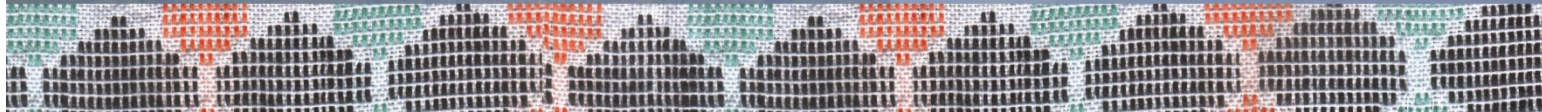


# Impact of Male Migration on Contraceptive Use, Unmet Need, and Fertility in Nepal

Further Analysis of the 2011 Nepal Demographic and Health Survey



Kathmandu, Nepal  
March 2013



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**Kathmandu, Nepal**

**March 2013**



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This report is part of the MEASURE DHS program, which is designed to collect, analyze, and disseminate data on fertility, family planning, maternal and child health, nutrition, and HIV/AIDS. Additional information about the 2011 NDHS may be obtained from the Population Division, Ministry of Health and Population, Government of Nepal, Ramshahpath, Kathmandu, Nepal; telephone: (977-1) 4262987; and from New ERA, P.O. Box 722, Kathmandu, Nepal; telephone: (977-1) 4423176/4413603; fax: (977-1) 4419562; e-mail: [info@newera.com.np](mailto:info@newera.com.np). Information about the DHS program may be obtained from MEASURE DHS, ICF International, 11785 Beltsville Drive, Suite 300, Calverton, MD 20705, USA; telephone: 301-572-0200; fax: 301-572-0999; e-mail: [reports@measuredhs.com](mailto:reports@measuredhs.com); Internet: <http://www.measuredhs.com>.

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## FOREWORD

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The 2011 Nepal Demographic and Health Survey is the fourth nationally representative comprehensive survey conducted as part of the worldwide Demographic and Health Surveys (DHS) project in the country. The survey was implemented by New ERA under the aegis of the Population Division, Ministry of Health and Population (MoHP). Technical support for this survey was provided by ICF International with financial support from the United States Agency for International Development (USAID) through its mission in Nepal.

The standard format of the main report includes only a descriptive presentation of findings and trends, without using analytical statistical methods to ascertain the significance of change and causative association between variables. Though largely sufficient, the standard report is limited, hence, particularly in providing answers to ‘why’, which are very essential in re-shaping important policies and programs. Hence, following the dissemination of the NDHS 2011, MoHP and partners have convened and agreed on key areas that are very important to assess progress and gaps, and ascertain determinants, in high priority public health programs that MoHP is implementing. In this context, further analyses has been carried out by relevant technical professionals from MoHP and partners who are directly working on the given areas, with technical support and facilitation from research agencies.

The primary objective of the further analysis of 2011 NDHS is to provide more in depth knowledge and insights into key issues that emerged based on the data of 2011 NDHS, and this provides guidance in planning, implementing, re-focusing, monitoring, and evaluating health programs related to these issues in Nepal. The long term objective of the further analysis is to strengthen the technical capacity of the local institutions and individuals to analyze and use data from complex national population and health surveys to better understand specific issues per country need and situation. The further analysis includes topics on ‘Maternal and Child Health in Nepal: The Effects of Caste, Ethnicity, and Regional Identity’; ‘Trends and Determinants of Neonatal Mortality in Nepal’; ‘Women's Empowerment and Spousal Violence in Relation to Health Outcomes in Nepal’; ‘Sexual and Reproductive Health of Adolescents and Youth in Nepal: Trends and Determinants’; and ‘Impact of Male Migration on Contraceptive Use, Unmet Need, and Fertility in Nepal’.

The further analysis of 2011 NDHS is the concerted effort of various individuals and institutions, and it is with great pleasure that I acknowledge the work that has gone into producing this useful document. The participation and cooperation that was extended by the members of the Technical Advisory Committee in the different phases of the survey is highly regarded.

I would like to extend my appreciation to USAID/Nepal, UK Department for International Development (DFID) and United Nations Population Fund (UNFPA) for providing financial support for the further analyses. I would also like to acknowledge ICF International Inc. for its technical assistance at all stages. Similarly, my sincere thanks go to the New ERA team for the overall management and coordination of the whole process. I also would like to thank the Population Division of the Ministry of Health and Population for its effort and dedication in the completion of this further analysis of 2011 NDHS.

Praveen Mishra  
Secretary  
Ministry of Health and Population



## ACKNOWLEDGMENTS

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The further analysis of 2011 Nepal Demographic and Health Survey (NDHS) was conducted under the aegis of the Population Division, Ministry of Health and Population of the Government of Nepal. The United States Agency for International Development (USAID), UK Department of International Development (DFID) and United Nations Population Fund (UNFPA) provided financial support and technical assistance was provided by ICF International through MEASURE DHS Project. Overall coordination, facilitation, administrative and logistic support was provided by New ERA, a local research firm with extensive experience in conducting such studies in the past.

I express my deep sense of appreciation to the technical experts in the different fields of population and health for their valuable input in the various phases of the study and providing valuable inputs towards finalizing the report. My sincere gratitude goes to all the members of Technical Advisory Committee for their time, support and valuable input. I would like to extend my sincere gratitude to Dr. Praveen Mishra, Secretary, Ministry of Health and Population for his guidance.

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Dr. Badri Pokhrel  
Chief, Population Division  
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## ABBREVIATION AND ACRONYMS

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ASFR	Age-specific Fertility Rates
CPR	Contraceptive Prevalence Rate
GAVI	Global Alliance for Vaccines and Immunisation
MDG	Millennium Development Goals
MOHP	Ministry of Health and Population
NDHS	Nepal Demographic and Health Surveys
MoHP	Ministry of Health and Population
NDHS	Nepal Demographic and Health Surveys
NFHP	Nepal Family Health Program
SLC	School Leaving Certificate
TF	Total Fecundity
TFR	Total Fertility Rate
TMFR	Total Marital Fertility Rate



# 1 INTRODUCTION

---

Despite political instability, armed conflict, poor economic status, and difficulty in accessing health services, Nepal has made considerable progress in improving reproductive health over the last two decades. There has been substantial progress in reducing maternal mortality, under-five mortality, and the total fertility rate (TFR). Nepal is on track to meet Millennium Development Goals (MDG) 4 (reducing child mortality rates) and 5 (improving maternal health), and has even received international awards such as the Global Alliance for Vaccines and Immunisation (GAVI) award in 2009 for reducing child mortality, the MDG Summit award in 2010 for reducing maternal mortality, and the Resolve award from the Global Leaders Council for Reproductive Health in 2012 for improving maternal and neonatal health (WHO and UNICEF, 2012).

Despite these gains, Nepal's progress on MDG 5b, universal access to reproductive health, as measured by the contraceptive prevalence rate (CPR<sup>1</sup>) and by the level of unmet need for family planning, appears to have slowed. Normally, the use of effective modern contraceptives is one of the strongest determinants of fertility decline (Johnson et al., 2011). Bongaarts and colleagues (2012), for example, report that an increase in contraceptive prevalence of 15-17 percentage points is generally required to reduce the total fertility rate (TFR) by one birth per woman. Such evidence raises the question, why has fertility declined so rapidly in Nepal despite stagnation of contraceptive prevalence?

This paper examines whether patterns in male migration can help account for the surprising decline in fertility in Nepal despite a stall in the uptake of contraceptives between 2006 and 2011. Nepal has a long history of labor migration, both internal and international (Sharma and Sharma, 2011). This trend has been increasing over the years, particularly among males. On average, at least 1,099 Nepali migrant workers leave the country every day. Foreign employment continues to be in strong demand among young Nepalese looking for income (Ghimire et al., 2011). According to the 2011 Nepal Census, out of Nepal's total population of 26.5 million about 2 million were out of the country at the time of the census, the majority of whom were of reproductive age (Central Bureau of Statistics, 2011).

Prior Nepal Demographic and Health Surveys (NDHS) reported that the CPR was 26 percent in 1996 and increased to 44 percent in 2006, but the CPR then declined slightly to 43 percent in 2011 (Pradhan et al., 1997; MOHP et al., 2007; MOHP et al., 2012). Fertility declined from a TFR of 3.1 children per woman to 2.6 during the same period.

The same pattern was noted in regard to unmet need for family planning in Nepal. The level of unmet need declined between 1996 and 2006—from 32 percent in 1996 to 28 percent in 2001 (MOH et al., 2002), and to 25 percent in 2006—but then slightly increased to 27 percent in 2011. Indeed, the recent increase in unmet need and decrease in the CPR, although slight, are of concern to stakeholders working in fertility and family planning.

---

<sup>1</sup>The proportion of married women currently using a modern method of contraception

This paper analyzes the impact of male migration and resulting spousal separation on contraceptive use, unmet need, and fertility in Nepal. ‘Male migration’ is defined as a nonresident husband<sup>2</sup>, whether he migrated internationally or within the country. We differentiate women whose husbands have been away for less than one year from women whose husbands have been away for one year or more.

## **1.1 RESEARCH QUESTION**

Why has fertility in Nepal recently decreased without a corresponding increase in contraceptive use? We hypothesize that male migration is an important factor, both for fertility decline and for non-use of contraceptives. The study intends to extend the analysis by Karki and Krishna (2008) of fertility decline based on the 2006 NDHS by showing trends in fertility, contraceptive prevalence, and unmet need in Nepal between 2006 and 2011. Additionally, the study seeks to explicitly examine patterns in these outcomes associated with male migration.

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<sup>2</sup> Women’s survey questionnaire; Q604: Is your (husband/partner) living with you now or is he staying elsewhere? Q 605a: For how long have you and your husband not been living together? We do not distinguish between migration for work, schooling, events, and so forth, but given the high rate of male labor migration in Nepal it is assumed that the vast majority of these nonresident husbands are away for work.



## 2 DATA AND METHODS

---

This paper examines the factors responsible for differences in fertility, contraceptive use, and unmet need for family planning in Nepal over the five-year period covering 2006 to 2011. The analysis is based on data collected in the nationally representative Nepal Demographic and Health Surveys (NDHS) conducted in 2006 and 2011. Data are based on a two-stage random sample of 10,793 women of reproductive age in 2006 and 12,674 women in 2011. While total fertility rates are calculated among all women of reproductive age, few women in Nepal are sexually active outside of marriage; therefore data on contraceptive use and unmet need are restricted to 8,257 married women in 2006 and 9,607 married women in 2011. A detailed description of the sampling methodology, number of respondents in each survey, and information gathered are presented in the final reports for each survey (MOHP et al., 2007; MOHP et al., 2012).

Section 3 of this paper shows trends in husband's residence (male migration) in relation to married women's fertility and family planning use. Section 4 discusses fertility trends and differentials, and Section 5 discusses trends and differentials in contraceptive use and unmet need. These sections offer a bivariate analysis, which shows the levels and trends in fertility, contraceptive use, and unmet need disaggregated by selected socio-economic and demographic characteristics. Section 6 decomposes fertility rates from 2006 and 2011 according to the Bongaarts (1978) model to compare the effects of the proximate determinants on fertility in Nepal in recent years. A concluding section discusses implications of the findings and offers recommendations for policies and programs.

