC visits or women who completed ANC visits that did not conform to the recommended timing.

The results of the multivariate regression show that all of the factors that were significant in bivariate regression (data not shown) retain their significance in the multivariate model. Young women age 15-24 living in a rural area, from Provinces 2 or 6, from the Janajati group, and those having second or higher order births have significantly lower odds of completing ANC visits per the recommended timing as compared to their respective reference categories after controlling for other factors. In contrast, young women with higher levels of education, better media exposure, and who are age 20-24 have significantly higher odds of completing the recommended ANC visits than their counterparts after adjusting for other variables. For example, young women with a higher level of education had 2.4 times higher odds of completing the recommended ANC visits compared to women with no education, while women with high media exposure have 1.5 times higher odds than those women with low exposure.

Table 25 **Determinants of timely antenatal care per national protocol: Odds ratios from a multivariate logistic regression for ANC visits in the fourth, sixth, eighth, and ninth month of pregnancy for the last birth among women age 15-24 who had a birth in the 5 years preceding the survey, Nepal DHS 2016**

Background Characteristics	OR	95% CI
Age		
15-19	Ref	
20-24	1.41*	1.05-1.89
Place of residence		
Urban	Ref	
Rural	0.73*	0.53-0.98
Province		
Province 1	0.73	0.40-1.32
Province 2	0.35**	0.18-0.70
Province 3	Ref	
Province 4	0.94	0.51-1.72
Province 5	1.09	0.57-2.08
Province 6	0.48*	0.26-0.88
Province 7	1.32	0.68-2.56
Education		
No education	Ref	
Primary	1.39	0.93-2.07
Some secondary	1.61*	1.12-2.33
SLC and above	2.36**	1.42-3.95
Caste/ethnicity		
Brahmin/Chhetri	Ref	
Terai/Madhesi other	0.76	0.44-1.30
Dalit	0.76	0.49-1.20
Janajati	0.62*	0.43-0.90
Newar	1.11	0.44-2.80
Muslim	0.56	0.27-1.18
Others	1.47	0.11-19.68
Wealth quintile		
Poorest	Ref	
Poorer	1.06	0.74-1.52
Middle	1.45	0.95-2.20
Richer	1.45	0.92-2.28
Richest	1.08	0.61-1.89
Exposure to media		
Low	Ref	
High	1.46*	1.05-2.04
Decision-making status		
Low	Ref	
High	0.96	0.74-1.25
Birth order		
First	Ref	
Second or higher	0.72*	0.56-0.94
Number of women	***1,415***	

*** p<0.001, **p<0.01, * p<0.05

6.4 Delivery Care

The following section explores various aspects of delivery care, including institutional delivery, reasons for not delivering in a health institution, and birth preparation. The data refer to the young woman's most recent birth in the 5 years before the survey, and not all births she had in the previous 5 years.

6.4.1 Institutional delivery

Table 26 shows the percentage of young women who delivered at a health facility for their last birth. In the distribution pattern, there is a significant differential in institutional delivery by all background characteristics, except for age and decision making. Institutional delivery is higher among women from urban areas, with better education, from a higher wealth quintile, and from Province 4. Use of institutional delivery among all young women is significantly higher for first-order births.

Overall levels of institutional delivery in the two age groups are not statistically different. Age-disaggregated results show a similar pattern for both age groups (See Appendix Table A11).

Table 26 Percentage of women age 15-24 who delivered their most recent birth in a health facility among women who had a birth in the 5 years preceding the survey, by background characteristics, Nepal DHS 2016

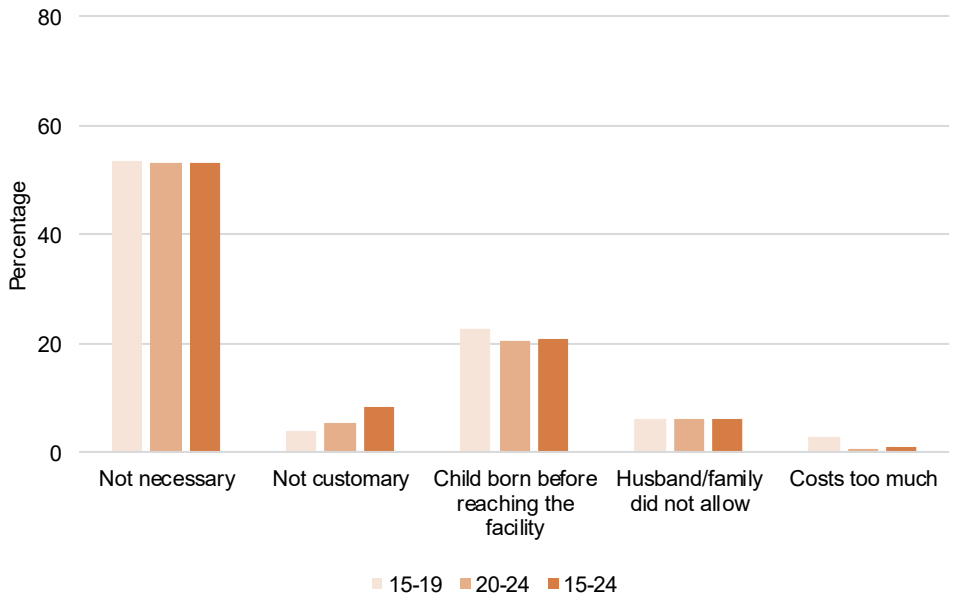
Background characteristics	%	*N*	*p-value*
Age			
15-19	70.4	*334*	
20-24	64.9	*1,271*	
Place of residence			
Urban	74.4	*842*	***
Rural	56.9	*764*	
Province			
Province 1	66.0	*267*	
Province 2	58.1	*451*	
Province 3	74.7	*210*	
Province 4	77.8	*148*	***
Province 5	68.5	*293*	
Province 6	47.7	*109*	
Province 7	76.8	*128*	
Education			
No education	49.2	*307*	
Primary	56.2	*350*	***
Some secondary	72.3	*759*	
SLC and above	86.6	*190*	
Wealth quintile			
Poorest	45.7	*314*	
Poorer	56.5	*371*	
Middle	72.6	*397*	***
Richer	74.9	*355*	
Richest	91.1	*169*	
Caste/ethnicity			
Brahmin/Chhetri	73.8	*399*	
Terai/Madhesi other	59.9	*334*	
Dalit	55.9	*241*	
Janajati	67.1	*477*	***
Newar	[78.6]	*41*	
Muslim	68.6	*109*	
Others	-	*5*	
Decision-making status[1]			
Low	65.6	*916*	
High	69.4	*540*	
Birth order			
First	74.9	*1,030*	***
Second or Higher	50.3	*575*	
Total	**66.1**	***1,606***	

Note: ***p<0.001, **p<0.01*, *p<0.05
- indicates the figure is based on fewer than 25 unweighted cases and has been suppressed.
[ ] indicates the figure is based on 25-50 unweighted cases and should be interpreted with caution.
[1] Data on decision making are not available for 149 cases

6.4.2 Reasons for not delivering in health institution

More than 50% of young women age 15-24 who did not deliver in a health institution reported that it was *not necessary* as the prime reason for not delivering at a hospital. About 20% cited *child born before reaching the facility* (see Figure 13). About 6% of young women reported that their husband or family did not allow them to deliver in an institution. Results show a similar pattern among women age 15-19 and 20-24.

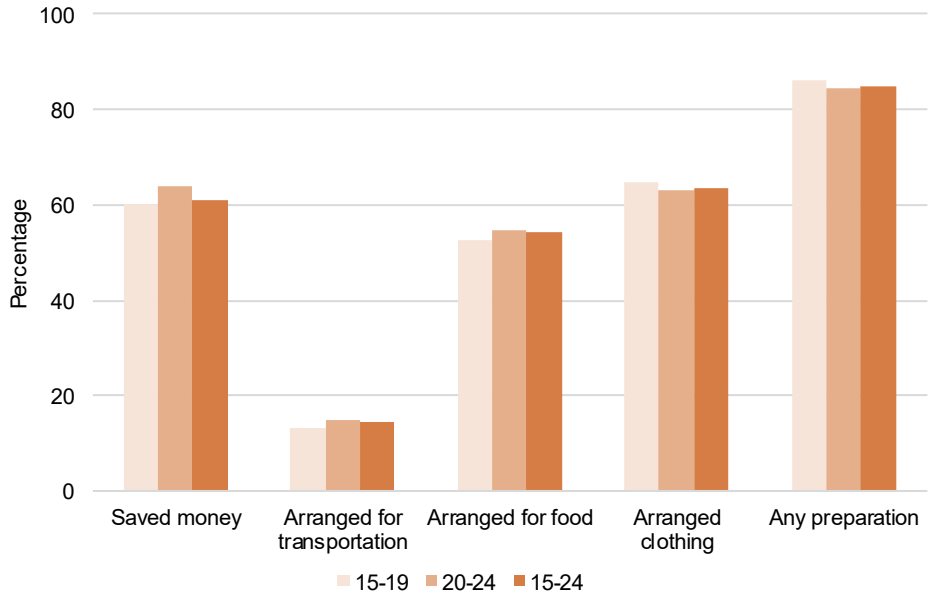
Figure 13 **Reasons for not delivering in a health facility among women age 15-24 who had a birth in the 5 years preceding the survey and did not deliver their most recent birth in a health facility, Nepal DHS 2016**



6.4.3 Birth preparedness

Results in Figure 14 show that about 85% of young women made some preparation for their most recent birth. About 6 of 10 young women either saved money for their most recent delivery or prepared clothing, which are the two most common preparations. More than 50% of women arranged for food, while making arrangements for transportation was the least common preparation. The prevalence of any birth preparation is almost similar among women age 15-19 and 20-24.

