Maternal and Child Health in Nepal: The Effects of Caste, Ethnicity, and Regional Identity

Further Analysis of the 2011 Nepal Demographic and Health Survey

Kathmandu, Nepal
March 2013

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Jhabindra Prasad Pandey[1]

Megha Raj Dhakal, PhD[2]

Sujan Karki[3]

Pradeep Poudel[4]

Meeta Sainju Pradhan[4]

[1] Family Health Division, Ministry of Health and Population

[2] Population, Education, and Health Research Centre

[3] Nepal Family Health Program II

[4] Nepal Health Sector Support Program

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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. 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; Internet: http://www.measuredhs.com.

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FOREWORD

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

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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
Ministry of Health and Population

ABBREVIATION AND ACRONYMS

ANC	Antenatal Care
B/C	Brahman/Chhetri
BMI	Body Mass Index
BNMT	British Nepal Medical Trust
CB-NCP	Community-Based Newborn Care Program
CBS	Central Bureau of Statistics
EHCS	Essential Health Care Services
g/dl	Grams Per Deciliter
GESI	Gender Equality and Social Inclusion
GoN	Government of Nepal
GSEA	Gender and Social Exclusion Assessment
HIP	Health Improvement Program
MDG	Millennium Development Goals
HMIS	Health Management Information System
MMR	Maternal Mortality Ratio
MoHP	Ministry of Health and Population
NDHS	Nepal Demographic and Health Survey
NHSP-II	Nepal Health Sector Program–II
NPC	National Planning Commission
OR	Odds Ratios
ORS	Oral Rehydration Salts
ORT	Oral Rehydration Therapy
PNC	Postnatal Care
RTI	Research Triangle International
SBA	Skilled Birth Attendant
TT	Tetanus Toxoid

1 BACKGROUND AND RATIONALE

Analysis of the Nepal Demographic and Health Survey (NDHS) findings from the perspective of caste, ethnicity, and regional identity (Bennett et al., 2008) was first conducted only after the third DHS round, which took place in 2006. The final reports in each round of the NDHS present extensive analysis from a gender, age, wealth, and geographic perspective but do not disaggregate the data from the perspective of caste, ethnicity, and regional identity. However, studies by Bennett and colleagues (2008), RTI (2008), and the Nepal Family Health Program II and New ERA (2010) have revealed important differences among caste/ethnic groups, exposing gaps in health services utilization and health outcomes that remain despite overall progress toward many of the Millennium Development Goals (MDGs). Such studies provide a valuable opportunity to focus policy attention on specific excluded or underserved groups of people.

Gender equality and social inclusion (GESI) has been a political priority of the Government of Nepal (GoN) since the Tenth Plan (2002-2007) and the Interim Constitution of 2006. It has continued to receive attention in the Three Year Interim Plan (2007-2010) and the Three Year Plan (2010-2013).[1] Also, the government's health policies, programs, and plans to make health services accessible to and utilized by all reflect the goal of integration of gender equality and inclusive development of all caste, ethnic, and regional groups. Concurrently, the Ten Point Health Policy and Program (2006) aims to reduce disparities among different caste/ethnic groups, economic classes, and geographic areas of the country in access to and utilization of essential health care services (EHCS). Therefore, as one of its major components, the Nepal Health Sector Program–II (NHSP-II), covering the period 2010 to 2015, has identified a critical need to address the remaining social and economic disparities in access to and utilization of EHCS (MoHP, 2010). To monitor progress toward this goal, NHSP-II has a specific list of indicators and targets with regard to GESI.[2] A better understanding of how to reduce inequities in the health system and in the provision of services and in outcomes must be based on evidence of these social, economic, and geographic disparities. The need for disaggregated data and analysis has become a top priority so that policies and interventions can address the factors that create or contribute to gaps in health outcomes.

This paper has two principal objectives. The first is to foster a better understanding of the disparities, in terms of caste, ethnicity, and regional identity, in access to and utilization of health services and in health outcomes by disaggregating the 2011 NDHS data for a selection of maternal and child health services and outcomes. Second, it examines the association of the caste, ethnicity, and regional identity of the respondents with use of selected health services and with health outcomes. Thus, the paper aims to help strengthen the evidence base on existing social disparities as a foundation for policy-making and programmatic decisions in the health sector.

[1]Both the Interim Constitution of Nepal 2006 (Article 13 on Fundamental Rights) and the current Three Year Plan (2010-2013) have expressly identified groups of poor and excluded people whose protection, empowerment, rights, and development are a priority to be ensured by additional legal measures where necessary.
[2]Refer to Annex 1 for a list of selected NHSP-II Logical Framework indicators that the NDHS monitors.

2 SOCIAL DISPARITIES IN ACCESS TO AND UTILIZATION OF HEALTH SERVICES

2.1 CASTE, ETHNICITY, AND REGIONAL IDENTITIES IN NEPAL

Since the promulgation of the *Muluki Ain* (National Code) in 1854, the caste system in Nepal has been accepted as the primary organizing principle and the major determinant of social identity. Groups with distinct ethnicities, cultures, social practices, and even religions were subsumed within the caste hierarchy by the politically dominant groups as a strategy for nation-building. Socially, culturally, and linguistically distinct ethnic minorities and indigenous groups were subsumed within a modified five-tiered caste hierarchy based on their degree of similarity with and differences from the cultural practices of the so-called upper caste Nepali-speaking Hindus (Höfer, 1979; Pradhan, 2002). This socio-political ordering did not take into account a number of occupational groups from the southern plains (terai) of the country, effectively leaving them outside the system as "untouchable" groups. These groups—Chamars, Musahars, and Tatma—are among the poorest in the country. Additionally, the 1854 *Muluki Ain* did not take account of many Terai-based caste and Janajati groups.

In 1963 the national Civil Code abolished caste discrimination. Since then there have been numerous political and policy measures to attempt to remove discriminatory practices. Yet the marginalization of groups from economic, social, and political participation and representation in local and central state structures continues to date.

The Gender and Social Exclusion Assessment (GSEA) study, which was conducted in close collaboration with the GoN's National Planning Commission (NPC), and the further analysis of the 2006 NDHS data from the perspective of caste, ethnicity, and regional identity provide details on the historical context of caste/ethnic and regional exclusion in the country (Bennett et al., 2008; World Bank and DFID, 2006). Studies have also documented how continuing caste/ethnic and regional disparities provided a medium for the growth of conflict and the decade-long Maoist insurgency. The resurgence of ethnic and regional identities since the political changes in 1990, and particularly since the end of the insurgency in 2006, has made it even more imperative to have disaggregated data on social inequities as well as on economic disparities within the population.

Cultural diversity and complexity characterize the current social landscape of Nepal. The Census of 2001 recorded 103 different caste/ethnic groups and 125 documented languages (CBS, 2002).[3] The Central Bureau of Statistics (CBS) and GSEA classified these caste/ethnic groups into 7 major categories, which have been further grouped into 11 sub-categories that reflect regional differences (Hill or Terai) (Table 2.1). The 2011 NDHS uses this categorization, and, thus, this paper also will use this classification, since it addresses the intersection

[3]The 2011 Census recorded 125 caste/ethnic groups and 123 documented languages—a rise in the number of caste/ethnic groups but a decrease in the number of documented languages. This study uses the 2001 Census categories of caste and ethnic groups.

between caste/ethnicity and region and provides a useful framework for identifying sub-categories of groups and their relative disadvantaged status.[4]

2.2 INEQUITIES IN HEALTH SERVICES

Trend analysis by Johnson and Bradley (2008) and RTI (2008) reveals evidence of severe and worsening economic inequities in access to and use of important health services, as reflected in such indicators as fertility rates, unmet need for contraception, use of antenatal care (ANC), delivery in a health facility, and services received from a skilled birth attendant (SBA) as well as in vitamin A consumption postpartum. These studies also found economic disparities in access to child health services, although over time there was an overall improvement in utilization of some child health services across all wealth quintiles.