### 2.1 LIMITATIONS

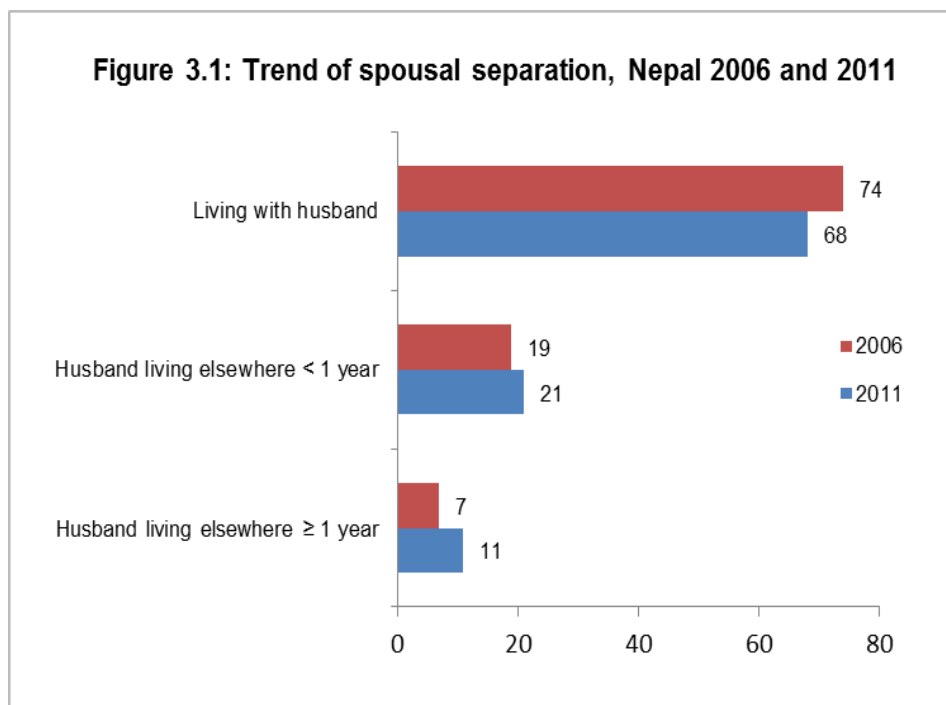
These comparisons are strictly descriptive; no statistical tests of significance have been conducted to assess the associations. Data are cross-sectional and limited by incomplete information about migratory history. Furthermore, the study is limited to nullify the role of any confounding factors while conducting disaggregated analysis. This study examines disaggregated trends in fertility, contraceptive use, and unmet need for family planning, but does not use multivariate regression to adjust for factors that may confound these trends.



### 3 THE ROLE OF MALE MIGRATION

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In Nepal the proportion of married women with non-resident husbands at the time of the survey increased from 26 percent in 2006 to 32 percent in 2011, according to the NDHS (MOHP et al., 2007; MOHP et al., 2012). If we disaggregate non-resident husbands by the time away from the household, the proportion who have been away for less than one year increased slightly (from 19 percent to 21 percent), whereas the proportion of women whose husbands have lived away for one year or more increased substantially, from 7 percent to 11 percent.





## 4 FERTILITY TRENDS AND DIFFERENTIALS

### 4.1 FERTILITY TRENDS

The total fertility rate (TFR) is a constructed measure of the number of children a woman would have if she completed her reproductive years at the prevailing age-specific fertility rates. Figure 4.1 shows the trends in TFR in Nepal over the last 25 years, as measured in the three years prior to the survey. From 1986 to 2006, the TFR fell by 39 percent (from 5.1 to 3.1). However, the rate of decline slowed as fertility approached replacement level, from 3.1 in 2006 to 2.6 in 2011.

Some possible reasons for the rapid decline in fertility in Nepal are improvements in economic conditions (partly due to remittances), increased literacy and education, increased age at first marriage, increased use of modern contraceptives, changes in ideal family size, and legalization of abortion. In conjunction with the MDGs, the government of Nepal Ministry of Health and Population (MOHP) has set a target to reduce the TFR to 2.5 per woman by 2015 (MOHP, 2010). The 2011 NDHS suggests that this goal has nearly been met, and if the current trend of fertility decline continues, even slightly, Nepal will easily achieve its goal.

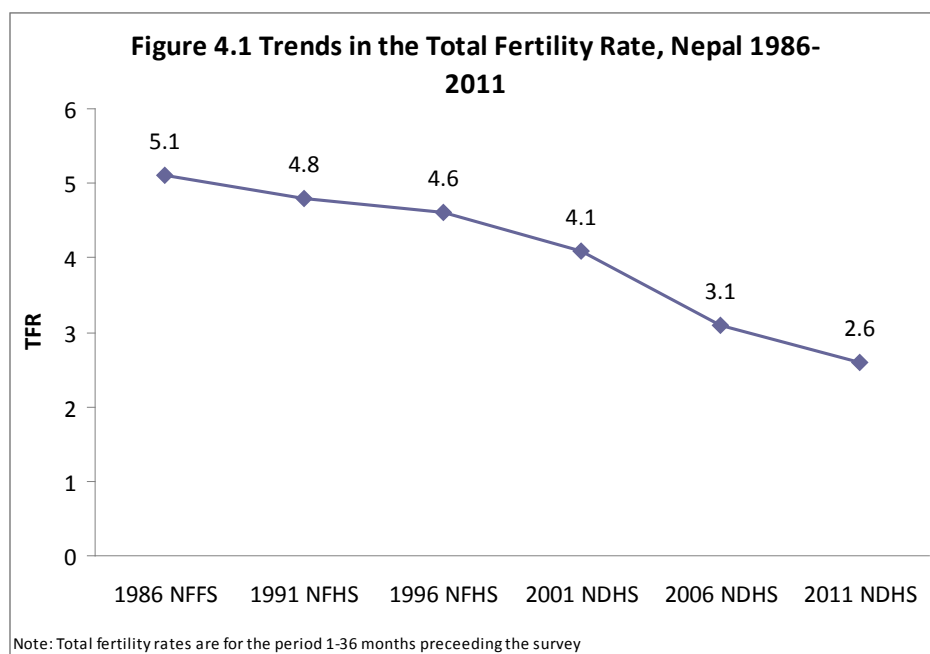
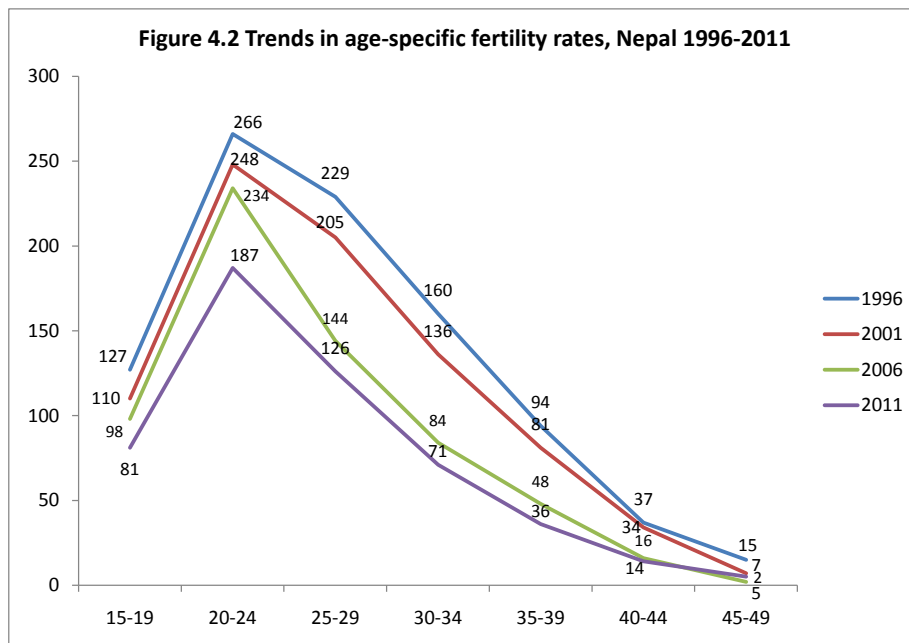
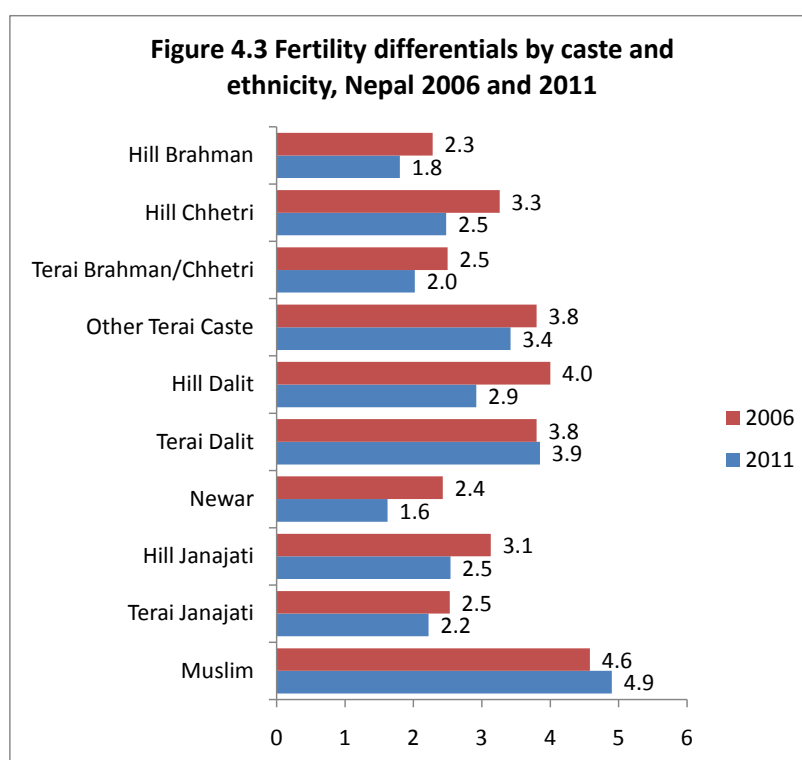


Figure 4.2 shows the trends in age-specific fertility rates (ASFR) in Nepal for the last 15 years. The ASFR has consistently been highest among women age 20-24. Between 2001 and 2006, fertility declined at all ages, and most strongly among age groups 25-29 and 30-34. Between 2006 and 2011, fertility declined among all age groups except 45-49 year olds. In that five-year period, the largest decline in fertility occurred among women age 20-24.



#### 4.1.1 Fertility Differentials by Caste and Ethnicity

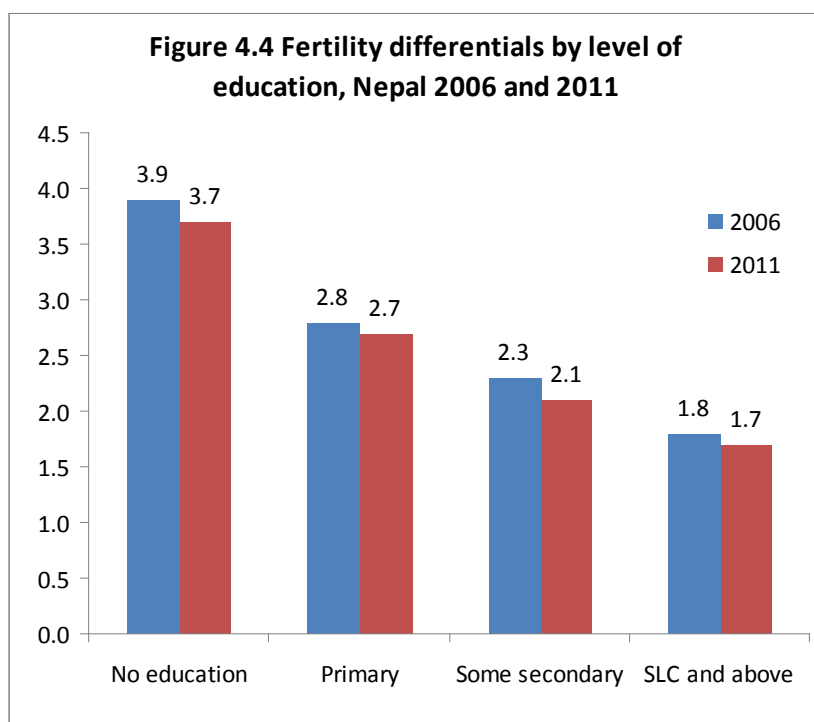
Figure 4.3 shows the TFR for the major caste/ethnic groups in Nepal. Hill Brahman, Hill Chhetri, Terai Brahman/Chhetri, Newar, Hill Janajati, and Terai Janajati have lower fertility rates than the national average. Hill Dalit, Tarai Dalit, Other Terai Caste (which comprises 25 different castes), and Muslim women have much higher fertility than the national average. Muslim, Terai Dalit, and Other Terai Castes reside mainly in Terai, where contraceptive prevalence overall is higher than the national average. These data suggest that a targeted approach is needed to reduce fertility among these groups.