Figure 14 **Percentage of women age 15-24 who made birth preparations among those who had a birth in the 5 years preceding the survey, Nepal DHS 2016**



6.4.4 Determinants of institutional delivery

Determinants of institutional delivery are examined by using logistic regression of the outcome variable with potential covariates. In addition to the same variables used in the model for timely ANC visits (various sociodemographic characteristics, media exposure, and decision making), the model for institutional delivery includes the additional variable of timely ANC visit per protocol.

As shown in Table 27, the odds of institutional delivery increase with wealth (tenfold for women in the richest wealth quintile) and with education (2.6 times for women with an SLC), after controlling for other variables. A significant negative association of institutional delivery with birth order and rural residence is observed. After controlling for sociodemographic factors, media exposure, and decision making, women who completed the recommended timing of ANC visits have more than double the odds of institutional delivery. Women's decision making, exposure to media, caste/ethnicity, provincial location, and age have no significant association with institutional delivery, although several of these variables show an association with timely ANC visits.

Table 27 Determinants of institutional delivery: Odds ratios from a multivariate logistic regression for the most recent birth among women age 15-24 who had a birth in the 5 years preceding the survey, Nepal DHS 2016

Background characteristics	OR	95% CI
Age		
15-19	Ref	
20-24	0.71	0.49-1.03
Place of residence		
Urban	Ref	
Rural	0.58**	0.42-0.97
Province		
Province 1	0.73	0.39-1.36
Province 2	0.57	0.28-1.16
Province 3	Ref	
Province 4	1.39	0.68-2.82
Province 5	0.70	0.38-1.31
Province 6	0.55	0.29-1.06
Province 7	1.25	0.63-2.45
Education		
No education	Ref	
Primary	1.36	0.90-2.04
Some secondary	1.71*	1.15-2.55
SLC and above	2.58**	1.44-4.62
Caste/ethnicity		
Brahmin/Chhetri	Ref	
Terai/Madhesi other	0.70	0.40-1.22
Dalit	0.68	0.42-1.11
Janajati	0.82	0.56-1.19
Newar	0.70	0.26-1.89
Muslim	0.89	0.43-1.84
Wealth quintile		
Poorest	Ref	
Poorer	1.40	0.94-2.10
Middle	4.49***	2.56-7.86
Richer	4.19***	2.53-6.95
Richest	10.21***	4.11-25.38
Exposure to media		
Low	Ref	
High	0.95	0.65-1.39
Decision-making status		
Low	Ref	
High	0.99	0.75-1.30

(Continued…)

Table 27—*Continued*

Background characteristics	OR	95% CI
Birth order		
First	Ref	
Second or higher	0.45***	0.33-0.62
Timely ANC visits[1]		
Not per national protocol	Ref	
Per national protocol	2.16***	1.60-2.91
Number of women	***1,410***	

*** p<0.001, **p<0.01, * p<0.05

[1] The national protocol recommends antenatal care visits during the 4th, 6th, 8th, and 9th months of pregnancy.

6.5 Postnatal Care

In this section, we examine the third stage in the continuum of maternal care: PNC for mothers within 2 days of delivery. A separate report analyzes the determinants of PNC for all women age 15-49 and found that age is not associated with PNC, suggesting that young and older women share the same determinants. These were education, wealth, delivery in a health facility, and being advised during ANC to have PNC checkup (Aryal et al. 2019). For this reason, we do not explore determinants of PNC specifically for youth in this study.

6.5.1 Postnatal care by background characteristics

Table 28 presents use of PNC for mothers within 2 days of delivery among young women. A significant differential in the use of PNC is observed among the selected variables. For example, young women living in urban areas, currently living in Province 4, or with higher education (SLC and above) have a higher proportion of use than their counterparts. The age differential in the utilization of PNC is not significant.

Although the pattern is similar for women age 20-24 as for women age 15-24, there is a significant variation in the pattern of PNC use within 2 days across all variables for women age 15-19 as compared to the distributional pattern for women age 20-24 (See Appendix Table A12). Only wealth and birth order show significant variations in utilization of PNC among women age 15-19, although this may be due to the small sample size of women age 15-19 (n=335).

Table 28 Percentage of women age 15-24 who received postnatal care within 2 days for the most recent birth among women who had a birth in the 5 years preceding the survey, by background characteristics, Nepal DHS 2016

Background characteristics	%	N	p-value
Age			
15-19	54.9	*335*	
20-24	56.7	*1,272*	
Place of residence			
Urban	62.9	*842*	***
Rural	49.1	*764*	
Province			
Province 1	62.7	*267*	
Province 2	46.4	*451*	
Province 3	65.3	*210*	
Province 4	70.7	*148*	***
Province 5	58.0	*293*	
Province 6	41.6	*109*	
Province 7	54.9	*128*	
Education			
No education	39.5	*307*	
Primary	46.8	*350*	***
Some secondary	60.6	*759*	
SLC and above	83.9	*190*	
Wealth quintile			
Poorest	38.9	*314*	
Poorer	49.8	*371*	
Middle	57.4	*397*	**
Richer	67.6	*355*	
Richest	76.6	*169*	
Caste/ethnicity			
Brahmin/Chhetri	65.9	*399*	
Terai/Madhesi other	48.0	*334*	
Dalit	49.1	*241*	
Janajati	57.0	*477*	***
Newar	[63.7]	*41*	
Muslim	55.6	*109*	
Others	-	*5*	
Decision-making status[1]			
Low	55.5	*916*	
High	60.8	*540*	
Birth order			
First	62.6	*1,030*	***
Second or Higher	45.0	*575*	
Total	**56.3**	***1,606***	

Note: ***p<0.001, **p<0.01*, *p<0.0
- indicates the figure is based on fewer than 25 unweighted cases and has been suppressed.
[ ] indicates the figure is based on 25-50 unweighted cases and should be interpreted with caution.
[1] Data on decision making are not available for 149 cases.

7 OTHER HEALTH OUTCOMES

7.1 Background

Women in developing nations are facing a high prevalence of violence. Beyond the demographic and intergenerational effects, there are health burdens associated with violence (United Nations 2006). Anemia is a major health concern for women that is associated with increased maternal morbidity and mortality, poor birth outcomes, and low work productivity (Ministry of Health – MOH/Nepal, New ERA/Nepal, and ICF 2017). Body mass index is also an important indicator of nutritional status. Early onset of hypertension has become an alarming public health concern not only in developed countries, but in developing countries as well. Therefore, we analyze domestic violence against young women, their nutritional status in terms of anemia and BMI status, and the extent of hypertension in young men and women as indicators of health outcomes.

7.2 Spousal Domestic Violence

This study examines spousal domestic violence among ever-married young women. We examine the women's experience of any form of such violence: emotional, physical, and sexual violence experienced in the 12 months before the survey. The domestic violence module was administered to a 50% subsample with only one ever-married woman per household eligible for the interview about domestic violence.

Table 29 shows the levels of spousal domestic violence among young women age 15-24, which have not changed significantly between 2011 and 2016. Among ever-married young women, 15% experienced some form of spousal violence in 2016. However, there was a significant decline from 18% to 13% in any form of spousal domestic violence among women age 20-24, while there was no change observed among women age 15-19.

Table 29 Trends in the percentage of ever-married women age 15-24 who report any physical, emotional, or sexual spousal violence in the past 12 months, Nepal DHS 2011-2016

	2011		2016		Difference 2016-2011 (% point)	p-value
	%	*N*	%	*N*		
Age						
15-19	17.5	*261*	18.1	*231*	0.6	*
20-24	18.0	*634*	13.4	*601*	– 4.6	
15-24	17.9	*894*	14.7	832	– 3.2	

Note: ***p<0.001, **p<0.01*, *p<0.05

Table 30 depicts the percentage of ever-married women age 15-24 who experienced any kind of violence in the past 12 months, by background characteristics based on the 2016 NDHS. Significant variation exists with education, decision-making status, and exposure to media. The highest proportion (27%) of women who experienced any form of spousal violence is found with uneducated young women age 15-24, while the smallest proportion (7%) occurs for women who had an SLC and a higher level of education. A high level of decision making and media exposure is associated with a low level of any form of spousal domestic violence. There are no significant differences in the level of violence experienced by age, residence, province, household wealth, or caste/ethnicity. An age-disaggregated analysis of this indicator could not be conducted due to the small sample size responding to the spousal violence module in each age group.