Table 2.1 Caste and Ethnic Groups with Regional Divisions, Nepal (from the 2001 Census)

	Main Caste/Ethnic Groups (7)	Caste/Ethnic Groups with Regional Divisions (11) and Social Groups (103), 2001 Census	
Caste Groups	*1. Brahman/Chhetri*	1.1	**Hill Brahman** Hill Brahman
		1.2	**Hill Chhetri** Chhetri, Thakuri, Sanyasi
		1.3	**Terai/Madhesi Brahman/Chhetri** Madhesi Brahman, Nurang, Rajput, Kayastha
	2. Terai/Madhesi Other	2	**Terai/Madhesi Other** Kewat, Mallah, Lohar, Nuniya, Kahar, Lodha, Rajbhar, Bing, Mali Kamar, Dhuniya, Yadav, Teli, Koiri, Kurmi, Sonar, Baniya, Kalwar, Thakur/Hazam, Kanu, Sudhi, Kumhar, Haluwai, Badhai, Barai, Bhediyar/Gaderi
	3. Dalits	3.1	**Hill Dalit** Kami, Damai/Dholi, Sarki, Badi, Gaine, Unidentified Dalits
		3.2	**Terai/Madhesi Dalit** Chamar/Harijan, Musahar, Dushad/Paswan, Tatma, Khatwe, Dhobi, Baantar, Chidimar, Dom, Halkhor
Adivasi/Janajatis	*4. Newar*	4	**Newar** Newar
	5. Janajati	5.1	**Hill/Mountain Janajati** Tamang, Kumal, Sunuwar, Majhi, Danuwar, Thami/Thangmi, Darai, Bhote, Baramu/Bramhu, Pahari, Kusunda, Raji, Raute, Chepang/ Praja, Hayu, Magar, Chyantal, Rai, Sherpa, Bhujel/Gharti, Yakha, Thakali, Limbu, Lepcha, Bhote, Byansi, Jirel, Hyalmo, Walung, Gurung, Dura
		5.2.	**Terai Janajati** Tharu, Jhangad, Dhanuk, Rajbanshi, Gangai, Santhal/Satar, Dhimal, Tajpuriya, Meche, Koche, Kisan, Munda, Kusbadiya/ Patharkata, Unidentified Adibasi/Janajati
Other	*6. Muslim*	6	**Muslim** Madhesi Muslim, Churoute (Hill Muslim)
	7. Other	7	**Other** Marwari, Bangali, Jain, Punjabi/Sikh, Unidentified Others

Source: Bennett, L., Dahal, D.R., and Govindasamy, P. (2008).

[4] The Health Management Information System (HMIS) of the GoN uses a classification system with six categories, namely, (i) Dalits, (ii) Disadvantaged Janajatis, (iii) Disadvantaged Non-Dalit Terai Caste Groups, (iv) Religious Minorities, (v) Relatively Advantaged Janajatis, and (vi) Upper Caste Groups. There is a continued need for a consistent framework for such classification so that data collection and analysis at the national and local levels in all sectors will be comparable.

There are few national studies in Nepal, however, that have documented health disparities from the perspective of caste, ethnicity, and regional identity. The GSEA conducted one of the first national studies to use selected indicators from the 2001 NDHS. The study documented significant disparities in access to health care among women of different caste and ethnic groups (World Bank and DFID, 2006). Access to family planning services was lowest among the Dalit and Terai/Madhesi Other, particularly in rural areas, and highest among the Brahman/Chhetri (B/C), Hill Janajatis, and Newars. Similar differences were also noted in access to ANC and the use of SBAs during deliveries; rural Janajati and Dalit women had the least access. There were also social disparities in the nutritional status of mothers and children.

At a regional level, in 2003 the Health Improvement Program (HIP) carried out a detailed assessment of health utilization and health services provisions in the eastern part of the country. This study found that health knowledge, practice, and service coverage were poor in the communities studied and that there were significant disparities according to class, caste, ethnicity, and literacy levels (BNMT, 2003).[5] The respondents pointed out that caste discrimination and an inadequate supply of medicines were key reasons for not going to health institutions. Thus, although limited, evidence has supported policy initiatives to improve equity of access to health services, particularly among the disadvantaged caste and ethnic groups. These initiatives have reduced the differentials in levels and equity of some of the health indicators.

2.2.1 Social Disparities in Maternal Health

Studies conducted between 1996 and 2006 found that health outcomes had improved and also that the unequal access to and utilization of some services had decreased significantly (RTI, 2008). However, further analysis of the 2006 NDHS from a perspective of caste, ethnicity, and regional identity found that Dalits, Muslims, and Terai/Madhesi Other groups, which formed 28 percent of the country's population, had consistently low levels of most indicators covered by the study (Bennett et al., 2008). In terms of maternal health, there was a consistent pattern of disparities among the different groups in the use of ANC, delivery by an SBA, and delivery in a health facility. Less than 35 percent of Muslims, Terai Janajati, and Hill Janajati women received ANC from an SBA; an even lesser percentage delivered in a health facility supported by an SBA. The Terai/Madhesi Dalits had some of the lowest percentages delivering in a health facility (5 percent) or having support from a SBA (5 percent) and the highest percentage of respondents (66 percent) who cited the lack of money to pay for treatment as a problem in accessing health care. Terai/Madhesi Dalit women and Muslim women had the poorest nutritional status; in 2006 they were among the groups with the highest proportion of women who were considered moderately or severely thin.

The continued inequities in access to and use of maternal health services were reflected in the differences in maternal mortality rates (MMR) for different groups. The study by Suvedi and colleagues (2009) found a much higher maternal mortality ratio (MMR) among Muslims (318 maternal deaths per 100,000 live births),

[5]The HIP was implemented by the British Nepal Medical Trust (BNMT) and partner organizations. It involved more than 8,000 households in 203 villages in 16 districts of the Eastern Development Region.The program sought to improve the health services available to communities, in particular to the most marginalized groups: women, excluded castes, ethnic minorities, and the poor. Therefore, in order to better understand issues of access and equity, about 28 percent of the households interviewed for the HIP were Dalit.

Terai/Madhesi Other (307), and Dalits (273) compared with the Brahman/Chhetri (182) and Newar (108) at the other end of the spectrum.

The 2010 Mid-Term Survey of the NFHP-II revealed similar patterns of disparities in access to and utilization of maternal health services (NFHP and New ERA, 2010). For a number of services, the Hill Dalit and Hill Janajati fared the worst in the survey, which covered 40 districts. The unmet need for family planning was highest among the Hill Dalit, at 35 percent, followed by the Hill Janajati, at 34 percent, compared with a low of 14 percent for the Terai Janajati. Hill Dalit women also had the lowest percentage who had received any ANC from an SBA (34 percent), compared with Hill Brahman women (59 percent) at the other end of the scale. Hill Dalit women also had the lowest percent of deliveries at a health facility (18 percent) and were among those with the highest percentage who had made no preparations for delivery.

2.2.2 Social Disparities in Child Health

Disparities on the basis of caste, ethnicity, and regional identity are also evident in child health outcomes. In 2006 neonatal mortality rates and infant mortality rates were highest for the Muslims and Dalits, and the latter also had the highest under-five mortality rates (Bennett et al., 2008). Differences in neonatal mortality rates between Brahman/Chhetri and Dalits and between Newars and Janajatis had also increased between 1996 and 2006 (RTI, 2008). Although the overall child immunization coverage rate has increased in the country, Dalits and Muslims were the two groups that were substantially below the national average (83 percent) of those having complete immunization. Additionally, Dalit and Muslim children (like women from the same groups) suffered the most malnutrition, with the highest proportion of children who were stunted (below normal height-for-age) in 2006.

Still, there have also been some encouraging changes in terms of gender and caste inequities in relation to child health outcomes. Multivariate analysis conducted by Johnson and Bradley (2008) to examine child nutrition (moderate or severe stunting among under 3-year-olds) showed that in 2001 and 2006 girls were no longer significantly more likely to be stunted than boys, as they had been in 1996. Also, Dalit children, who were at a significant nutritional disadvantage in 1996 and 2001 compared with other children, were no longer so in 2006.

Thus, social exclusion and discrimination based on caste/ethnic and regional identities and their detrimental effect on social, economic, and political conditions and opportunities are now increasingly being recognized. There is a growing need for systematic collection and analysis of data disaggregated along these lines to support appropriate policy and program formulation and adaptation. This study attempts to provide evidence to contribute to this effort.