The figure shows that the TFR declined among Newar between 2006 and 2011 (from 2.4 to 1.6), Hill Chhetri (from 3.3 to 2.5), Hill Dalit (from 4.0 to 2.9), whereas fertility among Terai Dalit women appeared to increase slightly (from 3.8 to 3.9), as did fertility among Muslim women (from 4.6 to 4.9).

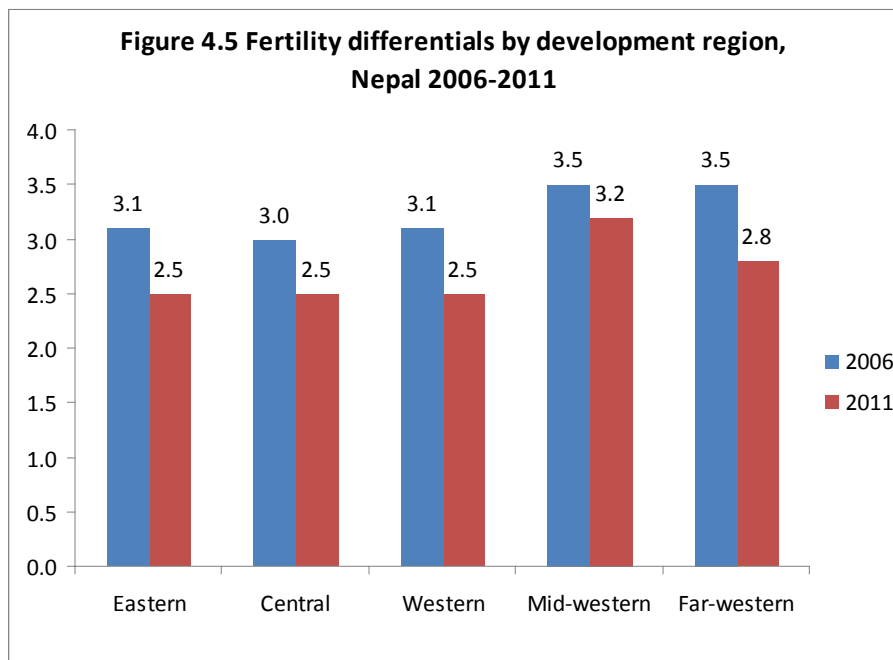
#### 4.1.2 Fertility Differentials by Level of Education

In general, fertility has an inverse association with women’s education. Figure 4.4 shows that in both surveys, 2006 and 2011, fertility is highest among women with no education. Fertility among women with School Leaving Certificate (SLC) and above, at a TFR of 1.7 in 2011, is less than half the level of fertility among women with no education, at 3.7. Between the 2006 and 2011 surveys, there was a slight decline in fertility among women at every educational level.



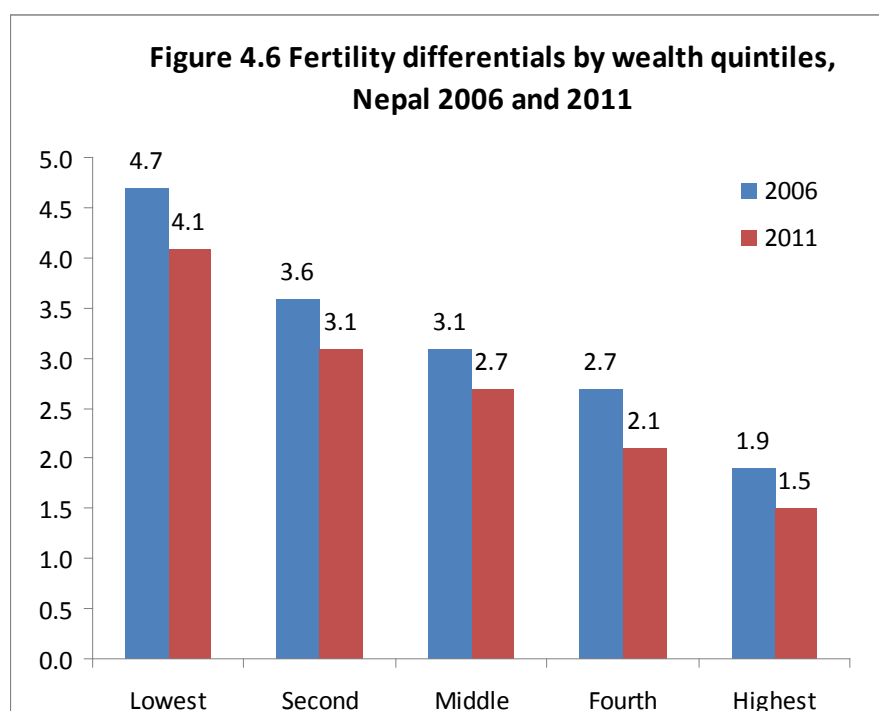
#### 4.1.3 Fertility Differentials by Development Region

Figure 4.5 shows the TFR for the five development regions of Nepal. Between 2006 and 2011, the TFR declined in all development regions. The decline was greatest in the Far-western development region (from 3.5 to 2.8) and smallest in the Mid-western region (from 3.5 to 3.2). As of 2011, the TFR had fallen to under 3 children per woman in all regions except the Mid-western region.



#### 4.1.4 Fertility Differentials by Wealth Quintiles

As Figure 4.6 shows, there is an inverse association between fertility and household wealth. In both surveys, fertility is highest in the lowest wealth quintile, and lowest in the highest wealth quintile. In 2011, the TFR was greater than 4 children per woman (4.1) among women in the lowest wealth quintile, compared with a TFR of less than 2 children per woman (1.5) among women in the highest wealth quintile.





## 4.2 FERTILITY AND MALE MIGRATION

In both surveys fertility rates were much lower among women whose husbands had been away for at least a year than for all married women. Table 4.1 shows that in 2006 the TFR was 3.0 among women whose husbands were absent for at least a year, compared with 3.9 among all married women; and in 2011, a TFR of 2.6 compared with 3.4. In both surveys fertility rates were roughly similar among women whose husbands had been away less than one year compared with women living with their husbands. The disparity in fertility rates between women whose husbands had been away for more than a year and women living together with their husbands was higher in urban than rural areas, and higher in the Western region than other regions in Nepal.

Background Characteristics	2006				2011			
	All married women	Living together with husband	Husband living elsewhere		All married women	Living together with husband	Husband living elsewhere	
			< 1 Year	≥ 1 Year			< 1 Year	≥ 1 Year
<b>Residence</b>								
Urban	3.0	3.1	3.1	1.8	2.5	2.6	2.2	1.7
Rural	4.0	4.1	4.1	3.1	3.5	3.7	3.4	2.7
<b>Ecological Zone</b>								
Mountain	4.8	4.9	4.7	4.2	4.2	4.5	3.4	3.1
Hill	3.8	4.0	3.8	2.9	3.4	3.6	3.3	2.7
Terai	3.8	3.8	4.2	2.8	3.3	3.4	3.3	2.4
<b>Development Region</b>								
Eastern	4.0	4.1	4.3	3.1	3.2	3.5	2.9	2.5
Central	3.7	3.7	3.9	2.7	3.3	3.5	3.1	2.6
Western	3.8	4.0	3.7	2.5	3.2	3.5	3.1	2.4
Mid-western	4.2	4.2	4.2	4.9	3.8	4.0	4.0	3.2
Far-western	4.0	4.0	4.3	3.3	3.6	3.6	3.8	2.9
<b>Total</b>	<b>3.9</b>	<b>3.9</b>	<b>4.0</b>	<b>3.0</b>	<b>3.4</b>	<b>3.6</b>	<b>3.3</b>	<b>2.6</b>



## 5 TRENDS AND DIFFERENTIALS OF CONTRACEPTIVE USE AND UNMET NEED

### 5.1 TRENDS IN CONTRACEPTIVE USE

As Cleland and colleagues have written (2006), “Family-planning promotion is unique among medical interventions in the breadth of its potential benefits.” Use of effective contraception is central not only to reducing fertility, but it also helps in the reduction of poverty and maternal and child mortality and contributes to empowerment of women (Cleland et al., 2006).

Table 5.1 presents trends in the contraceptive prevalence rate (CPR) among married women in Nepal from 1996 to 2011. The table shows remarkable increase in the use of modern contraceptive methods, from 26 percent of married women in 1996 to 44 percent in 2006. During the last five years before NDHS 2011, however, the use of modern contraceptive methods among married women stagnated. And, despite little attention to traditional family planning methods by the government health system, the use of traditional methods increased from 4 percent in 2006 to 7 percent in 2011. Thus the question arises: Despite having more health facilities, pharmacies, and clinics, why is modern contraceptive use stagnant? A partial reason may be the apparent shift toward traditional methods, which have increased in use while modern contraceptive use has declined.

Percent of married women currently using a method of contraception				
Method	1996 NFHS <sup>1</sup>	2001 NDHS <sup>2</sup>	2006 NDHS <sup>3</sup>	2011 NDHS <sup>4</sup>
Modern Methods	26.0	35.4	44.2	43.2
Traditional Methods	2.5	3.9	3.7	6.5
All Methods	28.5	39.3	48.0	49.7
Number of Women	7,982	8,342	8,257	9,608

<sup>1</sup> Pradhan et al., 1997

<sup>2</sup> MOH et al., 2002

<sup>3</sup> MOHP et al., 2007

<sup>4</sup> MOHP et al., 2012

### 5.2 CONTRACEPTIVE USE AND MALE MIGRATION

One important reason for the stall in contraceptive prevalence from 2006 to 2011 could be spousal separation. As discussed in section 3, spousal separation increased from 26 percent in 2006 to 32 percent in 2011 (MOHP et al., 2007; MOHP et al., 2012). In a survey by the Nepal Family Health Program II (NFHP II, 2012), when spouses are separated they tend to discontinue family planning methods to avoid rumors about infidelity, mainly from in-laws and community members. Regarding family planning and preparedness before return of their husbands, most women responded that they were not using any family planning methods, while some women said they prepared themselves by using injectables or pills before arrival of their husbands. The report also shows that most migrant couples prefer to use pills, condoms, or the traditional method, withdrawal, instead of long-acting or permanent modern methods. (NFHP II, 2012).

As Table 5.2 and Figure 5.1 show, the CPR among currently married women living with their husbands was 62 percent in 2011, well over twice the level among currently married women with husbands living elsewhere for

less than one year, at 25 percent, and more than three times the level among those with husbands living elsewhere for one year or more, at 20 percent. CPR increased among couples living together, from 57 percent in 2006 to 62 percent in 2011. However, there was no change in use of modern methods but a substantial increase in use of traditional methods, from 5 percent in 2006 to 9 percent in 2011. There was no substantial change in the use of family planning among women whose husbands were living elsewhere for less than one year. But there was a substantial increase in use of any method and use of modern methods among women whose husbands were living elsewhere for one year or more, from 13 percent in 2006 to 20 percent in 2011 (see Table 5.2).