Table 30 Percentage of ever-married women age 15-24 who report any physical, emotional, or sexual spousal violence in the past 12 months by background characteristics, Nepal DHS 2016

Background characteristics	%	*N*	p-value
Age			
15-19	18.1	*231*	
20-24	13.4	*601*	
Place of residence			
Urban	13.1	*448*	
Rural	16.7	*385*	
Province			
Province 1	9.8	*125*	
Province 2	18.9	*200*	
Province 3	13.6	*122*	
Province 4	7.2	*85*	
Province 5	19.7	*153*	
Province 6	11.2	*66*	
Province 7	15.1	*81*	
Education			
No education	26.7	*120*	**
Primary	17.5	*171*	
Some secondary	12.4	*423*	
SLC and above	7.1	*119*	
Wealth Index			
Poorest	14.3	*160*	
Poorer	16.4	*179*	
Middle	14.8	*201*	
Richer	12.8	*196*	
Richest	16.0	*96*	
Caste/ethnicity			
Brahmin/Chhetri	10.8	*220*	
Terai/Madhesi other	18.3	*137*	
Dalit	16.9	*130*	
Janajati	14.3	*279*	
Newar	-	*21*	
Muslim	[23.6]	*42*	
Other	-	*4*	
Decision-making status			
Low	15.8	*604*	*
High	9.3	*95*	
Exposure to media			
Low	23.1	*142*	**
High	13.0	*690*	
Total	**14.7**	***832***	

Note: ***p<0.001, **p<0.01*, *p<0.05
- indicates the figure is based on fewer than 25 unweighted cases and has been suppressed.
[ ] indicates the figure is based on 25-50 unweighted cases and should be interpreted with caution.

7.3 Anemia among Women

Table 31 presents the change in prevalence of any degree of anemia (mild, moderate, or severe) among young women age 15-24. Overall, 44% of young women had anemia in 2016, with no difference between the age groups. This represented a significant increase in anemia of 6 percentage points since 2011.

Table 31 Trends in the percentage of women age 15-24 with any anemia, Nepal DHS 2011-2016

	2011		2016		Difference 2016-2011 (% point)	p-value
	%	*N*	%	*N*		
Age						
15-19	38.6	*1,341*	43.6	*1,297*	5.0	**
20-24	36.8	*1,136*	43.6	*1,146*	6.8	***
15-24	37.7	*2,476*	43.6	2,443	5.9	***

Note: ***p<0.001, **p<0.01*, *p<0.05
Anemia is defined as a hemoglobin level of less than 12 gm/dl for nonpregnant women and less than 11 gm/dl for pregnant women.

The prevalence of anemia among young women by background characteristics is shown in Table 32. Age-disaggregated results are not presented because anemia does not differ by age and the pattern of anemia across background characteristics is the same for both age groups.

Table 32 Percentage of women age 15-24 with any anemia by background characteristics, Nepal DHS 2016

Background characteristics	%	*N*	p-value
Age			
15-19	43.6	*1,297*	
20-24	43.6	*1,146*	
Place of residence			
Urban	43.4	*1,515*	
Rural	43.9	*928*	
Province			
Province 1	49.7	*392*	
Province 2	59.5	*496*	
Province 3	32.3	*509*	
Province 4	26.9	*237*	***
Province 5	45.9	*421*	
Province 6	38.5	*153*	
Province 7	40.3	*235*	
Education			
No education	49.7	*246*	
Primary	42.1	*348*	*
Some secondary	45.2	*1,388*	
SLC and above	36.6	*462*	
Wealth quintile			
Poorest	38.4	*440*	
Poorer	45.3	*484*	
Middle	51.7	*524*	**
Richer	43.7	*567*	
Richest	36.9	*429*	
Caste/ethnicity			
Brahmin/Chhetri	37.8	*733*	
Terai/Madhesi other	54.3	*368*	
Dalit	39.5	*316*	
Janajati	46.1	*797*	***
Newar	27.1	*94*	
Muslim	51.5	*126*	
Other	-	*9*	
Total	**43.6**	***2,443***	

Note: ***p<0.001, **p<0.01*, *p<0.05
Anemia is defined as a hemoglobin level of less than 12 gm/dl for nonpregnant women and less than 11 gm/dl for pregnant women.

Significant differentials in the prevalence of anemia exist among all background characteristics except for place of residence and age. The prevalence of anemia among young women age 15-24 varies across provinces. About 60% of young women who live in Province 2 have some degree of anemia, while the prevalence is roughly half that in Province 3 (32%) and Province 4 (27%). Young women of the Newar community have a lower prevalence of anemia (28%), while young women from the Terai/Madhesi

other caste group (55%) and the Muslims (52%) have the highest prevalence. Although education and household wealth are significantly associated with anemia, the pattern is not clearly linear. Anemia is least prevalent among women with higher education and those from the richest wealth quintile.

7.4 Body Mass Index

Body mass index (BMI) is calculated by dividing weight in kilograms by height in meters squared (kg/m^2). BMI is calculated for women age 15-24 who were not pregnant and who did not have a birth in the 2 months before the survey. The results are presented as underweight (BMI less than $18.5kg/m^2$), normal (BMI $18.5\text{-}24.9kg/m^2$), and overweight ($25kg/m^2$ and above) in Table 33. The prevalence of underweight young women age 15-24 has increased 3 percentage points from 2011 to 2016, while overweight has increased 2 percentage points. These changes are significant. When disaggregated by age, the increases in the prevalence of underweight women age 15-19 and the prevalence of overweight women age 20-24 are both significant.

Table 33 Trends in body mass index of women age 15-24, Nepal DHS 2011-2016

Age	Underweight (BMI < 18) %	Normal (BMI 18-25) %	Overweight (BMI >25) %	*N*
2011				
15-19	25.1	72.0	2.9	*1,350*
20-24	16.4	75.1	8.4	*1,149*
15-24	21.1	73.5	5.4	*2,499*
2016				
15-19	29.1	67.4	3.6	*1,304*
20-24	18.5	69.3	12.2	*1,148*
15-24	24.1	68.3	7.6	*2,452*
Difference 2016-2011				
15-19	4.0*		0.7	
20-24	2.1		3.8**	
15-24	3.0*		2.2**	

Note: ***p<0.001, **p<0.01*, *p<0.05

Table 34 depicts the percent distribution of BMI status (underweight, normal, and overweight) among women age 15-24 by selected background characteristics from the 2016 NDHS. A significant variation in BMI status (underweight, normal, and overweight) is observed with age, province, wealth, and caste/ethnicity. Overall, 32% of young women experience some form of malnutrition, either underweight or overweight. This is most prevalent among Muslim (45%) and Terai Madhesi other caste (40%) groups, in Province 2, among less-educated women (no education 35% and primary education 38%), and among the richer wealth quintile. The prevalence of underweight (24%) is higher than the prevalence of overweight (8%) across all characteristics. The proportion of underweight women is higher for women age 15-19, while the proportion of overweight women is higher for those age 20-24. Being underweight has a negative association with the level of education. The higher the level of education, the lower the proportion of underweight. However, there is no clear pattern with the normal weight and overweight groups. Underweight is most prevalent among young women from the Muslim and Terai/Madhesi other caste groups. The proportion of overweight increases with household wealth, although there is no clear pattern with being underweight.

Table 34 Body mass index of women age 15-24 by background characteristics, Nepal DHS 2016

Background characteristics	BMI			N	p-value
	Underweight (BMI < 18) %	Normal (BMI 18-25) %	Overweight (BMI >25) %		
Age					
15-19	29.1	67.4	3.6	*1,304*	***
20-24	18.5	69.3	12.2	*1,148*	
Place of residence					
Urban	23.0	68.3	8.7	*1,524*	
Rural	25.9	68.2	5.9	*928*	
Province					
Province 1	19.2	72.7	8.1	*395*	
Province 2	35.3	61.0	3.7	*500*	
Province 3	18.5	69.6	11.9	*509*	
Province 4	14.2	72.7	13.1	*237*	***
Province 5	28.8	63.7	7.5	*422*	
Province 6	16.7	79.9	3.4	*154*	
Province 7	27.1	69.4	3.5	*235*	
Education					
No education	29.4	65.1	5.5	*246*	
Primary	28.4	62.1	9.5	*350*	**
Some secondary	24.5	68.7	6.8	*1,393*	
SLC and above	16.8	73.3	9.9	*464*	
Wealth quintile					
Poorest	19.1	76.1	4.8	*443*	
Poorer	24.7	69.2	6.1	*486*	
Middle	28.4	66.6	5.0	*524*	***
Richer	26.1	63.5	10.4	*569*	
Richest	20.8	67.4	11.8	*430*	
Caste/ethnicity					
Brahmin/Chhetri	25.3	67.1	7.6	*735*	
Terai/Madhesi other	36.0	60.5	3.6	*369*	
Dalit	28.2	66.1	5.8	*317*	
Janajati	14.4	75.6	10.1	*800*	***
Newar	16.9	70.9	12.2	*95*	
Muslim	40.6	55.0	4.4	*127*	
Other	-	-	-	*9*	
Total	**24.1**	**68.3**	**7.6**	***2,452***	**2,452**