3 DATA AND METHODS

This paper uses data from the 2011 NDHS, which categorized the caste and ethnicity of all respondents into the 11 groups listed in Table 2.1. This categorization reflects the *regional identity* of the respondent and not necessarily their region of origin or of current residence. As in the study conducted by Bennett and colleagues (2008) using 2006 NDHS data, such categorization reflects the welfare levels of people of Terai origin and Hill/Mountain origin. Therefore, many Hill/Mountain groups who currently live in the Terai region are counted in the numbers for the Hill/Mountain groups and *not* in the Terai groups, thus permitting comparison of various indicators on the basis of regional origin.

The differentials based on caste, ethnicity, and regional identity are presented in two ways in this paper. The first way is in six aggregate categories, of Brahman/Chhetri, Newar, Janajati (excluding Newars), Dalit, Muslim, and Terai/Madhesi Other, to facilitate drawing an overall picture and also to take account of the smaller numbers in some of the sub-categories. The second way is in the 11 different categories, as mentioned above. (The data for the seventh aggregate category "Other" has been suppressed in most of the figures due to the small numbers in this group.)

Throughout this study data in the tables and charts reflect weighted numbers. However, when the unweighted number of cases for a particular group is less than 25, an asterisk appears in that row or column, and the data are not shown. When the number of cases is between 25 and 49, the data appear in parentheses to remind the reader about possible anomalies due to small sample size.

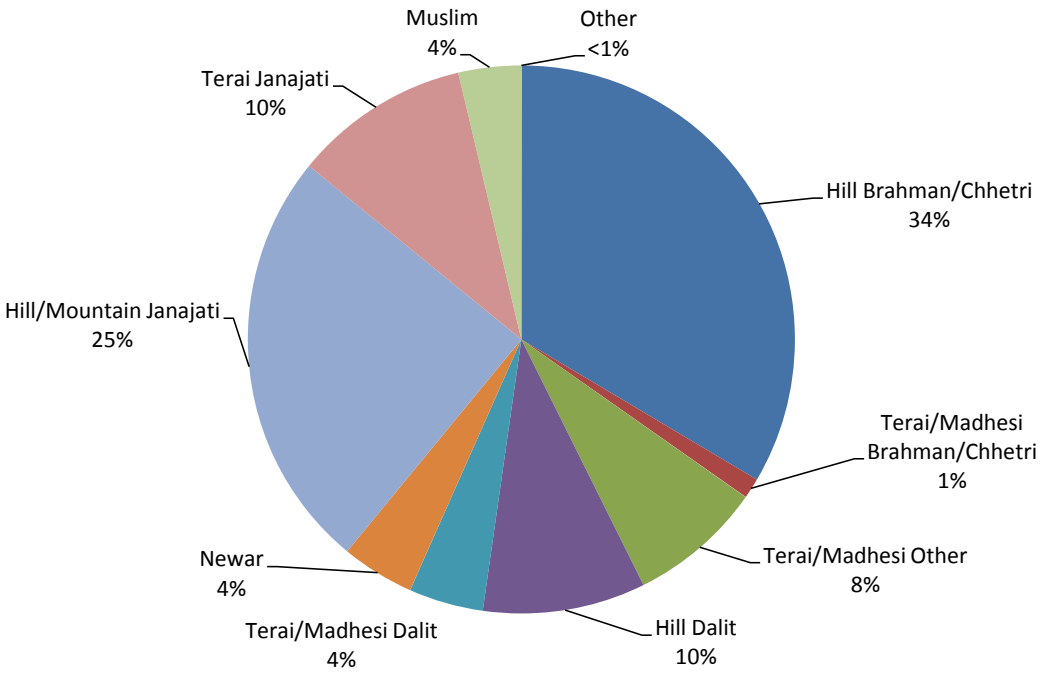
Logistic regression procedures are used to estimate multivariate models that examine the association of caste, ethnicity, and regional identity with use of selected maternal and child health services and with health outcomes. To examine the social determinants, we use only the six aggregate categories (Dalit, Brahman/Chhetri, Terai/Madhesi Other, Newar, Janajati, and Muslim). The analysis starts with unadjusted models of caste, ethnicity, and regional identity. In the final model a number of additional controls are introduced to examine the *independent* effect of caste, ethnicity, and regional identity on the outcomes of interest. The results are presented as odds ratios, which can be interpreted as the factor by which a change of one unit in the independent variable will increase or decrease the odds of health service utilization or selected health outcomes for each caste/ethnic group compared with the reference category of the Dalit group.

4 DIFFERENTIALS IN MATERNAL AND CHILD HEALTH

4.1 CASTE, ETHNICITY, AND REGIONAL DIFFERENTIALS IN BACKGROUND CHARACTERISTICS

To address the first objective of this paper, this section presents the disparities in access to and utilization of selected health services and in health outcomes in terms of caste, ethnicity, and regional identity. We begin by examining the distribution of women by selected background characteristics, maternal and child health services utilization, and outcomes (Table 4.1).[6] Figure 4.1 shows the distribution of the 2011 NDHS sample by caste, ethnicity, and regional identity.

Figure 4.1 Distribution of Women by Caste, Ethnicity and Regional Identity, Nepal DHS 2011



[6]Due to this study's focus on maternal and child health services and outcomes, it does not address differences between men and women. Data for men only appear in Annex 2, disaggregated by caste, ethnicity, and regional identity for selected background characteristics, education, and employment indicators.

Table 4.1 Background Characteristics: Women

Percent distribution of women age 15-49 by selected background characteristics, according to caste, ethnicity, and regional identity, Nepal 2011

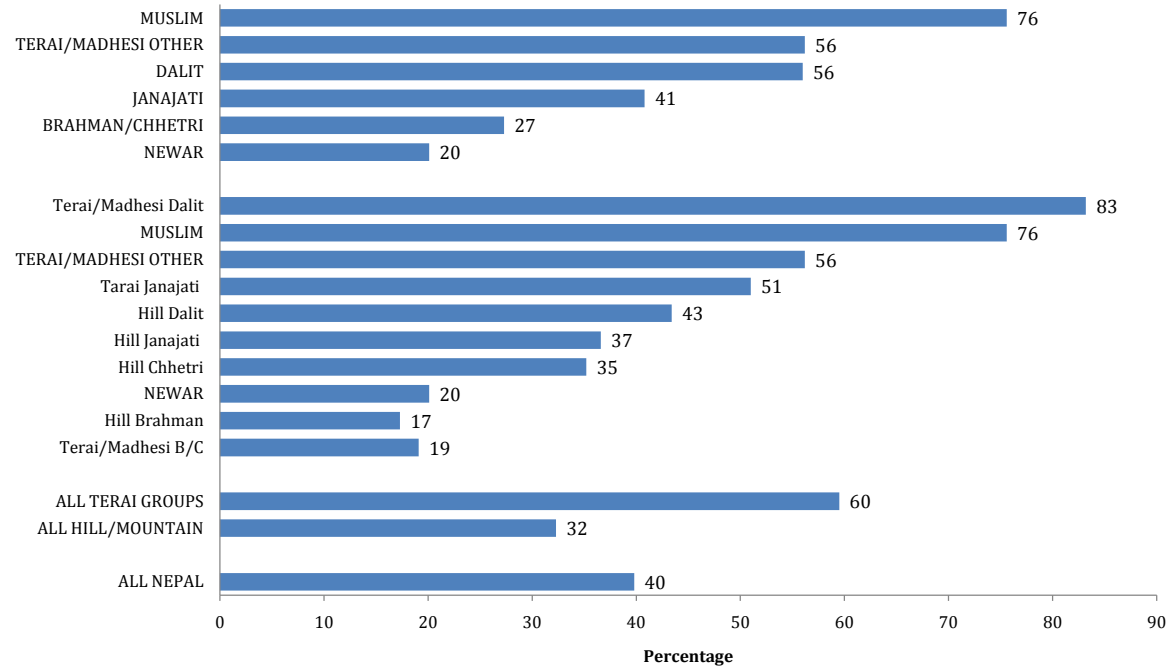
	Educational Attainment				Marital Status			Employment					Residence	
Caste, Ethnicity, and Regional Identity	No education	Primary	Secondary	Higher	Never married	Married	Divorced/ separated/ widowed	Not paid	Cash Only	Cash and in-kind	In-kind only	Not working	Urban	Rural
BRAHMAN/CHHETRI	27.3	15.1	43.8	13.9	21.4	75.3	3.4	52.5	17.6	1.8	3.5	24.7	16.4	83.6
Hill Brahman	17.3	13.6	47.6	21.5	22.4	74.5	3.1	45.9	22.0	2.2	3.3	26.7	18.6	81.4
Hill Chhetri	35.2	16.2	40.6	8.1	20.1	76.4	3.4	60.5	14.3	1.5	3.7	20.0	13.4	86.6
Terai/Madhesi Brahman/Chhetri	19.1	14.0	49.7	17.2	28.7	66.2	5.1	5.1	18.5	0.6	1.9	73.9	37.8	62.2
TERAI/MADHESI OTHER	56.2	16.6	24.3	2.9	15.2	83.0	1.9	27.0	9.8	5.9	8.8	48.6	16.2	83.8
DALIT	56.0	22.4	20.5	1.2	16.1	80.8	3.0	38.7	17.1	12.3	12.5	19.3	7.8	92.2
Hill Dalit	43.4	27.3	27.7	1.6	18.2	78.2	3.6	52.5	20.5	5.5	6.7	14.8	9.1	90.9
Terai/Madhesi Dalit	83.2	11.6	5.0	0.2	11.6	86.6	1.8	9.0	9.7	27.1	25.1	29.2	5.0	95
NEWAR	20.1	11.8	46.6	21.4	26.4	70.2	3.3	25.5	38.6	3.1	3.5	29.2	43.1	56.9
JANAJATI	40.8	19.1	35.6	4.4	24.5	73.1	2.4	53.2	19.3	4.8	5.5	17.2	11.2	88.8
Hill Janajati	36.6	20.0	37.9	5.5	24.3	73.0	2.8	56.6	18.9	3.6	3.1	17.8	11.5	88.5
Terai Janajati	51.0	16.9	30.3	1.8	24.9	73.5	1.6	45.0	20.3	7.5	11.3	15.8	10.4	89.6
MUSLIM	75.6	13.5	9.2	1.7	19.7	78.2	2.1	16.2	14.7	3.6	8.3	57.1	10.7	89.3
OTHER	12.5	20.8	50.0	16.7	16.0	84.0	0	16.0	20.0	0	0	64.0	56.0	44.0
ALL HILL/MOUNTAIN	32.3	18.2	39.7	9.8	22.1	74.7	3.2	53.1	19.7	3.0	3.8	20.4	15.0	85.0
ALL TERAI/MADHESI	59.5	15.4	22.6	2.5	19.5	78.6	1.9	28.5	14.8	9.4	11.9	35.4	12.4	87.6
ALL NEPAL	39.8	17.4	35.0	7.8	21.4	75.8	2.8	46.2	18.3	4.7	6.0	24.7	14.4	85.6
TOTAL WOMEN	5,045	2,210	4,432	987	2,709	9,608	357	5,860	2,322	602	765	3,125	1,820	10,854