Year	All currently married women			Currently married women living together with husband			Currently married women with husband living elsewhere (< 1 Year)			Currently married women with husband living elsewhere (≥ 1 Year)		
	Any Method	Any modern Method	Any traditional Method	Any Method	Any modern Method	Any traditional Method	Any Method	Any modern Method	Any traditional Method	Any Method	Any modern Method	Any traditional Method
2006	48.0	44.2	3.8	57.1	52.4	4.7	25.7	24.3	1.4	12.8	12.8	0.0
2011	49.7	43.2	6.5	62.0	52.9	9.1	25.1	23.9	1.2	20.4	19.8	0.6

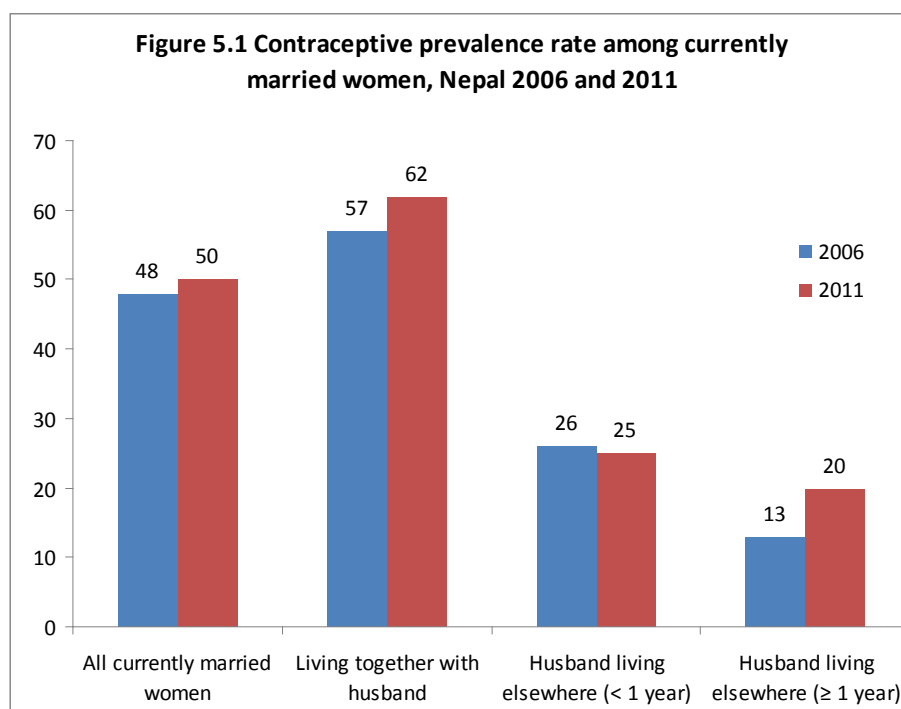


Table 5.3 shows the percent distribution of currently married women by their use of contraceptive methods, according to the migration status of their husbands.<sup>3</sup> Information on current use of contraception among women living together with their husbands or whose husbands are absent can help programs identify and better serve the family planning needs of different groups.

<sup>3</sup> In 2011, three cases were dropped due to missing information about length of spousal absence. Therefore the total number of married women in 2011 reported here is 9,605 instead of 9,608.

Method	2006				2011			
	Living together with husband	Husband living elsewhere < 1 Year	Husband living elsewhere ≥ 1 Year	All	Living together with husband	Husband living elsewhere < 1 Year	Husband living elsewhere ≥ 1 Year	All
Not using	42.9	74.3	87.2	52.0	37.9	74.9	79.7	50.3
Pill	4.4	1.4	0.0	3.5	5.7	1.2	0.4	4.1
IUD	0.7	0.6	0.2	0.7	1.6	0.8	0.1	1.3
Injections	12.6	4.3	0.0	10.1	12.1	4.2	0.6	9.2
Implants	0.8	0.3	1.3	0.8	1.4	1.0	0.3	1.2
Condom	6.2	1.1	0.1	4.8	6.1	0.8	0.5	4.3
Female Sterilization	20.7	11.4	8.8	18.0	16.7	11.5	12.9	15.2
Male Sterilization	7.0	5.2	2.5	6.3	9.3	4.4	5.0	7.8
Periodic Abstinence	1.5	0.1	0.0	1.2	1.6	0.2	0.1	1.1
Withdrawal	3.2	1.3	0.0	2.6	7.5	1.0	0.4	5.4
Other	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<b>Total number of women</b>	<b>6,081</b>	<b>1,604</b>	<b>572</b>	<b>8,257</b>	<b>6,530</b>	<b>1,985</b>	<b>1,090</b>	<b>9,605</b>

As the table shows, the percentage of all married women who were not using any contraceptive method decreased slightly between surveys, from 52 percent in 2006 to 50 percent in 2011. Female sterilization was the most commonly used contraceptive method among all married women, whether living together or living away from their husbands. There was a decrease in use of female sterilization, from 18 percent in 2006 to 15 percent in 2011, and an increase in male sterilization, from 6 percent in 2006 to 8 percent in 2011.

Among couples staying together, there was an increase in use of withdrawal, from 3 percent in 2006 to 8 percent in 2011, and an increase in use of the pill, from 4 percent in 2006 to 6 percent in 2011. Use of IUDs increased slightly among couples staying together, from 1 percent in 2006 to 2 percent in 2011, and use of implants increased from less than 1 percent in 2006 to 1.4 percent in 2011.

Table 5.4 shows contraceptive prevalence (CPR) by area of residence and husband's migration status. By ecological zones of the country, family planning and other reproductive health indicators typically perform better in Terai areas compared to Hill and Mountain areas. However, the gap was greatly reduced in 2011, due to improvement in the Mountain and Hill areas alongside a stagnant rate in Terai areas. In all three ecological regions contraceptive use is less among women with husbands living elsewhere compared with women living together with their husbands.

By ecological zone, among all currently married women in the Central, Western, and Mid-western regions, contraceptive use in 2011 was greater than in 2006. However, there was a slight decrease in contraceptive use in the Eastern region, from 50 percent in 2006 to 46 percent in 2011. Use of contraceptive methods by currently married women living together with their husbands increased in all development regions in 2011 compared with 2006.

Table 5.5 presents contraceptive use stratified by women's household-level characteristics. Contraceptive use among all currently married women in the lowest and second wealth quintiles increased in 2011 compared with 2006. There was no major change among the middle, fourth, and higher wealth quintiles. Use of contraceptive methods varies among different caste and ethnic groups (see Table 5.5). Contraceptive use is particularly low among Muslims, and is high among Brahman/Chhetri, Newar, and Terai Janjati.

Table 5.4 Contraceptive use by area of residence, currently married women, Nepal 2006 and 2011

Background Characteristics	2011													
	2006							2011						
	All currently married women			Living together with husband		Husband living elsewhere		All currently married women			Living together with husband		Husband living elsewhere	
	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year
<b>Residence</b>														
Urban	60.9	27.3	13.7	1,226	977	173	75	48.2	60.9	29.7	22.6	1,261	986	169
Rural	45.9	25.5	12.7	7,031	5,104	1,431	497	59.4	68.8	24.7	20.1	8,345	5,544	1,817
<b>Ecological Zone</b>														
Mountain	38.5	29.2	(3.4)	586	445	106	36	48.4	57.6	29.3	11.1	630	459	119
Hill	45.6	19.8	10.2	3,402	2,409	710	283	48.1	62.2	21.4	13.9	3,782	2,567	790
Terai	51.1	30.6	17.1	4,269	3,227	789	253	50.9	62.6	27.4	25.6	5,193	3,504	1,077
<b>Development Region</b>														
Eastern	50.0	24.1	7.6	1,757	1,335	262	160	46.4	61.9	17.0	11.2	2,293	1,548	370
Central	50.0	28.4	18.1	2,736	2,096	501	138	54.8	62.5	34.5	32.6	3,209	2,346	561
Western	40.9	18.6	12.7	1,602	1,067	372	163	46.1	63.2	21.0	18.3	2,030	1,224	524
Mid-western	45.5	25.6	4.9	976	721	190	65	46.9	57.6	22.8	16.1	1,149	808	273
Far-western	51.7	32.1	(26.1)	1,187	861	280	47	51.9	64.7	27.4	29.6	925	605	258
<b>Total</b>	<b>48.0</b>	<b>25.7</b>	<b>12.8</b>	<b>8,257</b>	<b>6,081</b>	<b>1,604</b>	<b>572</b>	<b>49.7</b>	<b>62.1</b>	<b>25.1</b>	<b>20.3</b>	<b>9,605</b>	<b>6,530</b>	<b>1,985</b>

Note: Figures in parentheses are based on 25-49 unweighted cases. Numbers may not sum to total due to rounding.

Table 5.5 Contraceptive use by household-level characteristics, currently married women, Nepal 2006 and 2011

Background Characteristics	2011															
	2006						2011									
	All currently married women	Living together with husband	Husband living elsewhere	< 1 Year	≥ 1 Year	All currently married women	Living together with husband	Husband living elsewhere	< 1 Year	≥ 1 Year	All currently married women	Living together with husband	Husband living elsewhere	< 1 Year	≥ 1 Year	
<b>Wealth Quintile</b>																
Lowest	32.9	39.4	20.2	2.0	1,537	1,109	327	101	40.4	50.4	21.5	11.7	1,664	1,148	343	173
Second	42.6	51.3	22.9	13.9	1,642	1,175	358	109	46.3	57.7	30.1	15.4	1,846	1,186	470	191
Middle	49.2	57.8	28.3	21.1	1,747	1,267	352	128	48.2	61.2	23.0	25.8	2,022	1,315	463	244
Fourth	52.8	62.3	27.5	14.8	1,640	1,234	290	116	52.0	66.3	23.5	26.7	2,052	1,346	418	288
Highest	60.9	71.9	30.9	10.3	1,692	1,297	276	119	59.6	71.2	27.2	16.6	2,021	1,535	291	195
<b>Caste and Ethnicity</b>																
Hill Brahman	51.5	63.1	27.8	13.2	978	690	210	78	57.9	72.0	24.9	26.5	1,345	939	282	124
Hill Chhetri	47.1	57.3	25.1	12.3	1,601	1,137	361	103	48.7	62.6	23.2	17.1	1,861	1,236	427	198
Terai Brahman/Chhetri	69.0	72.8	*	*	70	56	14	0	62.0	69.3	*	*	104	83	9	11
Other Terai Caste	45.2	49.5	31.4	(30.3)	962	737	179	46	49.1	56.0	35.5	28.2	832	583	154	95
Hill Dalit	37.3	47.5	17.0	15.3	620	415	149	56	43.8	56.1	23.8	18.7	949	603	247	100
Terai Dalit	49.9	53.7	(31.2)	*	419	346	56	17	42.1	45.2	33.4	*	484	317	118	49
Newar	61.5	69.4	28.8	*	333	273	48	12	63.7	73.4	(25.0)	*	379	304	53	21
Hill Janajati	41.0	53.0	19.1	5.1	1,734	1,196	348	190	44.7	60.7	19.0	10.0	2,300	1,498	438	364
Terai Janajati	67.7	71.3	51.2	*	1,057	894	139	23	64.1	71.7	45.6	38.8	965	709	164	91
Muslim	18.7	29.3	0.0	(1.9)	330	208	79	43	25.4	34.6	6.0	*	366	238	92	36
Others	55.7	59.3	*	*	153	129	21	4	(70.7)	*	*	*	21	20	1	0
<b>Total</b>	<b>48.0</b>	<b>57.1</b>	<b>25.7</b>	<b>12.8</b>	<b>8,257</b>	<b>6,081</b>	<b>1,604</b>	<b>572</b>	<b>49.7</b>	<b>62.1</b>	<b>25.1</b>	<b>20.3</b>	<b>9,605</b>	<b>6,530</b>	<b>1,985</b>	<b>1,090</b>

Note: Figures in parentheses are based on 25-49 unweighted cases. An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed. Numbers may not sum to total due to rounding.

Table 5.6, which shows contraceptive use by individual characteristics, indicates a strong association between use of contraceptive methods and women's age. Among all currently married women, in both surveys contraceptive use was lowest among adolescents (age 15-19) compared to women in older age groups. On the other hand, contraceptive use among adolescents increased slightly between 2006 and 2011, whereas a slight decrease was observed in women who fall in age groups between age 20-34. In NDHS 2011 contraceptive use peaks among women age 40-44. This pattern is similar in NDHS 2006 but with the peak at age 35-39. In both 2006 and 2011, contraceptive use is highest among women with more education.