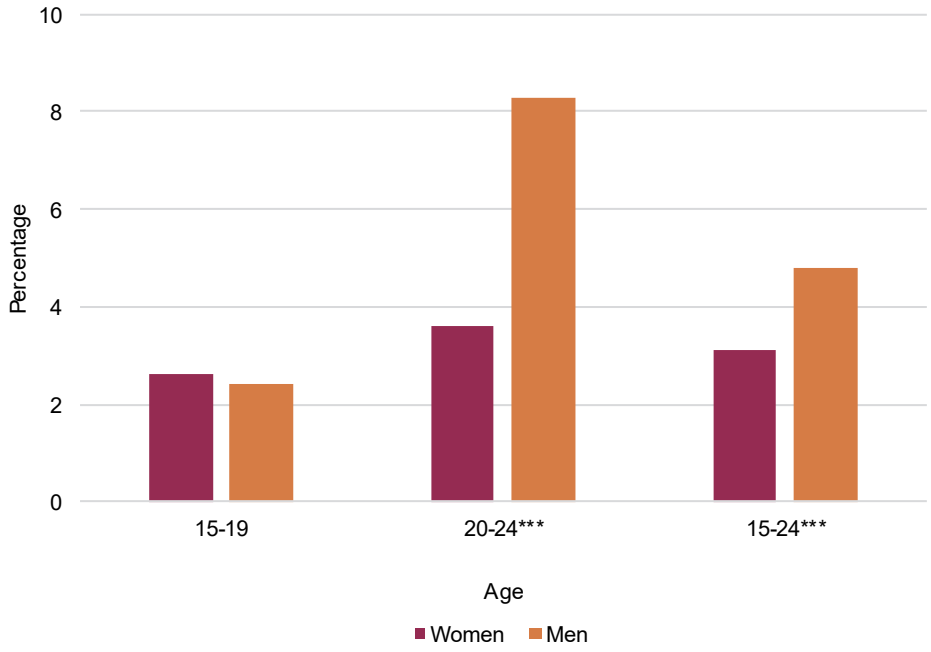
Note: ***p<0.001, **p<0.01*, *p<0.05
- indicates the figure is based on fewer than 25 unweighted cases and has been suppressed.

When disaggregated by age, the results show almost a similar pattern of differentials, although only some differences are significant for background characteristics. The details are shown in Appendix Table A13.

7.5 Hypertension

For the first time, in 2016, the NDHS collected data on the blood pressure of all women age 15-49 and men age 15-54 present in the household and who provided informed consent. Figure 15 presents the prevalence of hypertension for young women and men age 15-24. There are 3% of young women and 5% of young men who were hypertensive at the time of survey. The gender differentials in the prevalence of hypertension are significant among youth age 15-24, and particularly among those age 20-24.

Figure 15 Percentage of youth age 15-24 with hypertension, Nepal DHS 2016



Note: ***p<0.001, **p<0.01*, *p<0.05
Hypertension is defined as an average systolic blood pressure more than 140mmHg or average diastolic blood pressure more than 90mmHg.

8 DISCUSSION AND CONCLUSIONS

This study was designed to examine the health status of youth in Nepal. Given the importance of health policy and strategies for youth, this study considered health indicators in four areas: marriage and sexual behavior, fertility and family planning, maternal health care, and other health outcomes that included domestic violence, nutritional status, and hypertension. This study examined the levels, trends, and determinants of health outcomes for youth in each of these areas.

8.1 Marriage and Sexual Activity

The present study showed a persistent high rate of early marriage, decreasing comprehensive HIV knowledge, and gender differences in sexual activity that involved ever having sex before marriage and relationship to the last sexual partner, and STI symptoms among young men and women. The Government of Nepal has recently amended existing law and declared the legal marriageable age for men and women to be a minimum of age 20 (Nepal Law Commission [NLC] 2017). However, we find that half of the women age 20-24 and more than one-fourth of women age 15-19 are already married, and nearly 60% women have already been married by 20 years. There is no significant decline in the proportion married in the recent past, which suggests that adolescent and young women are still facing the challenge of early marriage and, along with it, numerous adverse consequences. Association of early marriage with poor reproductive health status has been reported in many research studies (Prakash et al. 2011). Women's education is a significant determinant of marriage, with a negative association. At least a secondary level of education seems to be a necessary threshold. A national strategy to end child marriage in the country was formulated and approved in 2016, with the goals of ending child marriage by 2030 and ensuring quality education for all adolescent girls (Ministry of Women Children and Social Welfare 2016).

In fact, keeping girls in school may be one of the best ways to promote later and consensual marriage, which can also contribute to delayed sexual initiation (Lloyd 2010). Special attention through educational programs must focus on ending marriage at an early age. Policies and programs that help keep adolescent girls in school and their continuation to higher education may bring positive change. Beyond education, some studies show that food security in Nepal supports a delay in marriage (Plan Nepal, Save the Children, and World Vision International Nepal 2012). The efforts of government and nongovernmental organizations in food security programs that target underserved people may discourage early marriage in Nepal. Such efforts should be targeted to those locations and population subgroups for whom adolescent marriage is particularly prevalent, such as in Provinces 2 and 6, and in the Dalits and Terai/Madhesi other groups.

Initiation of sexual intercourse is associated with marriage for young women, but less so for young men, a quarter of whom have had sex without being married. Research has shown substantial diversity in sexual behavior by region and sex, with a higher prevalence of never-married men who ever had sex compared to never-married women and a low level of condom use in many developing countries (Wellings et al. 2006). This is similar in Nepal, which suggests interventions that encourage youth to use safe sexual practices through proper sex education are needed.

A significant decline in the proportion of young men and women with comprehensive knowledge of HIV transmission has been observed during the period 2011-2016. Such a decline was also observed during the period 2006-2011 (Khatiwada et al. 2013). Although young women nearly universally experience sex in the context of marriage while men are more likely to report a nonmarital partner, we

find that women are more likely than men to report symptoms of an STI. It is possible we find this result because women underreport premarital sex due social desirability bias disproportionately affecting women. Nonetheless, the higher prevalence of STI symptoms among women suggests women may require special attention in terms of prevention, screening, and treatment of STIs. Overall, the results demonstrate a need to scale-up advocacy and sexuality education that can enhance comprehensive knowledge of HIV transmission, STIs, and reproductive hygiene among young men and women.

8.2 Fertility and Family Planning

As with adolescent marriage, adolescent childbearing is still common in Nepal. Nearly 40% of women age 15-24 have already begun childbearing. Since early childbearing is associated with adverse health outcomes for both the mother and child (Ganchimeg et al. 2014; Plan Nepal, Save the Children, and World Vision International Nepal 2012), there is a need for increasing the age at marriage and, for those already married, delaying the first birth beyond age 20. The determinants of childbirth during adolescence are similar to those of adolescent marriage: women's education (a significant negative association), provincial location (higher odds in Province 6) and particular caste/ethnicity (higher odds among the Terai/Madhesi Other group). Therefore, programs should focus on the needs of these subgroups of the population.

Although there is overall significant increase in contraceptive use among currently married young women, the observed rate for the use of modern methods is low, as it has been in the past (Khatiwada et al. 2013). Those young married women who have more children, who want no more children, and who live together with their spouse are more likely to use modern contraception. Unlike the results from some previous studies (Khatiwada et al. 2013), place of residence, education, and women's decision making are not significant predictors of modern contraceptive use among young women in this study. It should be noted that the association between women's decision making and reproductive health outcomes is inconclusive in literature, and that some previous studies in Nepal had also shown that such association is insignificant (Pandey, Lama, and Lee 2012).

Although there is a significant decline in unmet need for family planning among young women, and a corresponding significant increase in met need and in the proportion of demand satisfied, the level of unmet need remains high with the proportion of demand satisfied at less than 50%. The family planning program should consider this and promote high-quality services to satisfy all young adults' demand. The contraceptive method mix has implications for the family planning program. Some changes in the method mix of modern contraceptive methods have also been observed. Enhanced choice through involvement of nongovernmental organizations and the private sector to complement and support the government program (MoHP 2015) may have played a positive role in the trend toward long-acting reversible methods. It is not clear whether the extent of promotion of those methods is helping to reduce the unmet need for young women. However, providing a range of contraceptive options is an important feature of promoting informed choices that meet young women's individual needs.

Nearly one-third of currently married women age 15-49 report that their husband is away from home at the time of survey (Ministry of Health [MoH]/Nepal, New ERA/Nepal, and ICF 2017). The high rate of male migration in Nepal has left women living apart from their husbands. Unmet need, as it is calculated, is the highest for young women whose husband is staying elsewhere than for any other population subgroup, and is seven times higher than young women who are living with their husbands. Unmet need is likely overestimated for this group, since the algorithm for unmet need assumes that all married women are sexually active and therefore potentially at risk of pregnancy (Bradley et al. 2012). This assumption may not be accurate for those women whose husbands live elsewhere, and it may also

be incorrect to assume these women have no need for family planning. They may have special needs at present or they may also have an urgent need for family planning after their husbands come home (Khan et al. 2016). Programs should pay special attention to these young women and their special needs.

8.3 Maternal Health Care

There has been significant improvement in the utilization of all three major components of maternal health care among young women (ANC, institutional delivery, and PNC) over the period 2011-2016. However, a gap in the use of the three services persists because only 72% of the women have had four or more ANC visits, 66% used institutional delivery, and only 56% had PNC within 2 days of delivery. This decline at each stage in the continuum of care indicates less than optimal use of maternal health services among young women. Lack of transportation arrangements as part of birth preparation, the baby born before reaching the hospital, and perceiving institutional delivery as *not necessary* possibly decrease the prevalence of institutional delivery and, with it, PNC of the mother.