4.1.1 Social Differentials in Education

Despite slight improvements in recent years in the educational attainment of women, the 2011 NDHS shows that pockets of illiteracy remain, as can been seen in Figure 4.2. Also, the gender gap in educational attainment persists in almost all social groups and continues to be very wide in many of the groups (refer to Annex 2b).

In 2011, 40 percent of all women nationwide had received no education. The highest percentages of women with no education were in the Terai/Madhesi Dalit group and the Muslim community (83 and 76 percent, respectively).

Figure 4.2 Percentage of Women (age 15-49) without any Education by Caste, Ethnicity and Regional Identity, Nepal DHS 2011



In general, women in the Terai region are more likely to have no education than women in the Hill and Mountain region. This regional difference holds true even within the same caste/ethnic group. For example, among the Dalit, historically a socially marginalized group, the percent of Terai/Madhesi Dalit women without any education, at 83 percent, is almost twice that of Hill Dalit women, at 43 percent.[7]

In terms of educational attainment of more than 10 years, the overall figures continue to be discouragingly low, with the national average for women at less than 8 percent (Table 4.1). Only among the Hill Brahmans, the Terai/Madhesi Brahman/Chhetri, and the Newar do a markedly higher percentage of women have more than 10 years of education. In the other social groups, women continue to suffer from low rates of higher education. This fact has important implications for their participation in government and other professional services and, indeed, for increased representation of all social groups that have been historically marginalized in Nepal.

[7] Among men the difference between the two groups is more than threefold—57 and 17 percent, respectively.

4.1.2 Social Differentials in Employment

Studies worldwide have shown that women who have access to financial resources are more likely to obtain health services for themselves and for their children. Thus, being employed and, particularly, having a cash income are important contributors to improvement in maternal and child health. In the 2011 NDHS 25 percent of women reported that they had not been employed in the 12 months preceding the survey, and 46 percent said they were working for no pay. Only 23 percent of all women reported that at least some of their earnings were paid in cash (Table 4.1).[8] With respect to cash income, the gender gap is more prominent than caste/ethnic differentials (refer to Annex 2c). Newar women have the highest percentage earning cash only (39 percent), followed by Hill Brahman, Terai Janajati, and Hill Dalit women, among whom 20 to 22 percent have earnings in cash only. In contrast, Terai/Madhesi Other and Terai/Madhesi Dalit women have the lowest percentage earning cash only, both at less than 10 percent, compared with the national average of 18 percent.

4.1.3 Wealth Differentials among Social Groups

Economic differentials among women, measured by the wealth index, show persistent patterns of inequality among different caste, ethnicity, and regional groups. The wealth index is constructed from the household asset data via a principal components analysis, as presented in the main 2011 NDHS report. It groups households into quintiles and serves as an indicator of level of wealth that is consistent with expenditure and income measures (Rutstein, 1999). The groups with the largest percentages in the highest wealth quintile are Terai/Madhesi Brahman/Chhetri and Newar women, at 59 and 61 percent, respectively, and less than 2 percent in the lowest quintile (Table 4.2). Consistent with the findings of Bennett and colleagues (2008), the economic status of women from the Hill Chhetri group shows a more even distribution across all wealth quintiles.

Table 4.2 Wealth Differentials

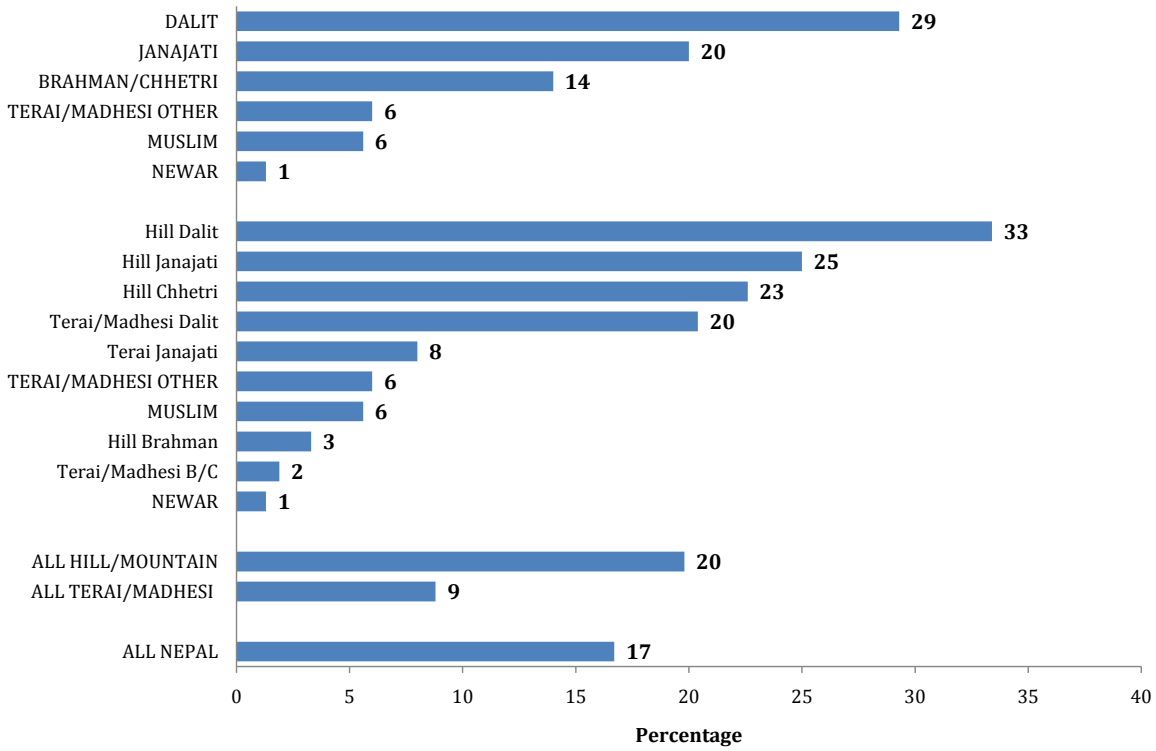
Percent distribution of women in wealth quintiles according to caste, ethnicity, and regional identity, Nepal DHS 2011