Contraceptive use tends to increase as the number of children already born increases, as couples achieve their desired number of children. But in recent years there has been an increase in contraceptive use among currently married women who do not have any children, from 9 percent in 2006 to 12 percent in 2011.



Table 5.6 Contraceptive use by individual-level characteristics, 2006 and 2011

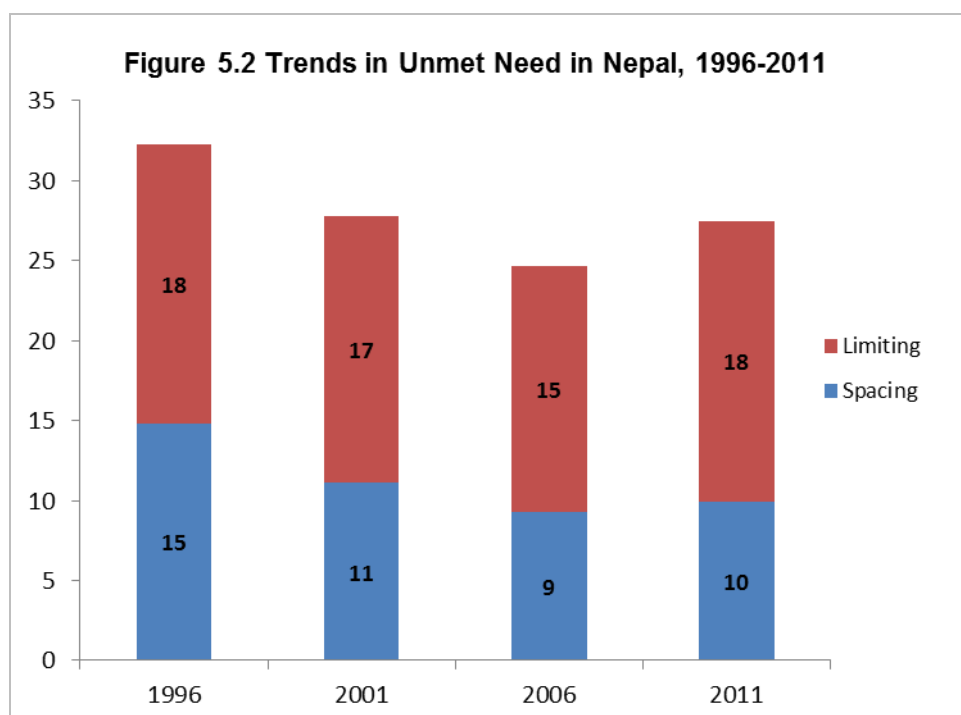
Background Characteristics	2006											2011													
	All currently married women					Number of women					Number of women					All currently married women					Number of women				
	Living together with husband	Husband living elsewhere	< 1 Year	≥ 1 Year	All currently married women	Living together with husband	Husband Living elsewhere	< 1 Year	≥ 1 Year	All currently married women	Living together with husband	Husband living elsewhere	< 1 Year	≥ 1 Year	All currently married women	Living together with husband	Husband living elsewhere	< 1 Year	≥ 1 Year	All currently married women	Living together with husband	Husband living elsewhere	< 1 Year	≥ 1 Year	
<b>Age</b>																									
15-19	16.0	21.3	5.5	(0.0)	784	527	228	29	17.6	26.4	3.2	(0.0)	791	497	242	53									
20-24	30.6	42.4	13.3	0.9	1,606	1,012	455	138	29.6	43.4	12.9	6.5	1,761	1,009	522	229									
25-29	48.4	59.5	32.6	9.5	1,664	1,123	372	169	46.3	61.8	25.2	14.8	1,912	1,182	455	276									
30-34	63.1	73.6	42.0	20.3	1,265	923	228	115	59.6	73.2	34.6	25.9	1,659	1,119	339	201									
35-39	64.8	71.5	41.0	30.9	1,135	908	162	66	67.4	78.1	49.2	31.4	1,461	1,036	238	187									
40-44	63.2	68.6	39.0	(17.9)	1,016	865	103	48	68.1	74.9	43.2	37.9	1,190	951	129	109									
45-49	45.9	47.2	28.9	*	788	724	56	9	53.7	56.2	32.1	(39.5)	832	737	59	36									
<b>Education</b>																									
No education	49.3	55.7	31.1	15.6	5,110	3,964	842	304	52.8	61.2	33.8	27.0	4,580	3,283	831	466									
Primary	45.5	58.1	19.5	14.9	1,404	957	335	112	47.0	61.5	24.4	19.9	1,844	1,158	428	258									
Secondary	45.3	60.9	18.9	6.1	1,522	1,002	376	144	45.5	63.5	14.8	12.5	2,609	1,664	616	328									
SLC and above	51.5	62.8	28.3	*	222	159	51	12	52.7	64.9	20.8	(8.5)	572	425	110	37									
<b>Number of Living Children</b>																									
0	9.0	12.2	1.7	0.0	860	605	200	55	12.2	17.9	2.6	0.0	1,074	690	295	89									
1 - 2	44.3	57.6	23.6	6.0	3,364	2,213	839	313	46.8	63.9	21.7	11.7	4,441	2,790	1,038	613									
3 - 4	63.3	70.5	38.5	28.1	2,831	2,238	438	155	65.4	74.8	42.8	40.1	3,091	2,217	544	329									
≥5	49.9	53.2	33.6	22.4	1,202	1,025	127	50	54.1	58.9	30.5	30.4	999	833	108	58									
<b>Total</b>	<b>48.0</b>	<b>57.1</b>	<b>25.7</b>	<b>12.8</b>	<b>8,257</b>	<b>6,081</b>	<b>1,604</b>	<b>572</b>	<b>49.7</b>	<b>62.1</b>	<b>25.1</b>	<b>20.3</b>	<b>9,605</b>	<b>6,530</b>	<b>1,985</b>	<b>1,090</b>									

Note: Figures in parentheses are based on 25-49 unweighted cases. An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed. Numbers may not sum to total due to rounding.

### 5.3 TRENDS IN UNMET NEED

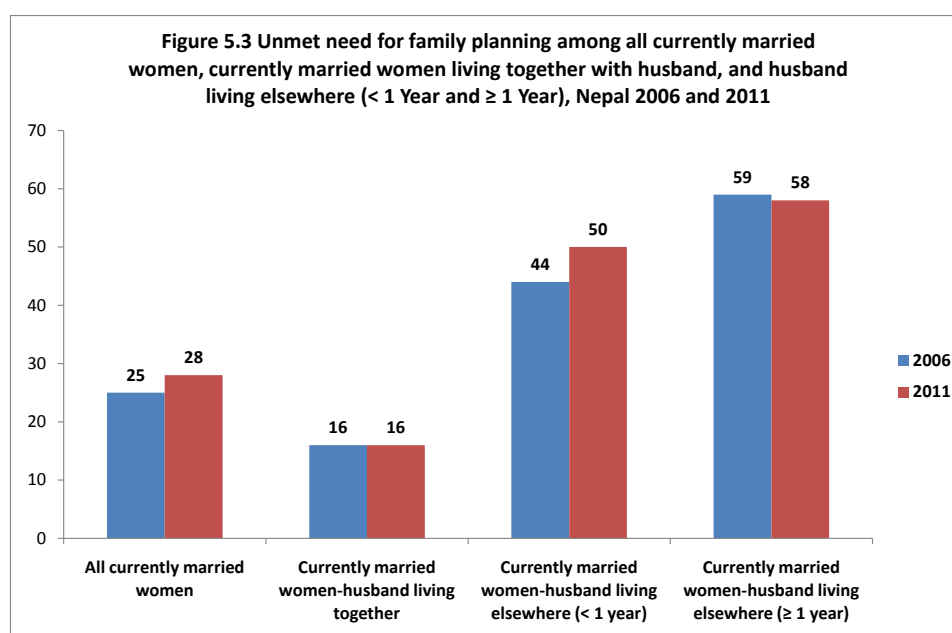
In simple words, unmet need for family planning is the percentage of women who are at risk of pregnancy but are not using contraception.<sup>4</sup> This concept was first defined in the 1960s, when researchers identified a discrepancy between many women’s fertility preferences and their use of contraception, based on responses to KAP (Knowledge, Attitudes, and Practices) surveys (Bongaarts, 1991; Robey, Ross, and Bhushan 1996). The definition and measurement of unmet need based on survey data have changed over the years (Westoff 1978; Westoff and Pebley, 1981; Bradley et al., 2012). Data on unmet need have provided a focus for many national governments and nongovernmental organizations to invest in meeting the need for family planning. By drawing attention to women’s own stated reproductive health desires, unmet need has helped to define family planning as an issue of individual rights (Sonfield, 2006). Recently, the DHS program has developed a revised definition of unmet need that ensures consistency between current surveys and previous surveys (see Bradley et al., 2012).

This study uses the revised DHS definition of unmet need and classifies women into one of the following three categories: unmet need to space, unmet need to limit, no unmet need. Figure 5.2 shows trends in unmet need in Nepal between 1996 and 2011. In 1996, the total level of unmet need for family planning was 32 percent, which then declined to 28 percent in 2001 and 25 percent in 2006. Results from the 2011 NDHS show that unmet need increased to 28 percent (18 percent for limiting births and 10 percent for spacing).



<sup>4</sup> “The percent with an unmet need for family planning is expressed as a percentage of women of reproductive age who are married or in a union fecund and sexually active but are not using any contraceptive method, and report not wanting any more children or wanting to delay the birth of their next child” (UN, 2011).

Figure 5.3 and Table 5.7 show that, when disaggregated by type of marital arrangement, unmet need is extraordinarily high among women whose husbands are living elsewhere for at least one year (more than twice as high as average, and more than three times as high than women whose husbands are resident at the time of survey). Unmet need is also high among women whose husbands have been living elsewhere for less than a year.



Unmet need among married women living with their husbands remained constant between 2006 and 2011, at 16 percent, and decreased slightly among women whose husbands had been away for at least one year, from 59 to 58 percent. The only subgroup that experienced an increase in unmet need between 2006 and 2011 is women whose husbands were living elsewhere for less than one year, from 44 percent in 2006 to 50 percent in 2011. In other words, the increase in unmet need between 2006 and 2011 is driven by women whose husbands have been away for less than one year. Whether the increase is attributable solely to migration or instead due to other characteristics correlated with temporary absence remains unknown.

**Table 5.7 Changes in unmet need among all currently married women, women with husband living together, and women with husband living elsewhere, Nepal 2006 and 2011.**

Years	Unmet need among all currently married women			Unmet need among currently married women living together with husband			Unmet need among currently married women with husband living elsewhere <1 Year			Unmet need among currently married women with husband living elsewhere ≥ 1 year		
	Spacing	Limiting	Total	Spacing	Limiting	Total	Spacing	Limiting	Total	Spacing	Limiting	Total
2006	9.3	15.4	24.7	6.0	10.4	16.4	19.5	24.5	44.0	16.1	42.7	58.8
2011	9.9	17.6	27.5	5.7	9.8	15.5	19.3	31.2	50.4	18.1	40.0	58.1

When we calculate unmet need, the denominator is women of reproductive age, 15-49, who are married or in union. In Nepal, as mentioned above, 32 percent of women's husbands live elsewhere, according to the 2011 NDHS (MOHP et al., 2012). The absence of husbands means that, although the women are in union, they may not need to use family planning because they are presumed not to be sexually active (except for those who may have extramarital sexual relations). While it is true that upon the return of their husbands these women may in

fact need contraception, the practice of including women whose husbands have been away for several months or more in the denominator for the unmet need calculation has resulted in high levels of apparent unmet need.