Only two of three young women initiated their first ANC visit in the first trimester, and three out of five young women complete the ANC visits at the recommended times. Young women from rural areas, Provinces 2 and 6, the Janajati community, with higher parity, adolescence age, less exposure to mass media, and less education are less likely to receive timely ANC service. Programs need to reach these subgroups more effectively. Less than half of the young women receive ANC counseling on the possible complications during pregnancy, remedial measures, assistance from an SBA in delivery, delivery in health institution, and use of PNC services. Overall, there are sizeable missed opportunities for promoting complete maternity care through proper counseling at the point of contact and influencing better utilization of the continuum of maternal health services by young women. Until this becomes a reality, the program for *making pregnancy safer* cannot be fully realized by the government.

Early decisions to reach the hospital at expected date of delivery may help to increase institutional delivery. Many births occur on the way to a health facility in Nepal, which may be due to late decisions to go to hospital or lack of proper, timely transportation to the facility. The finding that only a small proportion (14%) of young women arranged for transportation may also be due to a lack of transportation in remote places. However, suggestions during ANC that promote transportation planning can be helpful. Connection of health facilities with transportation providers may also be beneficial. It is important to reiterate that more than half of young women who did not opt for institutional delivery reported it as *not necessary*. There is a need to reinforce the benefits of facility delivery and PNC during ANC counseling, and to better understand the cultural contexts of why institutional delivery is viewed as *not necessary* and tailor programs accordingly.

Timely ANC visits have shown a significant positive association with institutional delivery. The result is also consistent with other research (Mbugua and MacQuarrie 2018; Ram and Singh 2006). Focused intervention that promotes timely ANC visits also brings positive results in institutional delivery. Timely ANC visits do not directly encourage women to arrange transportation to reach the hospital at the due date of delivery, but they help women remain in contact with health professionals who recommend institutional delivery. The Government of Nepal provides a card which, when retained and produced in the health institution, ensures an additional incentive of NRs 800 (approximately USD 7) if women obtain at least four ANC visits and deliver at a health institution. Such a mechanism may increase

institutional delivery. Moreover, provision of incentives for transportation costs[7] when a woman delivers at a health institution might also have played a positive role.

For both of the maternal health indicators (ANC visits at recommended time and institutional delivery), three factors (increased women's education, lower birth order, and urban residence) are associated with better use of maternal health care. However, some factors are different for both components of maternal health. For example, household wealth quintile is not a predictor of timely ANC visits but is a significant predictor of institutional delivery. This is despite there being many free delivery services in public and some private health institutions in Nepal. When the direct or indirect costs related to ANC and institutional delivery are compared, institutional delivery is obviously more costly. Perceived costs associated with institutional delivery might be even higher and might be preventing women from accessing delivery care. Strategies that reduce the costs in health facilities are needed. Similarly, media exposure and the age of young women are predictors of timely ANC visits but not for institutional delivery.

8.4 Other Health Outcomes

Anemia levels and the proportions of underweight have significantly increased in the period 2011-2016. This indicates an alarming situation about the nutritional status of young women. Simultaneously, the proportion of young women who are overweight has significantly increased, which suggests the emergence of this form of malnutrition along with persistent undernutrition. Variation in nutritional status is also observed by ethnicity and region, which suggests that nutrition interventions still need to target areas of greatest need, in Province 2 and in the Terai/Madhesi Other group and Muslim young women.

The extent of spousal domestic violence experienced by ever-married young women has stagnated at around 15%. Better education, media exposure, and greater decision making are significantly associated with a lower level of spousal violence in the bivariate analysis. This is consistent with other studies in Nepal (Atteraya, Gnawali, and Song 2015; Lamichhane et al. 2011). Youth education, especially female education, can be a positive force that reinforces better media exposure and enhances women's decision-making power.

Hypertension is a health concern associated with older ages, and our results confirm low levels of hypertension among youth in Nepal. Nonetheless, the emergence of significantly detectable gender differences at young ages is a concern and suggests that preventative behavior change campaigns and screening for lifestyle factors associated with hypertension are warranted, particularly for young men.

8.5 Conclusion

Overall, the results are mixed in terms of progress made in youth health in Nepal. There have been significant improvements in many health indicators, but stagnation or even deterioration in others. Improvements are detected in the uptake of all components of maternal health services, use of contraceptive methods, and declines in unmet need for family planning. Meanwhile, there has been no significant decrease in domestic spousal violence or adolescent marriage. Comprehensive knowledge of HIV transmission has declined and nutritional status has worsened in terms of anemia and low BMI. We find that young women and men who reside in Provinces 2 and 6 and those who belong to the

[7] An incentive of NRs. 3,000 (approximately USD 27), NRs. 2,000 (approximately USD 18), and NRs. 1,000 (approximately USD 9) respectively in Mountain, Hill, and Terai regions, respectively, is given to support transportation to health institution.

Terai/Madhesi Other group or are Muslim consistently exhibit poorer health across a range of outcomes. This suggests health improvements should target these underserved groups. Despite some improvements, focused interventions are needed for desired change.

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APPENDICES

Background Characteristics

Appendix Table A1 Percent distribution of women age 15-24 by background characteristics and disaggregated by age, Nepal DHS 2016

Background characteristics	15-19		20-24		15-24	
	%	*N*	%	*N*	%	*N*
Place of residence						
Urban	61.7	*1,602*	61.7	*1,389*	61.7	*2,991*
Rural	38.3	*996*	38.3	*862*	38.3	*1,858*
Province						
Province 1	16.1	*417*	17.8	*400*	16.9	*817*
Province 2	21.3	*554*	19.6	*442*	20.5	*996*
Province 3	19.9	*518*	19.3	*435*	19.6	*952*
Province 4	9.0	*234*	10.0	*226*	9.5	*460*
Province 5	17.9	*464*	19.0	*428*	18.4	*892*
Province 6	6.3	*163*	5.8	*130*	6.1	*293*
Province 7	9.6	*249*	8.5	*191*	9.1	*440*
Education						
No education	6.1	*159*	14.4	*324*	10.0	*483*
Primary	13.3	*347*	15.5	*349*	14.3	*696*
Some secondary	67.6	*1,757*	41.7	*939*	55.6	*2,696*
SLC and above	12.9	*336*	28.4	*639*	20.1	*974*
Caste/ethnicity						
Brahmin/Chhetri	27.2	*708*	31.7	*713*	29.3	*1,420*
Terai/Madhesi other	16.0	*416*	14.3	*321*	15.2	*737*
Dalit	14.9	*387*	11.3	*254*	13.2	*641*
Janajati	30.6	*795*	33.3	*750*	31.9	*1,545*
Newar	4.5	*116*	4.2	*95*	4.3	*210*
Muslim	6.5	*169*	5.0	*112*	5.8	*281*
Others	0.3	*9*	0.3	*7*	0.3	*15*
Wealth quintile						
Poorest	19.4	*504*	15.3	*343*	17.5	*847*
Poorer	19.8	*515*	21.3	*479*	20.5	*994*
Middle	21.0	*545*	20.9	*470*	20.9	*1,015*
Richer	22.5	*584*	23.1	*520*	22.8	*1,104*
Richest	17.4	*452*	19.5	*438*	18.4	*890*
Total	**100.0**	***2,598***	**100.0**	***2,251***	**100.0**	***4,849***

Appendix Table A2 Percent distribution of men age 15-24 by background characteristics and disaggregated by age, Nepal DHS 2016

Background characteristics	15-19		20-24		15-24	
	%	*N*	%	*N*	%	*N*
Place of residence						
Urban	65.1	*607*	68.7	*446*	66.6	*1,053*
Rural	34.9	*325*	31.3	*203*	33.4	*528*
Province						
Province 1	17.8	*165*	14.2	*92*	16.3	*258*
Province 2	20.0	*187*	18.1	*118*	19.3	*304*
Province 3	21.6	*201*	29.2	*189*	24.7	*391*
Province 4	11.4	*107*	7.9	*51*	10.0	*158*
Province 5	15.5	*144*	16.8	*109*	16.0	*253*
Province 6	5.3	*49*	5.8	*38*	5.5	*87*
Province 7	8.4	*78*	7.9	*52*	8.2	*129*
Education						
No education	1.7	*16*	4.5	*29*	2.8	*45*
Primary	10.6	*98*	14.7	*95*	12.3	*194*
Some secondary	71.8	*669*	43.9	*285*	60.4	*954*
SLC and above	15.9	*148*	37.0	*240*	24.6	*388*
Caste/ethnicity						
Brahmin/Chhetri	27.6	*257*	30.5	*198*	28.8	*455*
Terai/Madhesi other	16.3	*152*	14.7	*95*	15.6	*247*
Dalit	13.5	*126*	12.0	*78*	12.9	*203*
Janajati	30.7	*286*	34.0	*221*	32.1	*507*
Newar	5.3	*49*	4.3	*28*	4.9	*77*
Muslim	6.3	*58*	4.4	*28*	5.5	*87*
Others	0.4	*4*	0.1	*1*	0.3	*5*
Wealth quintile						
Poorest	15.8	*147*	13.9	*90*	15.0	*237*
Poorer	17.7	*165*	15.8	*103*	16.9	*267*
Middle	20.0	*186*	16.8	*109*	18.7	*296*
Richer	25.6	*238*	27.8	*181*	26.5	*419*
Richest	21.0	*195*	25.6	*166*	22.9	*361*
Total	**100.0**	***931***	**100.0**	***649***	**100.0**	***1,580***