Caste, Ethnicity, and Regional Identity	Wealth Quintile					
	Lowest	Second	Middle	Fourth	Highest	Low/high ratio
BRAHMAN/CHHETRI	14.0	14.1	17.4	23.1	31.5	0.44
Hill Brahman	3.3	11.2	17.5	27.3	40.8	0.08
Hill Chhetri	22.6	16.9	17.9	19.7	22.8	0.99
Terai/Madhesi Brahman/Chhetri	1.9	3.9	7.7	27.7	58.7	0.03
TERAI/MADHESI OTHER	6.0	19.3	28.3	23.6	22.9	0.26
DALIT	29.3	26.3	22.6	15.2	6.5	4.51
Hill Dalit	33.4	22.8	20.0	14.8	9.0	3.71
Terai/Madhesi Dalit	20.4	34.2	28.3	15.9	1.3	15.69
NEWAR	1.3	5.7	8.5	23.4	61.1	0.02
JANAJATI	20.0	21.3	21.1	21.4	16.2	1.23
Hill Janajati	25.0	21.2	15.3	18.8	19.7	1.27
Terai Janajati	8.0	21.3	35.1	27.8	7.8	1.03
MUSLIM	5.6	28	34.0	23.5	9.0	0.62
OTHER	0.0	4.0	12.0	24.0	60.0	0.00
ALL HILL/MOUNTAIN	19.8	17.4	16.7	20.5	25.7	0.77
ALL TERAI/MADHESI	8.8	22.9	30.7	24.1	13.5	0.65
ALL NEPAL	16.7	18.9	20.5	21.5	22.4	0.75
TOTAL NUMBER	2,120	2,393	2,600	2,722	2,839	12,674

[8] 72.3percent of men reported earnings in either cash or in-kind or both (refer to Annex 2c).

The groups with the largest proportion of women in the lowest wealth quintile are the Hill Dalit and Hill Janajati, at 33 and 25 percent, respectively (Figure 4.3). In terms of the association between caste, ethnicity, and regional identity, on one hand, and wealth, on the other, the most critical finding is that so many of the Dalits are poor. Hill Dalits were more than three times more likely to fall into the poorest category than into the wealthiest, as expressed by the low/high ratio shown in Table 4.2. For the Terai/Madhesi Dalit, this ratio is extremely high; these women are more than 15 times more likely to fall into the poorest category than into the wealthiest.

Figure 4.3 Percentage Distribution of Women Age 15-49 in the Lowest Wealth Quintile, by Caste, Ethnicity, and Regional Identity, Nepal DHS 2011



4.2 MET AND UNMET NEED FOR FAMILY PLANNING

The definition of unmet need for family planning has changed over time and has been applied inconsistently across DHS surveys (Bradley et al., 2012). This study follows the recently revised definition of unmet need for family planning as the percentage of women who are not currently using a method of contraception and who want to stop or delay childbearing. Table 4.3 shows met and unmet need for family planning by caste, ethnicity, and regional identity. Of over 9,600 currently married women age 15-49, almost half have a need for family planning that is met, and about 28 percent have an unmet need for family planning.

While awareness of family planning is almost universal among Nepali women and men, there is still substantial variation in the use of family planning methods and in unmet need among different caste/ethnic groups. As Table 4.3 shows, the met need for family planning is highest among Newar women (63 percent) and Terai Janajati women (64 percent), while unmet need in these groups is 20 percent and 16 percent, respectively.

Conversely, the highest unmet need is found among Hill Dalit (35 percent), Hill Janajati (34 percent), and Muslim women (39 percent). At 25 percent, met need for family planning is markedly lower among Muslim women than among other groups.

Table 4.3 Met and Unmet Need for Family Planning among Currently Married Women

Percentage of currently married women age 15-49 with met need and with unmet need for family planning, according to caste, ethnicity, and regional identity, Nepal DHS 2011

Caste, Ethnicity, and Regional Identity	Met need (current user)	Unmet need	Number of married women
BRAHMAN/CHHETRI	52.9	26.7	3,309
Hill Brahman	57.9	24.4	1,345
Hill Chhetri	48.7	28.7	1,861
Terai/Madhesi Brahman/Chhetri	57.9	24.4	1,345
TERAI/MADHESI OTHER	49.0	19.6	832
DALIT	43.2	31.3	1,433
Hill Dalit	43.8	35.2	948
Terai/Madhesi Dalit	42.1	23.7	484
NEWAR	63.4	20.3	380
JANAJATI	50.5	28.4	3,266
Hill Janajati	44.7	33.6	2,301
Terai Janajati	64.1	16.1	964
MUSLIM	25.4	39.3	366
OTHER	*	*	21
ALL HILL/MOUNTAIN	49.3	30.0	6,837
ALL TERAI/MADHESI GROUPS	50.5	21.7	2,750
ALL NEPAL	49.7	27.5	9,608

Note: An asterisk indicates that a figure is based on fewer than 25 unweighted cases and so has been suppressed.

4.3 UTILIZATION OF MATERNAL HEALTH SERVICES

4.3.1 Antenatal Care

The maternal mortality ratio (MMR) in Nepal decreased substantially between 1996 and 2006, from 539 to 281 deaths per 100,000 live births (MoHP et al., 2012). Improvements in maternal health services have been one of the key reasons that the country's MMR has fallen dramatically. Antenatal care is considered one of the most important components of maternal health care; the aim of this care is to detect, manage, and refer potential complications during pregnancy. A 2003 review by Carroli and colleagues (as cited by Reynolds et al., 2006), however, found that ANC care does not necessarily reduce rates of maternal mortality. This study examines differentials in utilization of ANC, defined as at least four visits to a health service facility during pregnancy, and the receipt of iron tablets and tetanus injections (Table 4.4).

As with most other health service utilization, the Hill Brahman and Newar women have the highest levels of use of all essential antenatal services. In contrast, Dalit and Janajati women have relatively low levels of utilization of all services. The utilization of these services among Muslim women varies; while only 35 percent made at least four ANC visits, 87 percent received tetanus injections that protected their babies against neonatal tetanus.

Inequalities among the different social groups reflect not only historical socio-cultural hierarchies but also the different regions. For example, the difference in levels of ANC visits between Brahman and Chhetri women is quite large (81 percent versus 55 percent), signaling the problem of putting this group together into a Brahman/Chhetri category, as has been customary. Similarly, although the differences between the Hill and Terai Janajatis are not large, the Terai/Madhesi Dalit are far behind the Hill Dalits in ANC care and receipt of iron tablets, revealing high intra-group inequalities that need to be seriously considered.

An encouraging finding of the Nepal 2011 DHS is that across all ethnic/caste groups more women took at least 180 iron supplementation tablets than smaller numbers of tablets during pregnancy for their most recent births.