Results indicate that from 2006 to 2011 there was, in fact, a slight decline in unmet need (less than 1 percentage point) among women whose husbands were resident at the time of the survey. The apparent increase in unmet need is due to an increase in unmet need among women whose husbands are living elsewhere. In calculating unmet need in Nepal, therefore, special consideration should be given to the local context of labor migration.

#### **5.4 DIFFERENTIALS IN UNMET NEED**

Levels of unmet need vary substantially by women's residential, household, and individual characteristics. As Tables 5.8 and 5.9 shows for 2006 and 2011, respectively, unmet need was higher among women living in rural areas compared with urban areas, in both surveys. In 2006, total unmet need was higher in Mountain (30 percent) and Hill areas (29 percent) compared with Terai areas (21 percent). In 2011, unmet need was highest in Hill areas (30 percent) and similar in Mountain and Terai areas (26 percent in both). Compared with 2006, levels of unmet need in 2011 declined in Mountain and Hill areas but increased in Terai areas (see Table 5.9).

In 2006, total unmet need was highest in the Western region (32 percent) and increased to 35 percent in 2011. Yet among women in Western region who resided with their husbands at the time of the survey, total unmet need declined between the two surveys (from 21 percent in 2006 to 17 percent in 2011). Over the same period, there was both an increase in the proportion of women with nonresident husbands and an increase in unmet need among women whose husbands had been away for less than one year, suggesting that migration-related factors contributed to the overall increase in unmet need.

Table 5.10 and 5.11 show unmet need by married women's household-level characteristics in 2006 and 2011, respectively. Unmet need tends to have an inverse relationship with wealth quintile, particularly among women living together with their husbands at the time of the survey. Between 2006 and 2011, unmet need stagnated or increased among married women of all wealth quintiles. The largest increase in unmet need occurred among women in the middle wealth quintile. Concerning caste/ethnicity, total unmet need declined only among Hill Brahman, Newar, and Other women between 2006 and 2011. Among Other Terai Castes and Hill Dalits the increase was very small.

Table 5.8 Differentials in unmet need by place of residence, NDHS 2006

Background Characteristics	For spacing				For limiting				Total unmet need				
	Living together with husband		Husband living elsewhere		Living together with husband		Husband living elsewhere		Living together with husband		Husband living elsewhere		
	< 1 Year	≥ 1 Year	< 1 Year	≥ 1 Year	< 1 Year	≥ 1 Year	< 1 Year	≥ 1 Year	< 1 Year	≥ 1 Year	< 1 Year	≥ 1 Year	
<b>Residence</b>													
Urban	7.0	20.8	15.4	12.7	30.2	37.8	30.2	37.8	11.5	51.0	53.1	1,226	173
Rural	9.7	19.4	16.3	15.8	23.8	43.4	23.8	43.4	17.3	43.1	59.7	7,031	1,433
<b>Ecological Zone</b>													
Mountain	10.8	9.2	17.1	19.5	22.8	(57.5)	22.8	(57.5)	24.9	49.9	(69.4)	586	445
Hill	8.7	5.5	17.6	19.9	32.6	46.7	32.6	46.7	18.6	50.2	60.2	3,402	710
Terai	9.6	5.9	21.5	11.1	17.3	36.1	17.3	36.1	13.6	38.8	55.7	4,269	789
<b>Development Region</b>													
Eastern	10.1	5.5	27.3	13.7	22.8	42.5	22.8	42.5	14.0	50.1	62.8	1,757	262
Central	9.0	5.9	14.2	13.2	10.2	19.3	10.2	19.3	16.1	38.5	55.8	2,736	501
Western	10.4	7.7	16.8	22.1	13.0	36.6	13.0	36.6	20.7	53.4	61.6	1,602	372
Mid-western	9.4	4.8	20.6	17.3	12.1	25.5	12.1	25.5	17.0	46.1	62.9	976	190
Far-western	8.3	6.0	15.6	(7.9)	18.4	(30.9)	18.4	(30.9)	15.1	34.0	(38.8)	1,187	280
<b>Total</b>	<b>9.3</b>	<b>6.0</b>	<b>19.5</b>	<b>15.4</b>	<b>24.5</b>	<b>42.7</b>	<b>24.5</b>	<b>42.7</b>	<b>16.4</b>	<b>44.0</b>	<b>58.8</b>	<b>8,257</b>	<b>1,604</b>

Note: Figures in parentheses are based on 25-49 unweighted cases. Numbers may not sum to total due to rounding.

Table 5.9 Differentials of unmet need by place of residence, NDHS 2011

Background Characteristics	For spacing				For limiting				Total unmet need				
	Living together with husband		Husband living elsewhere		Living together with husband		Husband living elsewhere		Living together with husband		Husband living elsewhere		
	< 1 Year	≥ 1 Year	< 1 Year	≥ 1 Year	< 1 Year	≥ 1 Year	< 1 Year	≥ 1 Year	< 1 Year	≥ 1 Year	< 1 Year	≥ 1 Year	
<b>Residence</b>													
Urban	6.8	4.2	16.4	15.7	30.9	47.1	30.9	47.1	10.7	47.3	62.8	1,261	986
Rural	10.4	5.9	19.6	18.3	31.2	39.3	31.2	39.3	16.3	50.7	57.6	8,345	5,544
<b>Ecological Zone</b>													
Mountain	7.9	5.7	13.0	16.2	29.1	49.8	29.1	49.8	16.6	42.2	66.0	630	459
Hill	9.7	5.1	19.8	18.5	37.1	46.2	37.1	46.2	16.4	56.9	64.6	3,782	2,567
Terai	10.3	6.1	19.6	18.0	27.0	34.9	27.0	34.9	14.6	46.6	52.9	5,193	3,504
<b>Development Region</b>													
Eastern	11.9	6.0	27.4	20.8	31.9	46.5	31.9	46.5	14.8	59.3	67.3	2,293	1,548
Central	8.4	5.5	15.7	17.3	21.1	28.5	21.1	28.5	15.4	36.9	45.8	3,209	2,346
Western	11.5	6.4	20.5	17.0	40.9	43.4	40.9	43.4	17.1	61.4	60.4	2,030	1,224
Mid-western	9.6	5.9	19.3	13.9	29.1	45.6	29.1	45.6	16.9	48.4	59.5	1,149	808
Far-western	7.0	3.6	12.9	15.0	34.3	35.7	34.3	35.7	12.2	47.2	50.7	925	605
<b>Total</b>	<b>9.9</b>	<b>5.7</b>	<b>19.3</b>	<b>18.1</b>	<b>31.2</b>	<b>40.0</b>	<b>31.2</b>	<b>40.0</b>	<b>15.5</b>	<b>50.4</b>	<b>58.1</b>	<b>9,605</b>	<b>6,530</b>

Note: numbers may not sum to total due to rounding.

Table 5.10 Differentials of unmet need by selected household characteristics, NDHS 2006

Background Characteristics	For spacing						For limiting						Total unmet need						
	Living together with husband		Husband living elsewhere		All		Living together with husband		Husband Living elsewhere		All		Living together with husband		Husband living elsewhere		All		
	< 1 Year	≥ 1 Year	< 1 Year	≥ 1 Year	Year	< 1 Year	≥ 1 Year	< 1 Year	≥ 1 Year	Year	< 1 Year	≥ 1 Year	< 1 Year	≥ 1 Year	< 1 Year	≥ 1 Year	< 1 Year	≥ 1 Year	
<b>Wealth Quintile</b>																			
Lowest	9.9	18.0	13.6	22.3	19.7	22.7	49.3	32.1	26.8	40.7	62.9	1,537	1,109	327	101				
Second	10.7	21.7	11.6	16.1	10.9	23.7	50.6	26.8	18.2	44.5	62.2	1,642	1,175	358	109				
Middle	10.5	23.1	20.2	12.2	8.2	19.0	32.6	22.7	14.2	42.1	53.7	1,747	1,267	352	128				
Fourth	10.2	20.6	21.3	13.2	7.9	26.7	34.8	23.3	14.6	47.4	56.1	1,640	1,234	290	116				
Highest	5.5	12.6	13.1	13.7	6.5	33.3	47.1	19.2	9.7	45.9	60.2	1,692	1,297	276	119				
<b>Caste and Ethnicity</b>																			
Hill Brahman	9.6	6.4	18.3	13.8	17.8	9.8	33.1	47.5	27.4	16.3	51.3	978	690	210	78				
Hill Chhetri	8.2	5.6	15.5	11.7	17.3	11.7	27.0	44.9	25.5	17.3	42.4	1,601	1,137	361	103				
Terai Brahman/Chhetri	6.7	5.0	*	2.9	2.9	1.2	*	9.6	6.2	7.0	*	70	56	14	0				
Other Terai Caste	10.2	7.9	19.7	(10.1)	8.5	7.3	8.7	(26.3)	18.7	15.2	28.4	962	737	179	46				
Hill Dalit	11.4	7.9	20.2	13.9	22.7	16.6	32.8	41.7	34.1	24.5	53.0	620	415	149	56				
Terai Dalit	10.5	6.4	(35.4)	7.7	7.7	6.3	(10.5)	*	18.3	12.7	(45.9)	419	346	56	17				
Newar	7.9	5.6	13.7	*	12.6	10.5	24.6	*	20.5	16.1	38.3	333	273	48	12				
Hill Janajati	9.0	4.9	19.9	15.3	21.7	14.5	30.6	50.5	30.7	19.4	65.9	1,734	1,196	348	190				
Terai Janajati	6.9	4.7	19.8	6.1	6.1	4.6	9.6	*	13.0	9.4	29.4	1,057	894	139	23				
Muslim	20.4	10.9	33.3	(42.9)	17.1	13.8	17.7	(32.0)	37.5	24.6	51.0	330	208	79	43				
Others	3.6	2.8	*	13.8	10.0	17.4	*	17.4	12.9	153	*	153	129	21	4				
<b>Total</b>	<b>9.3</b>	<b>6.0</b>	<b>19.5</b>	<b>16.1</b>	<b>15.4</b>	<b>10.4</b>	<b>24.5</b>	<b>42.7</b>	<b>24.7</b>	<b>16.4</b>	<b>44.0</b>	<b>8,257</b>	<b>6,081</b>	<b>1,604</b>	<b>572</b>				

Note: Figures in parentheses are based on 25-49 unweighted cases. An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed. Numbers may not sum to total due to rounding.