Appendix Table A3 Trends in the distribution of youth age 15-24 by background characteristics, Nepal DHS 2011-2016

Background characteristics	2011				2016			
	Women		Men		Women		Men	
	%	*N*	%	*N*	%	*N*	%	*N*
Age								
15-19	54.5	*2,753*	58.8	*978*	53.6	*2,598*	58.9	*931*
20-24	45.5	*2,297*	41.2	*685*	46.4	*2,251*	41.1	*649*
Education								
No education	17.1	*866*	4.3	*72*	10.0	*483*	2.8	*45*
Primary	17.6	*887*	12.4	*206*	14.3	*696*	12.3	*194*
Some secondary	55.0	*2,775*	66.8	*1,111*	55.6	*2,696*	60.4	*954*
SLC and above	10.4	*523*	16.5	*274*	20.1	*974*	24.6	*388*
Caste/ethnicity								
Brahmin/Chhetri	31.9	*1,611*	34.3	*569*	29.3	*1,420*	28.8	*455*
Terai/Madhesi other	8.1	*407*	8.9	*148*	15.2	*737*	15.6	*247*
Dalit	15.1	*762*	13.5	*224*	13.2	*641*	12.9	*203*
Janajati	37.1	*1,875*	35.6	*592*	31.9	*1,545*	32.1	*507*
Newar	3.5	*178*	4.4	*73*	4.3	*210*	4.9	*77*
Muslim	4.1	*205*	3.1	*52*	5.8	*281*	5.5	*87*
Others	0.3	*13*	0.2	*3*	0.3	*15*	0.3	*5*
Wealth quintile								
Poorest	16.1	*811*	13.0	*215*	17.5	*847*	15.0	*237*
Poorer	19.5	*983*	17.9	*298*	20.5	*994*	16.9	*267*
Middle	21.7	*1,095*	20.4	*339*	20.9	*1,015*	18.7	*296*
Richer	22.6	*1,142*	24.3	*404*	22.8	*1,104*	26.5	*419*
Richest	20.2	*1,020*	24.5	*407*	18.4	*890*	22.9	*361*
Total	**100.0**	***5,050***	**100.0**	***1,663***	**100.0**	***4,849***	**100.0**	***1,580***

Rural/urban residence cannot be directly compared between the Nepal DHS 2011 and Nepal DHS 2016 due to a change in classification criteria between surveys.

Marriage and Sexual Behavior

Appendix Table A4 Percentage of youth age 15-24 ever-married by background characteristics and disaggregated by age, Nepal DHS 2016

Background characteristics	Women			Men		
	15-19	20-24	15-24	15-19	20-24	15-24
Place of residence	***	***	***		**	*
Urban	22.4	69.7	44.3	5.5	40.3	20.2
Rural	35.6	85.3	58.7	8.2	56.7	26.9
Province	***	***	***		**	**
Province 1	23.8	72.9	47.8	5.2	46.5	20.0
Province 2	43.7	91.9	65.1	8.3	53.3	25.7
Province 3	16.8	58.8	36.0	4.4	33.5	18.5
Province 4	22.7	73.9	47.8	8.2	36.9	17.5
Province 5	23.8	78.8	50.2	4.8	49.2	23.9
Province 6	37.4	88.8	60.2	[14.6]	[70.5]	38.9
Province 7	24.6	68.1	43.5	5.3	51.8	23.8
Education	***	***	***	***	***	***
No education	55.7	97.0	83.5	-	[74.5]	[58.3]
Primary	47.0	94.5	70.8	15.7	65.9	40.4
Some secondary	24.6	80.2	44.0	5.1	54.0	19.7
SLC and above	9.2	47.7	34.4	4.0	23.7	16.1
Caste/ethnicity	***	***	***		*	
Brahmin/Chhetri	18.3	68.1	43.3	4.6	33.6	17.2
Terai/Madhesi other	40.3	93.3	63.4	5.8	51.5	23.5
Dalit	38.8	86.3	57.6	9.9	67.3	31.9
Janajati	23.9	72.6	47.5	6.8	46.5	24.1
Newar	14.6	52.6	31.7	[4.2]	[38.1]	16.4
Muslim	35.6	88.7	56.7	9.1	[48.3]	21.9
Other	-	-	-	-	-	-
Wealth quintile	***	***	***	**	***	***
Poorest	31.4	83.8	52.7	11.1	64.5	31.4
Poorer	30.9	77.7	53.5	9.3	53.1	26.2
Middle	34.8	85.8	58.4	8.7	55.9	26.1
Richer	26.9	76.6	50.3	3.9	47.0	22.5
Richest	11.1	54.9	32.6	1.5	21.8	10.8
Total	**27.5**	***75.6***	**49.8**	**6.4**	***45.5***	**22.5**
N	***2,598***	***2,251***	***4,849***	***931***	***649***	***1,580***

*** p<0.001, **p<0.01, * p<0.05
- indicates the figure is based on fewer than 25 unweighted cases and has been suppressed.
[ ] indicates the figure is based on 25-50 unweighted cases and should be interpreted with caution.

Appendix Table A5 Percentage who used condoms at last sexual intercourse among young men age 15-24 who have had sex in the past 12 months by background characteristics, disaggregated by age, Nepal DHS 2016

Background characteristics	Men		
	15-19	20-24	15-24
Marital status	***	***	***
Never married	67.5	75.2	71.0
Ever married	15.0	15.4	15.4
Place of residence			
Urban	48.7	32.4	37.2
Rural	51.8	27.4	35.5
Province		*	**
Province 1	-	25.3	33.2
Province 2	[34.9]	19.1	23.5
Province 3	-	[25.6]	29.3
Province 4	[55.9]	[43.0]	48.6
Province 5	[60.0]	41.9	48.0
Province 6	[46.2]	25.6	32.3
Province 7	-	44.9	50.9
Education	***	***	***
No education	-	-	[22.5]
Primary	-	11.9	11.5
Some secondary	54.4	29.5	38.6
SLC and above	[72.1]	48.9	54.1
Wealth quintile		***	**
Poorest	46.5	28.0	34.3
Poorer	[37.4]	22.3	27.5
Middle	50.9	36.5	42.0
Richer	[57.1]	21.8	30.1
Richest	-	48.3	51.8
Total	**50.0**	**30.6**	**36.5**
N	***175***	***392***	***567***

*** p<0.001, **p<0.01, * p<0.05
- indicates the figure is based on fewer than 25 unweighted cases and has been suppressed.
[ ] indicates the figure is based on 25-50 unweighted cases and should be interpreted with caution.

Fertility and Family Planning

Appendix Table A6 Percentage of women age 15-24 who have initiated childbearing by background characteristics and disaggregated by age, Nepal DHS 2016

Background characteristics	Current age		
	15-19	20-24	15-24
Place of residence	***	***	***
Urban	13.0	56.4	33.1
Rural	21.9	73.2	45.7
Province	***	***	***
Province 1	15.4	60.2	37.3
Province 2	26.9	80.4	50.6
Province 3	9.5	45.2	25.8
Province 4	13.9	60.8	36.9
Province 5	13.4	64.3	37.8
Province 6	18.3	77.1	44.4
Province 7	16.1	56.8	33.8
Education	***	***	***
No education	31.8	85.8	68.0
Primary	28.7	84.9	56.9
Some secondary	14.8	67.1	33.0
SLC and above	5.2	32.7	23.2
Caste/ethnicity	***	***	***
Brahmin/Chhetri	11.2	53.7	32.5
Terai/Madhesi other	25.5	82.8	50.4
Dalit	20.4	73.4	41.4
Janajati	14.7	60.7	37.0
Newar	7.4	38.8	21.5
Muslim	21.9	73.9	42.6
Other	-	-	-
Wealth quintile	***	***	***
Poorest	19.2	74.7	41.7
Poorer	19.2	64.9	41.2
Middle	21.6	72.8	45.3
Richer	14.9	63.3	37.7
Richest	6.0	39.9	22.7
Total	**16.4**	**62.8**	**38.0**
N	***2,598***	***2,251***	***4,849***

Note: ***p<0.001, **p<0.01*, *p<0.05
- indicates the figure is based on fewer than 25 unweighted cases and has been suppressed.