Table 4.4 Antenatal Care

Among women age 15-49 with a live birth in the five years preceding the survey, the percentage who had at least four visits for antenatal care (ANC), took iron supplementation tablets, and received two or more tetanus toxoid (TT) injections during the pregnancy for the most recent live birth, according to caste, ethnicity, and regional identity, Nepal DHS 2011

Caste, Ethnicity, and Regional Identity	At least four ANC visits	Took 90-179 iron tablets	Took 180+ iron tablets	Received two or more TT injections during last pregnancy (TT2)	Last birth was protected against neonatal tetanus (TT2+)[1]	Number of mothers
BRAHMAN/CHHETRI	63.5	17.8	51.2	76.8	86.7	1,283
Hill Brahman	80.5	18.6	62.3	85.1	95.1	456
Hill Chhetri	54.5	17.5	44.5	71.9	81.5	794
Terai/Madhesi Brahman/Chhetri	(48.6)	(17.1)	(54.3)	(74.3)	(91.4)	33
TERAI/MADHESI OTHER	35.8	19.9	24.0	78.5	89.3	414
DALIT	39.9	15.4	28.4	65.2	80.5	683
Hill Dalit	48.7	17.0	34.8	62.7	75.1	448
Terai/Madhesi Dalit	23.4	12.3	16.6	69.8	91.0	235
NEWAR	82.7	17.2	56.3	78.1	90.7	127
JANAJATI	46.4	16.3	35.3	61.1	73.0	1,396
Hill Janajati	44.5	15.5	32.2	56.8	66.7	1,000
Terai Janajati	51.3	17.9	43.2	72.2	89.0	396
MUSLIM	34.7	24.3	29.4	73.6	86.9	236
OTHER	*	*	*	*	*	10
ALL HILL/MOUNTAIN GROUPS	55.5	16.9	42.5	67.5	77.8	2,825
ALL TERAI/MADHESI GROUPS	38.2	18.6	30.3	74.2	89.3	1,314
ALL NEPAL	**50.1**	**17.5**	**38.4**	**69.7**	**81.5**	**4,148**

[1] Includes mothers with two TT injections during the pregnancy of their last birth, or two or more injections (the last within three years of the last live birth), or three or more injections (the last within five years of the last birth), or four or more injections (the last within 10 years of the last live birth), or five or more injections at any time prior to the last birth.
Note: Figures in parenthesis are based on 25-49 unweighted cases. An asterisk indicates that a figure is based on fewer than 25 unweighted cases and so has been suppressed.

4.3.2 Delivery Care

Delivery care plays a significant role in the welfare of both mothers and babies. Specifically, it is important that babies are delivered by skilled providers with adequate medical supervision, proper medical attention, and hygienic conditions during delivery, whether in hospital or at home (Graham et al., 2001). Increasing the percentage of births delivered in health facilities or in the presence of an SBA reduces deaths from complications of pregnancy. Nationally, the percentage of women who delivered with assistance from a SBA is low, at 36 percent in 2011 (MoHP et al., 2012). As with ANC service utilization, delivery care levels are marked by inequalities among groups by caste, ethnicity, and regional identity (Table 4.5).

Although, increasingly, women are delivering in health facilities, a majority of Nepali women continue to deliver their babies at home. Once again, the more privileged Newar and Hill Brahman women have the highest percentages of delivery in a health facility and supported by an SBA, while Terai/Madhesi Dalit have the lowest levels for both services. Delivery by cesarean section, one indicator of access to safe delivery techniques if complications arise during delivery, also is highest for Newar and Hill Brahman women.

Recognizing that institutional delivery care is likely to be costly for poor women; in 2005 the GoN began offering cash incentives for delivery in a health facility. The *Aama* Program, as it is known, comprises free delivery services and cash incentives to cover travel costs for all women who deliver at a participating health institution. This includes normal delivery, management of complications, and cesarean section. While the Hill Dalit, Hill and Terai Janajati, and Hill Chhetri women are among those with the lowest rates of institutional delivery, in these groups the highest percentages of women who did deliver at facilities received the cash incentives for transportation to a health facility.

Table 4.5 Delivery Care and Transportation Incentives for Institutional Delivery

Percentage of all live births in the five years preceding the survey that were delivered in a health facility; percentage of births assisted by a skilled birth attendant (SBA); percentage delivered by caesarean section; and, among women with a live birth in the two years preceding the survey delivered in a health facility, the percentage who received a cash incentive for transportation, according to caste, ethnicity, and regional identity, Nepal DHS 2011

Caste, Ethnicity, and Regional Identity	Percent delivered in a health facility	Percent delivered by SBA	Percent delivered by C-section	Number of mothers	Percent receiving incentives	Number of mothers
BRAHMAN/CHHETRI	48.5	45.5	7.3	1,618	68.6	318
Hill Brahman	62.2	64.8	12.2	532	62.8	145
Hill Chhetri	34.4	35.2	4.9	1,040	75.0	164
Terai/Madhesi Brahman/Chhetri	(57.4)	(59.6)	(12.8)	46	*	9
TERAI/MADHESI OTHER	37.9	39.4	5.9	559	71.9	96
DALIT	26.4	26.8	2.1	958	84.7	131
Hill Dalit	29.2	29.7	2.2	595	91.8	85
Terai/Madhesi Dalit	21.8	22.3	1.9	363	(78.6)	46
NEWAR	68.1	71.8	7.8	141	(70.0)	40
JANAJATI	29.0	28.8	3.0	1,750	68.8	231
Hill Janajati	28.6	28.9	3.3	1,257	66.9	163
Terai Janajati	29.6	28.4	2.4	493	73.1	67
MUSLIM	32.4	33.0	3.1	352	67.7	65
OTHER	*	*	*	13	*	6
ALL HILL/MOUNTAIN GROUPS	37.0	37.9	5.1	3,566	71.6	598
ALL TERAI/MADHESI GROUPS	31.7	32.0	3.6	1,812	70.4	284
ALL NEPAL	**35.3**	**36.0**	**4.6**	**5,391**	**71.1**	**888**

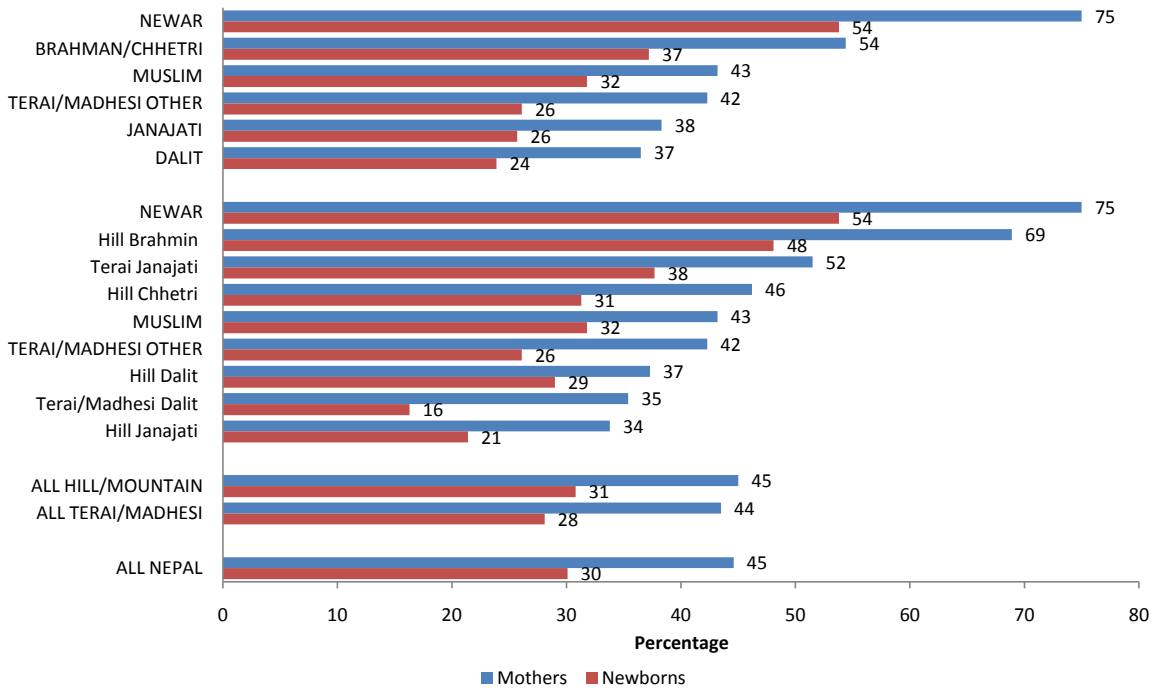
Note: Figures in parenthesis are based on 25-49 unweighted cases. An asterisk indicates that a figure is based on fewer than 25 unweighted cases and so has been suppressed.

4.3.3 Postnatal Check-Up for Mothers and Children

For both the mother and her newborn, the highest risk of death occurs at the time of childbirth and in the period immediately after delivery. More than two-thirds of newborn deaths occur within seven days after birth and, of these, most deaths occur within two days of birth (Singh et al., 2012). Maternal death rates are also most frequent in this period. Thus, ensuring appropriate postnatal care (PNC) is crucial. The GoN recommends PNC check-ups for mothers and neonates to identify, manage, and prevent complications that may occur within this

critical period. The 2011 NDHS shows that in Nepal, for women's last births occurring in the period two years preceding the survey, 45 percent of women and 30 percent of neonates received a first PNC check-up within two days of delivery (Figure 4.4).