Table 5.11 Differentials of unmet need by selected household characteristics, NDHS 2011

Background Characteristics	For spacing						For limiting						Total unmet need						
	Living together with husband			Husband living elsewhere			Living together with husband			Husband living elsewhere			Living together with husband			Husband living elsewhere			
	All	< 1 Year	≥ 1 Year	All	< 1 Year	≥ 1 Year	All	< 1 Year	≥ 1 Year	All	< 1 Year	≥ 1 Year	All	< 1 Year	≥ 1 Year	All	< 1 Year	≥ 1 Year	
<b>Wealth Quintile</b>																			
Lowest	9.1	6.1	15.0	17.9	22.8	16.2	33.9	44.4	31.9	22.3	48.9	62.2	1,664	1,148	343	173			
Second	9.4	6.1	16.2	13.6	19.2	11.2	29.6	44.1	28.6	17.3	45.7	56.7	1,846	1,186	470	191			
Middle	13.1	7.2	25.9	20.3	15.8	8.5	27.1	33.8	28.9	15.9	53.0	54.1	2,022	1,315	463	244			
Fourth	9.4	5.1	17.7	17.0	17.3	7.4	33.6	40.2	26.8	12.5	51.3	57.6	2,052	1,346	418	288			
Highest	8.2	4.2	21.1	20.9	14.1	7.0	31.5	40.7	22.3	11.2	54.5	61.6	2,021	1,538	291	195			
<b>Caste and Ethnicity</b>																			
Hill Brahman	8.5	3.9	20.8	15.3	15.9	7.0	33.2	44.1	24.4	10.9	54.0	59.4	1,346	939	282	124			
Hill Chhetri	8.3	4.6	15.1	16.6	20.5	10.9	36.2	46.5	28.8	15.5	51.3	63.1	1,864	1,236	427	198			
Terai Brahman/Chhetri	12.6	7.3	*	*	7.2	4.8	*	*	19.9	12.1	*	*	104	83	9	11			
Other Terai Caste	9.5	6.9	13.9	18.5	10.1	7.9	17.8	10.9	19.6	14.7	31.6	29.4	832	583	154	95			
Hill Dalit	12.8	8.3	20.8	20.0	22.4	13.1	36.1	44.5	35.1	21.4	56.9	64.5	949	603	247	100			
Terai Dalit	15.4	10.6	26.6	*	8.2	7.3	6.2	*	23.7	18.0	32.7	*	484	317	118	49			
Newar	6.4	3.1	(19.5)	*	13.6	6.4	(43.0)	*	20.0	9.5	(62.5)	*	379	306	53	21			
Hill Janajati	10.8	5.1	22.6	20.5	22.8	12.1	40.0	45.9	33.6	17.2	62.6	66.3	2,300	1,498	438	364			
Terai Janajati	6.8	4.4	13.5	13.4	9.3	4.1	14.9	39.2	16.1	8.5	28.4	52.6	966	709	164	91			
Muslim	14.5	12.1	22.1	*	24.9	24.0	24.3	*	39.4	36.2	46.3	*	366	238	92	36			
Others	(5.5)	*	*	*	(0.0)	*	*	*	(5.4)	*	*	*	21	20	1	0			
<b>Total</b>	<b>9.9</b>	<b>5.7</b>	<b>19.3</b>	<b>18.1</b>	<b>17.6</b>	<b>9.8</b>	<b>31.2</b>	<b>40.0</b>	<b>27.5</b>	<b>15.5</b>	<b>50.4</b>	<b>58.1</b>	<b>9,605</b>	<b>6,530</b>	<b>1,985</b>	<b>1,090</b>			

Note: An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed. Numbers may not sum to total due to rounding.

Tables 5.12 and 5.13 show unmet need stratified by women's individual characteristics in 2006 and 2011, respectively. Unmet need was high among women age 15-19 both in 2006 and in 2011, and decreases as women's age increases. Overall, unmet need increased from 25 percent in 2006 to 28 percent in 2011. However among women age 35-39 there was a decrease from 22 percent to 21 percent, and unmet need remained constant among women age 40-44. Unmet need for spacing was almost the same in 2006 and 2011. Unmet need for limiting increased from 15 percent in 2006 to 18 percent in 2011, an indication that the impact of the family planning program on permanent method use is decreasing (Upreti, 2012).

Concerning women's education, unmet need was highest among women with a secondary level education, both in 2006 and in 2011. Overall, unmet need increased slightly in all education groups between the two surveys but increased most among women with a primary level education. In 2011 unmet need for limiting was three times higher than unmet need for spacing among women with no education. It was two times higher among women with primary level education. However, unmet need for spacing and limiting was almost the same among the secondary and higher education groups.

In general, there was little change between surveys in levels of unmet need among women with any living children, but among all women without children unmet need increased, from 26 percent in 2006 to 29 percent in 2011. Almost all of the unmet need among women with no children is for spacing, and overall unmet need among this group is extremely low (see Tables 5.12 and 5.13). Among women with 1-2 living children, unmet need for limiting increased somewhat between surveys, from 14 percent in 2006 to 18 percent in 2011.



Table 5.12 Differentials of unmet need by selected individual characteristics of currently married women, NDHS 2006

	For spacing						For limiting						Total unmet need						
	Living together with husband		Husband living elsewhere		All		Living together with husband		Husband living elsewhere		All		Living together with husband		Husband living elsewhere		All		
	Year	< 1	Year	≥ 1	Year	( )	Year	< 1	Year	≥ 1	Year	( )	Year	< 1	Year	≥ 1	Year	( )	
<b>Age</b>																			
15-19	27.1	49.5	(56.3)	3.2	1.9	4.8	37.8	29.0	54.2	(70.0)	784	527	228	29					
20-24	13.0	32.7	35.0	12.7	6.8	18.4	33.2	19.7	51.1	72.4	1,606	1,012	455	138					
25-29	6.5	11.7	14.2	18.3	11.2	26.4	26.7	17.7	38.1	61.8	1,664	1,123	372	169					
30-34	1.2	0.9	1.7	2.4	20.4	38.2	21.6	13.5	40.0	49.8	1,265	923	228	115					
35-39	0.1	0.9	1.7	21.1	15.7	41.7	22.1	16.6	43.4	46.0	1,135	908	162	66					
40-44	0.3	0.2	1.1	(0.0)	15.6	28.9	15.9	12.5	30.0	(48.6)	1,016	865	103	48					
45-49	0.1	0.0	0.0	9.9	8.5	26.5	10.0	8.7	26.5	*	788	724	56	9					
<b>Education</b>																			
No education	3.9	13.7	11.1	15.8	12.3	23.2	21.7	16.2	37.0	50.7	5,110	3,964	842	304					
Primary	9.9	22.1	25.7	13.6	7.0	25.0	27.7	16.9	47.2	60.9	1,404	957	335	112					
Secondary	10.5	28.2	16.9	16.7	6.5	29.0	32.1	17.1	57.2	71.7	1,522	1,002	376	144					
SLC and above	8.1	33.4	*	8.5	6.1	7.2	24.4	14.2	40.6	*	222	159	51	12					
<b>Number of Living Children</b>																			
0	17.7	47.8	29.8	0.1	0.2	0.0	25.6	17.9	47.8	29.8	860	605	200	55					
1 - 2	9.5	23.3	22.0	14.0	6.8	21.3	28.1	16.2	44.6	67.7	3,364	2,213	839	313					
3 - 4	2.0	4.5	4.6	17.3	11.1	37.5	19.8	13.1	41.9	54.2	2,831	2,238	438	155					
≥ 5	0.5	1.4	0.0	25.4	22.5	39.1	25.9	23.0	40.5	49.0	1,202	1,025	127	50					
<b>Total</b>	<b>9.3</b>	<b>6.0</b>	<b>19.3</b>	<b>15.4</b>	<b>10.4</b>	<b>24.5</b>	<b>24.7</b>	<b>16.4</b>	<b>44.0</b>	<b>58.8</b>	<b>8,257</b>	<b>6,081</b>	<b>1,604</b>	<b>572</b>					

Note: Figures in parentheses are based on 25-49 unweighted cases. An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed. Numbers may not sum to total due to rounding.

Table 5.13 Differentials of unmet need by selected individual characteristics of currently married women, NDHS 2011

	For spacing						For limiting						Total unmet need						
	Living together with husband		Husband living elsewhere		All	Year	Living together with husband		Husband living elsewhere		All	Year	Living together with husband		Husband living elsewhere		All	Year	
	< 1	≥ 1	< 1	≥ 1		< 1	≥ 1	< 1	≥ 1		< 1	≥ 1	< 1	≥ 1	< 1	≥ 1		Year	
<b>Age</b>																			
15-19	37.6	27.3	51.4	(70.4)	4.0	2.7	6.7	(4.5)	41.6	30.0	58.1	(74.9)	791	497	242	53			
20-24	24.4	15.8	33.5	41.7	13.9	6.8	21.1	28.5	38.3	22.6	54.6	70.2	1,761	1,009	522	229			
25-29	8.7	3.8	15.8	18.5	22.4	11.5	37.0	45.7	31.2	15.3	52.8	63.7	1,912	1,182	455	276			
30-34	2.0	1.7	1.4	5.2	24.2	11.6	49.1	58.6	26.3	13.3	50.5	57.8	1,659	1,119	339	201			
35-39	1.0	0.8	2.4	0.3	20.1	10.6	39.8	48.0	21.1	11.3	42.2	48.3	1,461	1,036	238	187			
40-44	0.4	0.4	0.8	0.0	15.5	10.3	35.4	36.9	15.9	10.8	36.2	36.9	1,190	951	129	109			
45-49	0.4	0.0	0.0	(7.1)	13.1	11.4	28.2	(23.5)	13.4	11.4	28.2	(30.5)	832	737	59	36			
<b>Education</b>																			
No education	5.1	3.5	8.8	9.3	17.7	12.4	27.1	38.7	22.8	15.9	35.9	48.0	4,580	3,283	831	466			
Primary	10.7	6.8	16.9	17.8	20.4	8.2	38.1	45.0	31.0	15.0	55.0	63.4	1,844	1,168	428	258			
Secondary	16.8	8.6	32.5	28.7	16.7	6.5	3.3	38.0	33.5	15.1	65.5	66.6	2,609	1,664	616	328			
SLC and above	14.7	7.9	33.6	(36.8)	12.2	6.8	24.5	(36.2)	26.9	14.7	58.1	(73.0)	572	425	110	37			
<b>Number of Living Children</b>																			
0	29.3	18.3	49.5	47.8	1.2	1.2	1.4	0.0	30.5	19.5	50.9	47.8	1,074	690	295	89			
1 - 2	13.1	7.9	20.9	29.0	18.5	7.4	33.8	43.4	31.6	15.2	54.6	67.4	4,441	2,790	1,038	613			
3 - 4	1.6	1.1	3.4	2.2	19.6	11.1	39.6	43.8	21.2	12.2	48.9	46.0	3,091	2,217	544	329			
≥5	0.4	0.1	2.3	0.0	25.3	21.4	44.7	45.2	25.7	21.6	47.1	45.2	999	833	108	58			
<b>Total</b>	<b>9.9</b>	<b>5.7</b>	<b>19.3</b>	<b>18.1</b>	<b>17.6</b>	<b>9.8</b>	<b>31.2</b>	<b>40.0</b>	<b>27.5</b>	<b>15.5</b>	<b>50.1</b>	<b>58.1</b>	<b>9,605</b>	<b>6,530</b>	<b>1,985</b>	<b>1,090</b>			

Note: Figures in parentheses are based on 25-49 unweighted cases. Numbers may not sum to total due to rounding.

## 6 THE BONGAARTS MODEL

As noted earlier, the total fertility rate (TFR) fell between 2006 and 2011, from 3.1 to 2.6 children per woman. Among married women, the reduction in fertility was greatest among women whose husbands were living elsewhere, particularly among those whose husbands were living elsewhere for less than a year (18 percent), compared with women living together with their husbands (8 percent).

Years	TFR among all women	TFR among husband living together	TFR among women with husband living elsewhere	
			< 1 Year	≥ 1 Year
2006	3.1	3.9	4.0	3.0
2011	2.6	3.6	3.3	2.6
Change (%)	-16.1	-7.7	-17.5	-13.3

The analysis in this section examines factors associated with the observed decline in fertility in Nepal between NDHS 2006 and NDHS 2011, applying the proximate determinants model of fertility developed by John Bongaarts (1978). We use the indices derived from the Bongaarts model to show the relative contribution of each of the three measurable proximate determinants of fertility (non-marriage, contraception, and infecundity), as well as the prevailing spousal separation factors in Nepal. The Bongaarts model expresses the impact of each of the proximate determinants in terms of the extent to which it reduces/increases overall fertility. The analysis is expected to provide insight into the causality of changes in fertility in Nepal between 2006 and 2011.

### 6.1 DESCRIPTION OF THE MODEL

In 1978, Bongaarts proposed a framework to examine the changes in fertility based on selected elements known as the proximate or direct determinants of fertility (Bongaarts, 1978). The framework is based on the framework of fertility determinants originally developed by Davis and Blake (1956), with the premise that socioeconomic, cultural, and environmental factors affect fertility indirectly, operating through four proximate determinants: marriage, contraception, induced abortion, and postpartum infecundability. The proximate determinant of fertility framework is one of the most widely used tools in analyzing fertility change, by identifying the factors that accounted for the variation in fertility levels observed across populations.