Appendix Table A7 Percentage of currently married women age 15-24 currently using a modern method of contraception by background characteristics and disaggregated by age, Nepal DHS 2016

Background characteristics	15-19	20-24	15-24
Place of residence			
Urban	17.6	24.9	22.9
Rural	11.3	22.7	19.0
Province	***	**	***
Province 1	23.5	29.4	27.9
Province 2	3.9	15.0	10.8
Province 3	29.4	27.0	27.6
Province 4	20.6	23.7	23.0
Province 5	14.6	25.3	22.6
Province 6	17.0	22.1	20.4
Province 7	12.9	31.7	25.7
Education	***		
No education	5.2	18.9	15.9
Primary	9.3	25.8	20.4
Some secondary	17.1	25.8	22.7
SLC and above	[31.6]	22.2	23.1
Caste/ethnicity	***	***	***
Brahmin/Chhetri	20.7	22.9	22.4
Terai/Madhesi other	2.6	19.6	13.5
Dalit	16.5	18.0	17.4
Janajati	20.9	32.4	29.4
Newar	14.9	21.5	19.8
Muslim	8.0	6.4	7.3
Other	-	-	-
Wealth quintile			
Poorest	15.9	26.2	22.5
Poorer	16.5	25.5	22.8
Middle	8.2	23.6	18.7
Richer	17.4	20.5	19.6
Richest	18.3	25.0	23.9
Exposure to media		*	**
Low	8.8	16.6	14.1
High	15.8	25.3	22.6
Decision-making status[1]			
Low	16.2	26.6	23.1
High	21.8	28.3	27.0
Living together with partner	***	***	***
Yes	20.5	36.2	31.3
No	5.7	8.8	8.0
Number of living children	***	***	***
0	8.1	8.9	8.5
1	24.0	23.7	23.8
2+	[9.8]	35.8	33.6
Total	**14.5**	**23.9**	**21.1**
N	***704***	***1,684***	***2,389***

Note: ***p<0.001, **p<0.01*, *p<0.05

[1] Data on decision making are not available for 149 cases

N includes all currently married women irrespective of their pregnancy status

- indicates the figure is based on fewer than 25 unweighted cases and has been suppressed.

[ ] indicates the figure is based on 25-50 unweighted cases and should be interpreted with caution.

Appendix Table A8 Need and demand for family planning among currently married women age 15-24 by background characteristics and disaggregated by need for spacing and for limiting, Nepal DHS 2016

Background characteristics	Unmet need			Met need			Total demand			% of demand satisfied	*N*
	Spacing	Limiting	Total	Spacing	Limiting	Total	Spacing	Limiting	Total		
Place of residence											
Urban	21.7	8.7	30.4	18.5	3.0	21.5	40.2	11.7	51.9	41.4	*1,311*
Rural	27.7	9.0	36.7	14.1	11.8	25.9	41.8	20.8	62.7	41.4	*1,077*
Province											
Province 1	27.0	6.2	33.2	25.9	12.9	38.7	52.9	19.1	71.9	53.9	*386*
Province 2	25.9	7.3	33.2	7.8	9.1	16.9	33.7	16.4	50.1	33.8	*640*
Province 3	17.4	10.4	27.8	20.8	17.8	38.6	38.2	28.2	66.4	58.1	*338*
Province 4	27.7	11.8	39.5	18.5	14.8	33.3	46.2	26.6	72.8	45.7	*219*
Province 5	23.1	9.5	32.6	17.3	12.3	29.6	40.4	21.7	62.1	47.6	*439*
Province 6	27.8	11.3	39.1	14.1	12.2	26.3	41.9	23.5	65.4	40.3	*176*
Province 7	23.2	9.2	32.4	17.1	17.0	34.1	40.3	26.3	66.5	51.3	*190*
Education											
No education	17.8	10.1	27.8	7.7	13.9	21.5	25.4	23.9	49.3	43.6	*396*
Primary	24.1	11.3	35.4	11.1	14.0	25.1	35.3	25.2	60.5	41.5	*486*
Some secondary	26.5	8.1	34.7	19.7	12.7	32.4	46.3	20.8	67.1	48.3	*1,176*
SLC and above	25.4	6.2	31.6	23.6	10.8	34.4	49.0	17.0	66.0	52.1	*330*
Caste/ethnicity											
Brahmin/Chhetri	26.6	8.7	35.4	19.7	11.6	31.3	46.3	20.4	66.7	47.0	*608*
Terai/Madhesi other	23.0	9.0	32.0	8.6	12.8	21.4	31.6	21.8	53.4	40.1	*463*
Dalit	26.1	9.8	35.9	13.9	8.5	22.3	39.9	18.3	58.2	38.4	*366*
Janajati	22.9	7.9	30.9	20.8	18.1	38.9	43.7	26.1	69.8	55.8	*728*
Newar	21.3	12.9	34.2	28.2	12.6	40.7	49.4	25.5	74.9	54.4	*67*
Muslim	25.1	9.0	34.2	8.3	2.9	11.2	33.4	11.9	45.3	24.6	*152*
Other	-	-	-	-	-	-	-	-	-	-	*5*
Wealth quintile											
Poorest	30.1	9.4	39.5	13.0	14.1	27.6	43.6	23.5	67.1	41.1	*440*
Poorer	25.3	7.6	32.8	18.0	12.3	30.0	42.9	19.8	62.8	47.7	*526*
Middle	23.5	11.9	35.4	12.1	11.8	23.9	35.6	23.7	59.3	40.3	*589*
Richer	22.8	7.5	30.3	17.2	12.0	29.2	40.1	19.5	59.5	49.1	*548*
Richest	19.2	6.6	25.7	26.7	16.3	43.0	45.9	22.8	68.7	62.6	*286*
Exposure to media											
Low	24.7	9.3	34.0	9.3	9.9	19.2	34.0	19.2	53.2	36.1	*405*
High	24.4	8.7	33.1	18.0	13.5	31.5	42.4	22.2	64.6	48.8	*1,983*
Living together with partner											
Yes	11.9	3.3	15.2	25.4	19.5	44.9	37.3	22.8	60.2	74.7	*1,347*
No	40.6	15.9	56.6	5.0	4.3	9.3	45.6	20.3	65.9	14.1	*1,042*
Decision-making status											
Low	23.5	8.2	31.8	20.3	15.0	35.3	43.8	23.2	67.0	52.6	*1,771*
High	31.2	18.8	50.0	12.3	14.6	26.9	43.5	33.4	76.8	35.0	*288*
Number of living children											
0	24.3	0.3	24.7	15.6	0.3	15.9	39.9	0.7	40.5	39.1	*754*
1	29.0	7.9	36.9	22.8	10.9	33.6	51.7	18.8	70.5	47.7	*1,099*
2+	15.3	22.7	38.0	5.0	34.8	39.8	20.3	57.4	77.8	51.2	*535*
Age											
15-19	31.5	3.5	34.9	18.5	4.6	23.1	50.0	8.1	58.1	39.8	*704*
20-24	21.5	11.1	32.6	15.7	16.4	32.0	37.2	27.4	64.6	49.6	*1,684*
Total	**24.4**	**8.8**	**33.3**	**16.5**	**12.9**	**29.4**	**41.0**	**21.7**	**62.7**	**46.9**	***2,389***

- indicates the figure is based on fewer than 25 unweighted cases and has been suppressed.
[1] Data on decision making are not available for 149 cases.

Maternal Health

Appendix Table A9 **Percentage of women who had at least four antenatal care visits for the most recent birth among women age 15-24 who had a live birth in the 5 years preceding the survey by background characteristics, disaggregated by age, Nepal DHS 2016**

Background characteristics	15-19	20-24	15-24
Place of residence		**	**
Urban	78.6	76.5	76.9
Rural	67.9	65.4	66.0
Province		***	***
Province 1	84.8	79.2	80.3
Province 2	62.6	57.0	58.4
Province 3	78.2	77.0	77.2
Province 4	76.4	78.6	78.2
Province 5	73.4	79.1	78.2
Province 6	65.5	53.8	55.9
Province 7	84.2	81.9	82.4
Education	**	***	***
No education	55.6	53.8	54.1
Primary	66.9	61.8	63.0
Some secondary	78.2	77.2	77.5
SLC and above	90.0	93.5	93.3
Caste/ethnicity		***	***
Brahmin/Chhetri	87.2	81.3	82.2
Terai/Madhesi other	70.1	61.6	63.6
Dalit	67.9	66.9	67.2
Janajati	70.6	82.9	72.4
Newar	91.1	72.8	84.4
Muslim	65.3	57.5	59.7
Other	-	81.8	-
Wealth quintile		**	**
Poorest	68.8	63.3	64.6
Poorer	73.9	69.0	70.1
Middle	72.4	69.1	69.9
Richer	76.7	77.8	77.6
Richest	-	81.1	80.2
Decision-making status[1]			*
Low	72.2	70.6	71.0
High	76.8	76.3	76.4
Total	**73.5**	**71.4**	**71.7**
Number of women	***334***	***1,272***	***1,606***

Note: ***p<0.001, **p<0.01*, *p<0.05
- indicates the figure is based on fewer than 25 unweighted cases and has been suppressed.
[1] Data on decision making are not available for 149 cases

Appendix Table A10 Timing of antenatal care visits as per national protocol: Percentage of women age 15-24 who had antenatal care visits in the fourth, sixth, eighth, and ninth month of their most recent pregnancy per national protocol, among those who have a live birth in the 5 years preceding the survey, by background characteristics, disaggregated by age, Nepal DHS 2016

Background characteristics	15-19	20-24	15-24
Place of residence	*	**	**
Urban	57.9	63.9	62.8
Rural	44.6	52.9	50.9
Province	**	***	***
Province 1	45.5	62.8	59.3
Province 2	35.9	36.4	36.3
Province 3	57.4	69.5	67.3
Province 4	61.4	70.6	69.0
Province 5	62.4	70.3	69.0
Province 6	55.4	47.2	48.7
Province 7	77.4	75.1	75.6
Education	*	***	***
No education	33.4	37.0	36.5
Primary	51.2	54.1	53.4
Some secondary	52.3	65.5	62.1
SLC and above	88.0	76.0	76.8
Caste/ethnicity	*	***	***
Brahmin/Chhetri	72.2	70.7	70.9
Terai/Madhesi other	41.0	43.0	42.5
Dalit	54.4	52.2	52.8
Janajati	46.2	63.4	60.1
Newar	38.8	76.8	69.9
Muslim	43.0	42.0	42.3
Other	-	-	-
Wealth quintile			
Poorest	49.0	57.2	55.2
Poorer	47.0	59.4	56.5
Middle	50.6	54.1	53.3
Richer	55.6	60.4	59.5
Richest	58.5	67.5	66.5
Total	**50.8**	**58.9**	**57.2**
Number of women	***326***	***1,228***	***1,553***

Note: ***p<0.001, **p<0.01*, *p<0.05
- indicates the figure is based on fewer than 25 unweighted cases and has been suppressed.