Figure 4.4 Postnatal Check-up for Mothers and Newborns within Two Days of Birth, by Caste, Ethnicity, and Regional Identity, Nepal DHS 2011



Note: Figures for Terai/Madhesi Brahman/Chhetri and Other have been suppressed due to small numbers.

Figure 4.4 also shows that the differentials in maternal and neonatal PNC service utilization (within two days of birth) follow trends by caste, ethnicity, and regional identity like those for ANC and delivery service utilization. The mothers and newborns from Hill and Terai/Madhesi Dalit and Hill Janajati groups have the lowest rates. Newar and Hill Brahman women have the highest rates. A critical finding that cuts across all groups is that newborns are less likely to receive PNC services than their mothers. Further investigation is needed to explain such a big gap. The answers are likely to affect how neonatal and infant mortality is addressed.

4.3.4 Knowledge about Safe Abortion Service Sites and Experiences of Post-Abortion Complications

The patriarchal system and continuing low literacy rates, especially among women, combine to create barriers to open discussion of reproductive health issues in Nepal. The practice of abortion is linked with issues of morality and stigma; therefore, women often have resorted to terminating their pregnancies using illegal or traditional remedies, which are often unsafe and threaten their life and health. Abortion has been legal in Nepal since 2002, and safe abortion services are available in government health facilities such as referral hospitals, district hospitals, primary health centers and health posts, and in authorized private hospitals and clinics and those of

non-governmental organizations. Still, only two-fifths of women age 15-49 are aware that abortion is legal in Nepal and about three-fifths know about places where safe abortion services are available (MoHP et al., 2012).

Table 4.6 Knowledge about Places that Provide Safe Abortions and Experiences of Post-abortion Complications

Percentage of women age 15-49 who know about a place for safe abortion and, among women who had abortions in past five years, percentage who experienced post-abortion complications, according to caste, ethnicity, and regional identity, Nepal DHS 2011

Caste, Ethnicity, and Regional Identity	Know a place for safe abortion	Number of women	Report abortion complications	Number of women
BRAHMAN/CHHETRI	65.6	4,397	25.2	214
Hill Brahman	68.8	1,806	26.5	83
Hill Chhetri	63.4	2,436	22.8	127
Terai/Madhesi Brahman/Chhetri	63.5	156	*	3
TERAI/MADHESI OTHER	65.4	1,003	*	10
DALIT	55.0	1,773	40.5	42
Hill Dalit	54.0	1,214	(45.8)	39
Terai/Madhesi Dalit	57.4	559	*	3
NEWAR	64.0	541	*	14
JANAJATI	51.4	4,468	24.6	134
Hill Janajati	48.6	3,155	24.5	110
Terai Janajati	58.3	1,313	(37.9)	23
MUSLIM	61.7	467	*	6
OTHER	(40.7)	25	*	1
ALL HILL/MOUNTAIN GROUPS	58.1	9,150	25.7	374
ALL TERAI/MADHESI GROUPS	60.9	3,499	21.7	46
ALL NEPAL	**58.8**	**12,674**	**25.2**	**420**

Note: Figures in parenthesis are based on 25-49 unweighted cases. An asterisk indicates that a figure is based on fewer than 25 unweighted cases and so has been suppressed.

Differentials in knowledge by caste, ethnicity, and regional identity about places for safe abortion follow the patterns noted in utilization of maternal health services, although the extent of the variation is not great (Table 4.6). Higher percentages of Brahman/Chhetri and Newar women had this knowledge compared with Dalit and Janajati women. Even among Muslims over 61 percent had such knowledge, a figure slightly above the national average of 59 percent. There is greater variation in the level of this knowledge according to the wealth status of women, ranging from 40 percent among the poorest women to 71 percent among the wealthiest women.

The term "post-abortion complications" refers to health problems, such as infection, excessive bleeding, embolism, ripping or perforation of the uterus, anesthesia complications, convulsions, hemorrhage, cervical injury, and end toxic shock, that can result from abortions conducted under any circumstances. Around 25 percent of women who had undergone abortion in the five years preceding the 2011 survey had experienced post-abortion complications.

4.4 UTILIZATION OF CHILD HEALTH SERVICES

Next, we examine social differentials in practices and service utilization that are related to reducing child mortality (MDG 4) and improving child health.

4.4.1 Breastfeeding Practices

While breastfeeding is a natural act, it is also a learned behavior and requires that mothers are free from work burden and have the support necessary in workplaces to breastfeed their infants. Recognizing breastfeeding as one of the key factors that determine the survival and well-being of an infant, the Breast Milk Substitute Act (B.S. 2049) and Regulation B.S. 2051 promote and protect breastfeeding in Nepal (MoHP, 2004). The Child Health Division of the Ministry of Health and Population (MoHP) has initiated the Community-Based Newborn Care Program (CB-NCP) in 40 districts, where a number of newborn care initiatives are implemented in order to promote initial breastfeeding within one hour of birth and exclusive breastfeeding throughout the first six months of life.

Table 4.7 Breastfeeding Practices

Among last-born children who were born in the two years preceding the survey and live with their mother, the percentage that started breastfeeding within one hour of birth, and the percentage who were exclusively breastfed, according to caste, ethnicity, and regional identity, Nepal DHS 2011

Caste, Ethnicity, and Regional Identity	Breastfed within one hour of birth	Number of last- born children under age 2 years	Exclusive breastfeeding (0-5 months)	Number of all children age 0-5 months
BRAHMAN/CHHETRI	50.6	591	63.8	152
Hill Brahman	49.5	206	61.0	59
Hill Chhetri	52.2	368	66.3	92
Terai/Madhesi Brahman/Chhetri	*	17	*	2
TERAI/MADHESI OTHER	31.1	222	(75.0)	45
DALIT	39.0	364	82.2	118
Hill Dalit	48.1	216	(77.8)	54
Terai/Madhesi Dalit	25.7	148	92.1	63
NEWAR	53.8	52	*	15
JANAJATI	48.1	647	67,8	152
Hill Janajati	50.6	480	58.3	108
Terai Janajati	41.3	167	(86.8)	44
MUSLIM	33.8	148	(48.4)	46
OTHER	*	6	*	2
ALL HILL/MOUNTAIN GROUPS	50.6	1,323	64.0	328
ALL TERAI/MADHESI GROUPS	33.0	701	78.9	199
ALL NEPAL	**44.6**	**2,030**	**69.8**	**530**

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 so has been suppressed.

Starting breastfeeding *within one hour of birth* is a crucial factor for the survival and better health of an infant. In Nepal about 45 percent of infants who were born in the two years preceding the 2011 NDHS survey were reported to have been breastfed within one hour of birth (Table 4.7). More than half of the Brahman/Chhetri, Newar, and Hill Janajati women had initiated breastfeeding within an hour, while only 34 percent of Muslim and 31 percent of Terai/Madhesi Other women had done so. There is also striking variations in the frequency of this practice between Hill Dalit women (48 percent) and Terai/Madhesi Dalit women (26 percent).

Studies have shown that, in both resource-poor and affluent societies, *exclusive breastfeeding* (particularly in a child's first six months of life) reduces infant mortality due to common childhood illnesses such as diarrhea and pneumonia and leads to quicker recovery during illness (Kramer et al., 2001). Almost 70 percent of Nepali

infants are exclusively breastfed for up to six months. While breastfeeding within one hour of birth is least common among the Terai/Madhesi Dalit, this group has the highest rate of exclusive breastfeeding, at 92 percent. The reasons for this pattern need further investigation; it could result from lack of awareness regarding the benefits of breastfeeding immediately following birth, combined with limited resources to feed children anything but breast milk.

4.4.2 Immunization and Vitamin A Coverage

Universal immunization coverage has been a key goal in Nepal; the NHSP-II (2010-15) aims to reach 90 percent coverage in the country by 2015. Although there has been considerable progress toward this goal, remaining gaps among certain caste/ethnic groups as well as poorer groups make it a continuing challenge.