The multiplicative model to quantify the relationship between these indices and the TFR is described as (Bongaarts, 1978):

$$TFR = TF * C_m \times C_c \times C_i \times C_a$$

Where TFR = total fertility rate, TF = total fecundity,  $C_m$  = index of non-marriage,  $C_c$  = index of contraception,  $C_i$  = index of postpartum infecundability, and,  $C_a$  = index of induced abortion. Due to lack of comparability of abortion data across rounds, and a desire to add an index of spousal separation, we have modified the formula as follows:

$$TFR = TF * C_m \times C_c \times C_i \times C_{sep}$$

### **Total Fertility Rate (TFR)**

The TFR is the average number of children that a woman would have at the end of her reproductive years if she would survive age 15-49 and would bear children at prevailing age specific fertility rate (based on all women of reproductive age irrespective of their marital status).

### **Total Fecundity (TF)**

Total fecundity (TF) is a hypothetical or potential value that the TFR would take if all four of the C indices were exactly 1. TF is the total fertility rate in the absence of the fertility-inhibiting effects of the proximate determinants. Bongaarts estimated the TFs of most populations to fall within the range of 13 to 17 births per woman, with an average of about 15.3 (Bongaarts, 1978). In this study the Bongaarts average TF value is used.

### **Index of Non-Marriage ( $C_m$ )**

$C_m$  describes the reduced exposure to the risk of conception because of non-marriage.  $C_m$  is calculated by taking the ratio of the TFR to the total marital fertility rate (TMFR), that is ( $C_m = \text{TFR}/\text{TMFR}$ ), where TMFR equals to the number of births a women would have at the end of the reproductive years if she were to bear children at the prevailing age specific marital fertility rates and if she were to remain married during the entire reproductive period (based on the fertility of ever-married women age 15-49). The Index of marriage  $C_m$  equals 1 if all women of reproductive age are married and equals 0 in the absence of marriage.

The basic assumption behind this index is that marriage marks the beginning of sexual intercourse, and it represents the effect of periods during which a woman is not sexually active. In Nepal, couples who are in legal and consensual unions are considered as married. Since most births in Nepal are conceived within marriage, marriage marks the beginning of a woman's exposure to the risk of childbearing. The index of marriage measures the effect of non-marriage on reducing fertility from its biological maximum.

### **Index of Contraception ( $C_c$ )**

$C_c$  is the index of contraception, which equals 1 in the absence of any use of contraception and 0 if all fecund women use 100 percent effective contraception. The effects of contraception depend on use effectiveness ( $e$ ) of contraception, which measures the protection from unintended pregnancy of contraception as practiced by individual users. The index is calculated by weighting age-specific, method-specific prevalence rates by the effectiveness of each method.  $C_c$  is derived from the equation developed by Bongaarts: [ $C_c = 1 - 1.08 * u * e$ ], where  $u$  is the overall proportion of married women currently practicing contraception;  $e$  is the weighted average of contraceptive use-effectiveness using the proportions of current contraceptive users of each method as weights; 1.08 is a sterility correction factor. The index measures the proportionate reduction in marital fertility due to contraceptive use within marriage.

### **Index of Postpartum Infecundability ( $C_i$ )**

$C_i$  is the index of postpartum infecundability, referred as postpartum insusceptibility in this paper. This index equals 1 in the absence of breastfeeding and postpartum abstinence and 0 if the duration of infecundability is infinite. This index describes the reduced risk of exposure to conception because of extended breastfeeding. Bongaarts quantified this effect with the formula [ $C_i = 20/18.5 + i$ ], where  $i$  is the mean duration of postpartum insusceptibility.

### **Index of Separation ( $C_{sep}$ )**

One of the primary interests of this paper is to examine the effect of spousal separation (the proportion of married women whose husbands are not living with them) on fertility, as these women may have different exposure to pregnancy compared with women who are living with their husbands. To examine the effect of spousal separation on fertility, this study has calculated the index of exposure, denoted as  $C_{sep}$ , as one of the two metrics of spousal separation defined by Blanc (2004):

It is the ratio of the TMFR to a fertility rate that excludes births and exposure to conception among women who are not currently residing with their spouses. It represents the hypothetical number of children that women would have if all married women lived with their spouses continuously and had children at the same rate as women who were currently living with their spouses. This index most likely overestimates the effect on fertility of spouses' living separately because it assumes continuous coresidence of married couples, an assumption that, even under "normal" circumstances, is unrealistic. ... Nevertheless, the index provides a measure of the potential fertility-reducing effect of married couples' living apart. (p.242)

## **6.2 ESTIMATED FERTILITY RATE FROM THE MODEL**

A predicted total fertility rate can be obtained when the values of TF and all  $C$ 's considered are plugged into the proximate-determinants equation. To examine the strength of the effect of each of the proximate determinants considered in the model, the value of each is calculated, where a value of an index closer to zero indicates a greater effect on reducing fertility from its biological maximum (the total fecundity rate).

### **Residual Factor**

Johnson et al. (2011) argue that, if unmeasured components of the model are dropped (assumed to be 1), they are implicitly consolidated with TFR, making it harder to interpret TFR. In their study (Johnson et al., 2011) they have modified the formula in another way to express the fact that the observed TFR and the calculated  $C$ 's may not be consistent with a fixed TF, as TF is set at an arbitrary but plausible value, 15.3. As the authors suggest, a residual adjustment,  $R$ , can be calculated as follows:

$$R = TFR / (15.3 \times C_m \times C_c \times C_i \times C_{sep})$$

$R$  is labeled a "residual adjustment" because it combines the unmeasured value of  $C_a$  along with other unmeasured components. It can be interpreted as a multiplicative adjustment to  $TF = 15.3$  that would be required to achieve internal consistency of the model.

## Results

Table 6.1 gives the indices of the proximate determinants of fertility from the Bongaarts indices: the index of non-marriage; the index of contraception; the index of postpartum insusceptibility; the index of separation; and the product of the four, along with the residual adjustment R described above as a consolidation of unmeasured proximate determinants. The predicted fertility rate before the residual factor is included to compare with the observed TFR for the three years prior to the survey.

TFR and Indices	2006	2011	Percent change
$C_m^5$	0.808	0.775	-4.1
$C_c$	0.536	0.538	0.4
$C_i$	0.649	0.678	4.5
$C_{sep}$	0.796	0.724	-9.0
$C_m \times C_c \times C_i \times C_{sep}$	0.224	0.205	-8.5
Predicted Fertility Rate	3.4	3.1	-8.8
Observed fertility rate	3.1	2.6	-16.1
Residual Factor (R)	0.914	0.830	

The observed TFR in Nepal declined from 3.1 births per women in 2006 to 2.6 in 2011, a decline of 16percent. The index value of the proximate determinants of fertility corresponding to  $C_m$  (marriage) declined slightly, meaning that later ages at marriage likely contributed to the reduction in fertility from 2006 to 2011. In contrast, the index value corresponding to  $C_i$  (postpartum insusceptibility) suggests a negative influence in the fertility decline observed between the 2006 and 2011 surveys. With respect to the effect of spousal separation, the index value declined substantially between 2006 and 2011, suggesting that spousal separation had a major influence in the observed decline in fertility between 2006 and 2011.

In summary, after adjusting for differences in marriage, contraceptive use, and infecundability between the two survey rounds, the data indicate that the spousal separation factor, as defined by Blanc (2004), played a major role in the observed decline in fertility in Nepal between 2006 and 2011. The marriage index was second in importance. Contraception did not show any effect in the decline in fertility in Nepal between 2006 and 2011. Postpartum insusceptibility had a negative influence in fertility decline; that is, it contributed to an increase in fertility between 2006 and 2011.

The residual factor shown in Table 6.1 is the value that is unexplained due to proximate determinants and other direct factors that are not considered in the model. The predicted fertility is closer to actual fertility in 2006 than in 2011, suggesting the possible influence of other factors not considered in the model, such as abortion or use of traditional contraceptives.

<sup>5</sup>Note:  $C_m$  is computed differently in 2011 than it was in the 2006 Further Analysis report (Karki and Krishna, 2008).

## 7 CONCLUSION AND PROGRAMMATIC IMPLICATIONS

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Among married women, the TFR declined from 3.9 children per woman in 2006 to 3.4 in 2011. Among women whose husbands were co-resident at the time of the survey or had been living elsewhere less than one year, fertility rates were similar to the overall average. However, women with husbands who had been away for at least one year had much lower fertility than women who were living with their husbands at the time of the survey (3.0 in 2006 and 2.6 in 2011).

Nepal's demographic situation makes it difficult to interpret data on contraceptive use, unmet need, and fertility. Thirty-two percent of married women of reproductive age had absent husbands at the time of the 2011 NDHS, and 11 percent had husbands who had been away from home for at least one year. While a small percentage of spousal separation due to labor migration is normal in most developing countries, Nepal has a particularly high rate of cyclical labor-related migration. Generally, when important indicators like CPR, unmet need, and TFR are calculated, the assumption is that a majority of women of reproductive age are sexually active and thus are at risk of pregnancy if they do not use contraception regularly. But in Nepal, where nearly one-third of women of reproductive age are separated from their husbands, many do not use family planning methods on a regular basis because—except in the case of extramarital sex—they are not at immediate risk of pregnancy. Women whose husbands are away still have a need for contraceptives upon their husbands' return, but as Ban and colleagues (2012) have observed, their emphasis might be on using emergency contraception and barrier methods, reflecting that they might be sexually active for short periods of time when their husbands visit at home (Ban et al., 2012).

In Nepal, current estimates of CPR, TFR, and unmet need do not fully reflect the real situation of the country, as the findings of our further analysis of NDHS 2006 and 2011 demonstrate. According to NDHS 2011, the overall CPR is 50 percent for use of any contraceptive method but is substantially higher, at 62 percent, among couples who are living together. Overall, according to NDHS 2011, 27 percent of married women have unmet need for family planning, but our further analysis shows that only 16 percent of couples living together have unmet need. In fact, unmet need declined among women whose husbands were resident at the time of survey. This situation challenges the definition of unmet need, which does not take into account spousal separation.

Our analysis using the Bongaarts model found that spousal separation played a major role in the observed decline in fertility in Nepal between 2006 and 2011, followed by a decreasing proportion of married women. Contraceptive use did not appear to have any major effect in the decline in fertility in Nepal between 2006 and 2011, while postpartum insusceptibility contributed to an increase in fertility. The Bongaarts model did not fit the data as well in 2011 as in 2006, which may point to the influence of other factors not included in this analysis or to the difficulty of measuring the influence of spousal separation on fertility. Nonetheless, these results suggest that between 2006 and 2011 male migration was likely an important factor contributing to the decline in fertility in Nepal, despite stagnation in contraceptive prevalence.

These findings have a number of important implications:

- While discussing, presenting, and estimating the reproductive health situation of Nepal, it is necessary to consider the indicators in two scenarios: first the overall situation, and second the situation disaggregated with respect to spousal separation. Otherwise, the data can be misleading and misinterpreted, causing problems in planning programs and allocating health care resources.
- Given Nepal's current situation, the country's family planning program activities should be tailored to meet the needs of various unique groups: couples who are living together, couples who are separated for temporary periods but will be in union when the males return home, and couples who belong to regions and/or ethnic groups where use of family planning is very low (like Muslims and Terai Dalits).
- It is difficult to estimate the future situation of reproductive health indicators of Nepal. Although the rate of migration has increased over the last few years, one cannot assume that this trend will continue. If the political and economic situations in the places where migrants work became worse, or if the political and economic situation in Nepal improves, then outward male migration from Nepal could be halted or even reversed. This, in turn, would affect the levels of contraceptive use, unmet need, and fertility.
- While women whose spouses are away may eventually need contraception, including the high percentage of women who are not using contraception but whose husbands are living elsewhere results in inflated estimates of unmet need in countries where adult migration is common, as in Nepal and Bangladesh. Therefore it is also necessary to advocate at the national and international levels for an improved metric of CPR and unmet need that reflects high rates of spousal separation.



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