Appendix Table A11 Percentage of women age 15-24 who delivered in a health facility for the most recent birth among those who had a birth in the 5 years preceding the survey, by background characteristics and disaggregated by age, Nepal DHS 2016

Background characteristics	15-19	20-24	15-24
Place of residence	**	***	***
Urban	78.8	73.4	74.4
Rural	63.2	54.9	56.9
Province		***	***
Province 1	61.9	67.1	66.0
Province 2	69.8	54.0	58.1
Province 3	75.6	74.5	74.7
Province 4	77.0	77.9	77.8
Province 5	71.3	67.9	68.5
Province 6	61.3	44.8	47.7
Province 7	80.3	75.7	76.8
Education		***	***
No education	[64.6]	46.5	49.2
Primary	64.8	53.6	56.2
Some secondary	72.4	72.3	72.3
SLC and above	-	85.9	86.6
Caste/ethnicity		**	***
Brahmin/Chhetri	80.4	72.7	73.8
Terai/Madhesi other	72.2	56.0	59.9
Dalit	55.8	55.9	55.9
Janajati	72.3	65.9	67.1
Newar	-	83.1	78.6
Muslim	[75.6]	65.8	68.6
Other	-	-	-
Wealth quintile	***	***	***
Poorest	55.8	42.6	45.7
Poorer	55.1	57.0	56.5
Middle	81.1	70.0	72.6
Richer	85.0	72.6	74.9
Richest	-	90.8	91.1
Decision-making status[1]			
Low	70.5	64.0	65.6
High	75.3	68.3	69.4
Birth order	***	***	***
First	75.0	74.8	74.9
Second or higher	46.0	50.8	50.3
Total	**70.4**	**64.9**	**66.1**
Number of women	***334***	***1,271***	***1,606***

Note: ***p<0.001, **p<0.01*, *p<0.05
- indicates the figure is based on fewer than 25 unweighted cases and has been suppressed.
[ ] indicates the figure is based on 25-50 unweighted cases and should be interpreted with caution.
[1] Data on decision making are not available for 149 cases.

Appendix Table A12 Percent of women age 15-24 who received postnatal care within 2 days for the most recent birth among women who had a birth in the 5 years preceding the survey, by background characteristics and disaggregated by age, Nepal DHS 2016

Background characteristics	15-19	20-24	15-24
Place of residence		***	***
Urban	59.5	63.6	62.9
Rural	50.9	48.5	49.1
Province		***	***
Province 1	54.8	64.8	62.7
Province 2	58.2	42.3	46.4
Province 3	44.9	69.8	65.3
Province 4	70.2	70.8	70.7
Province 5	58.3	57.9	58.0
Province 6	43.3	41.3	41.6
Province 7	44.1	58.3	54.9
Education		***	***
No education	54.5	36.9	39.5
Primary	47.0	46.7	46.8
Some secondary	56.2	62.1	60.6
SLC and above	86.3	83.7	83.9
Caste/ethnicity		***	**
Brahmin/Chhetri	62.6	66.4	65.9
Terai/Madhesi other	51.9	46.7	48.0
Dalit	56.1	46.4	49.1
Janajati	46.7	59.5	57.0
Newar	-	[64.9]	[63.7]
Muslim	[67.7]	50.7	55.6
Other	-	-	-
Wealth quintile	**	***	***
Poorest	43.8	37.4	38.9
Poorer	43.6	51.6	49.8
Middle	56.4	57.7	57.4
Richer	75.2	65.8	67.6
Richest	-	77.5	76.6
Decision-making status[1]		*	*
Low	55.4	57.9	57.3
High	[54.2]	58.9	58.3
Birth order	*	***	***
First	58.3	64.2	62.6
Second or higher	36.3	45.9	45.0
Total	**54.9**	**56.7**	**56.3**
Number of women	***335***	***1,272***	***1,606***

Note: ***p<0.001, **p<0.01*, *p<0.05
- indicates the figure is based on fewer than 25 unweighted cases and has been suppressed.
[ ] indicates the figure is based on 25-50 unweighted cases and should be interpreted with caution.
[1] Data on decision making are not available for 149 cases.

Other Health Outcomes

Appendix Table A13 Body mass index of women age 15-19 by background characteristics, Nepal DHS 2016

Background characteristics	Underweight (BMI < 18) %	Normal (BMI 18-25) %	Overweight (BMI >25) %	*N*	p-value
Place of residence					
Urban	27.7	68.3	4.0	*822*	
Rural	31.4	65.7	2.9	*482*	
Province					
Province 1	24.0	71.2	4.8	*205*	
Province 2	39.1	59.8	1.1	*264*	
Province 3	22.6	71.9	5.5	*287*	
Province 4	19.5	72.8	7.7	*118*	***
Province 5	36.0	61.2	2.8	*221*	
Province 6	23.4	75.0	1.5	*83*	
Province 7	31.6	67.2	1.2	*126*	
Education					
No education	34.0	64.6	1.4	*75*	
Primary	34.4	61.5	4.1	*168*	
Some secondary	29.4	67.7	2.9	*908*	
SLC and above	18.8	73.3	7.8	*153*	
Wealth quintile					
Poorest	24.5	73.1	2.4	*247*	
Poorer	28.8	67.7	3.5	*246*	
Middle	32.3	65.5	2.2	*288*	
Richer	30.0	64.9	5.1	*311*	
Richest	28.9	66.5	4.6	*212*	
Caste/ethnicity					
Brahmin/Chhetri	33.7	62.7	3.6	*368*	
Terai/Madhesi other	43.7	55.3	1.0	*198*	
Dalit	29.0	68.7	2.3	*185*	
Janajati	17.1	77.7	5.2	*422*	***
Newar	22.5	71.9	5.6	*52*	
Muslim	40.1	56.8	3.2	*77*	
Others	-	-	-	-	
Total	**29.1**	**67.4**	**3.6**	***1,304***	

Note: ***p<0.001, **p<0.01*, *p<0.05
- indicates the figure is based on fewer than 25 unweighted cases and has been suppressed.

Appendix Table A14 Body mass index of women age 20-24 by background characteristics, Nepal DHS 2016

Background characteristics	Underweight (BMI <18) %	Normal (BMI 18-25) %	Overweight (BMI >25) %	*N*	*p-value*
Place of residence					
Urban	17.5	68.2	14.2	*702*	
Rural	20.0	70.9	9.1	*447*	
Province					
Province 1	14.1	74.4	11.5	*190*	
Province 2	31.0	62.4	6.6	*236*	
Province 3	13.3	66.5	20.2	*222*	
Province 4	8.9	72.6	18.5	*119*	***
Province 5	21.0	66.3	12.7	*201*	
Province 6	9.0	85.5	5.5	*71*	
Province 7	21.9	71.8	6.3	*110*	
Education					
No education	27.4	65.3	7.3	*171*	
Primary	22.8	62.7	14.5	*182*	*
Some secondary	15.5	70.5	14.0	*485*	
SLC and above	15.8	73.2	10.9	*311*	
Wealth quintile					
Poorest	12.3	79.9	7.8	*196*	
Poorer	20.5	70.7	8.8	*240*	
Middle	23.7	67.8	8.5	*236*	***
Richer	21.4	61.9	16.8	*258*	
Richest	12.9	68.3	18.8	*218*	
Caste/ethnicity					
Brahmin/Chhetri	16.8	71.5	11.7	*368*	
Terai/Madhesi other	27.0	66.4	6.5	*171*	
Dalit	27.0	62.3	10.7	*132*	
Janajati	11.3	73.1	15.6	*43*	***
Newar	[10.1]	[69.7]	[20.2]	*378*	
Muslim	[41.4]	[52.3]	[6.2]	*50*	
Others	-	-	-	*7*	
Total	**18.5**	**69.3**	**12.2**	***1,148***	

Note: ***p<0.001, **p<0.01*, *p<0.05
- indicates the figure is based on fewer than 25 unweighted cases and has been suppressed.
[ ] indicates the figure is based on 25-50 unweighted cases and should be interpreted with caution.