Table 4.8 Immunization and Vitamin A Coverage

Percentage of children age 12-23 months who received measles vaccine and all basic vaccines and percentage of children age 6-59 months who received vitamin A supplements in the six months preceding the survey, according to caste, ethnicity, and regional identity, Nepal DHS 2011

Caste, Ethnicity, and Regional Identity	Measles	All basic vaccines[1]	Number of children age 12-23 months	Vitamin A supplements (last 6 months)	Number of children age 6-59 months
BRAHMAN/CHHETRI	92.5	90.6	267	93.1	1,323
Hill Brahman	94.4	94.3	89	93.3	429
Hill Chhetri	92.3	89.9	168	93.8	852
Terai/Madhesi Brahman/Chhetri	*	*	10	(82.5)	42
TERAI/MADHESI OTHER	82.0	82.0	111	79.4	447
DALIT	89.3	86.4	169	89.1	759
Hill Dalit	91.0	88.0	100	90.0	491
Terai/Madhesi Dalit	87.0	83.8	69	87.5	268
NEWAR	(86.1)	(83.3)	26	93.0	115
JANAJATI	93.5	93.5	336	92.3	1,432
Hill Janajati	93.1	93.1	247	91.6	1,032
Terai Janajati	94.3	94.3	88	94.1	400
MUSLIM	57.3	57.3	89	88.8	275
OTHER	*	*	2	*	8
ALL HILL/MOUNTAIN GROUPS	92.7	91.6	630	92.3	2,919
ALL TERAI/MADHESI GROUPS	80.1	79.3	366	86.7	1432
ALL NEPAL	**88.0**	**87.1**	**1,000**	**90.4**	**4,360**

Note: Information on vitamin A is based on both mother's recall and the immunization card (where available). Figures in parenthesis are based on 25-49 unweighted cases. An asterisk indicates that a figure is based on fewer than 25 unweighted cases and so has been suppressed.
[1]That is, BCG, measles, and three doses each of DPT and polio vaccine (excluding polio vaccine given at birth).

In 2011 a large majority (87 percent) of children age 12-23 months had received all basic vaccines (Table 4.8). The coverage of measles vaccine is often considered a proxy for full immunization. Table 4.8 shows little differences in the coverage of full immunization and of measles in any group. The coverage both of measles vaccine and of all basic vaccines is equally low among Muslim children (57 percent).

Nepal has made a good progress in providing vitamin A supplements to children age less than five years old. There is little variation among social groups. Children in the Terai/Madhesi Other (79 percent), Terai/Madhesi Dalit (87 percent), and Muslim groups (89 percent) fall somewhat below the national average of 90 percent.

4.4.3 Prevalence and Treatment of Diarrhea

Diarrhea continues to be one of the most serious public health problems among children in Nepal. Diarrhea management initiatives, in both the community and health facilities, currently include zinc along with oral rehydration salts (ORS) and oral rehydration therapy (ORT).The overall coverage is low, however.

Of the 5,140 children age less than five years covered by the 2011 NDHS, 14 percent were reported to have had diarrhea in the two weeks preceding the survey. Of those children only 5 percent received treatment with zinc and ORS. Some 16 percent of Hill Dalit children who had diarrhea had been treated with zinc and ORS, the highest percentage among all the caste/ethnic groups (Table 4.9).

Table 4.9 Prevalence and Treatment of Diarrhea

Among children under age five years who had diarrhea in the two weeks preceding the survey, the percentage who were treated with zinc and oral rehydration salts (ORS), according to caste, ethnicity, and regional identity, Nepal DHS 2011

Caste, Ethnicity, and Regional Identity	Percent of children with diarrhea treated with zinc and ORS	Number of children with diarrhea
BRAHMAN/CHHETRI	6.0	182
Hill Brahman	5.6	53
Hill Chhetri	6.7	121
Terai/Madhesi Brahman/Chhetri	*	8
TERAI/MADHESI OTHER	1.3	92
DALIT	9.4	139
Hill Dalit	16.3	77
Terai/Madhesi Dalit	(0.0)	62
NEWAR	*	15
JANAJATI	4.3	233
Hill Janajati	5.1	169
Terai Janajati	(2.5)	54
MUSLIM	(2.5)	58
OTHER	*	1
ALL HILL/MOUNTAIN	7.6	435
ALL TERAI/MADHESI GROUPS	1.5	274
ALL NEPAL	**5.2**	**711**

Note: Figures in parenthesis are based on 25-49 unweighted cases. An asterisk indicates that a figure is based on fewer than 25 unweighted cases and so has been suppressed.

4.5 NUTRITION OF MOTHERS AND CHILDREN

Caste and socio-economic status are two interrelated sources of inequality that can reinforce each other; being from the so-called "upper" castes can buffer women from poor health effects related to low socio-economic status, while being from a so-called "lower" caste can magnify these effects (Mohindra et al., 2006). These effects have been evident in Nepal due to the historical, social, and economic marginalization of certain groups. In this study we examine the nutritional status of women age 15-49, using two indices: body mass index (BMI) and prevalence of any kind of anemia. BMI is expressed as the ratio of weight in kilograms to the square of height in meters (kg/m^2).It is used to measure an individual's thinness. A BMI below 18.5 kg/m^2 indicates acute

undernourishment and among women is associated with poor maternal health outcomes. Anemia is assessed based on hemoglobin levels. Women who are not pregnant and have hemoglobin levels of less than 11.0 g/dl are considered to have anemia, whereas for pregnant women a hemoglobin level of less than 12.0g/dl is considered to indicate anemia.

The variations in the prevalence of undernourishment and anemia among women in Nepal seem to be based more on regional differences than on specific caste or ethnicity. Only 8 percent of Newar and Hill Janajati women are undernourished. Only 17 percent of Newar women have anemia, although almost 28 percent of Hill Janajati women do (Table 4.10). By comparison, among women from all the Terai-based caste/ethnic groups, the levels of undernourishment and anemia are high. From 25 percent of Terai/Madhesi Brahman/Chhetri women to 45 percent of Terai/Madhesi Dalit women are undernourished. Also, the prevalence of anemia is higher than 40 percent for all terai-based groups of women. Above average proportions of Muslim women are undernourished, and more than half are anemic.

Table 4.10 Nutritional Status of Women

Among women age 15-49, the percentage with body mass index (BMI) less than 18.5 and who have any kind of anemia, according to caste, ethnicity, and regional identity, Nepal DHS 2011

Caste, Ethnicity, and Regional Identity	BMI <18.5	Number of women[1]	Any anemia	Number of women
BRAHMAN/CHHETRI	16.3	2,072	31.6	2156
Hill Brahman	17.0	870	34.8	896
Hill Chhetri	15.1	1,114	27.9	1,172
Terai/Madhesi Brahman/Chhetri	25.0	88	47.1	87
TERAI/MADHESI CASTE OTHER	32.6	399	40.2	420
DALIT	25.9	821	37.5	867
Hill Dalit	18.0	577	29.2	616
Terai/Madhesi Dalit	44.7	244	57.7	253
NEWAR	8.2	231	17.2	244
JANAJATI	13.9	2,106	36.5	2,190
Hill Janajati	8.4	1,447	27.6	1,502
Terai Janajati	25.9	659	56.0	688
MUSLIM	36.6	164	54.7	201
OTHER	*	10	*	9
ALL HILL/MOUNTAIN GROUPS	13.2	4,238	28.8	4,431
ALL TERAI/MADHESI GROUPS	31.7	1,553	51.6	1,648
ALL NEPAL	**18.2**	**5,800**	**35.0**	**6,088**

Notes: Body mass index is expressed as the ratio of weight in kilograms to the square of height in meters (kg/m^2). Prevalence of anemia is adjusted for altitude and for smoking status if known using formulas in CDC, 1998. Figures in parenthesis are based on 25-49 unweighted cases. An asterisk indicates that a figure is based on fewer than 25 unweighted cases and so has been suppressed.
[1] Excludes pregnant women and women with a birth in the preceding two months.

Nepal is close to achieving the MDG goal of reducing the percentage of underweight children age 6-59 months to 29 percent by 2015. There was a marked drop in the percentage of underweight children between 2006 and 2011. Steady improvements have also been observed in the percentage of stunted children (MoHP et al., 2012). Still, there are variations in levels of child nutrition among the different social groups, which the overall picture masks.

Table 4.11 presents the nutritional status of children age 6-59 months and the prevalence of anemia among them according to caste, ethnicity, and regional identity. Overall, a high percentage of Dalit children are malnourished. Among Hill Dalit children in particular, more than half (51 percent) are stunted (low height-for-age), and about one-third (34 percent) are underweight (low weight-for-age).[9] Except for Terai/Madhesi Brahman/Chhetri children, at least one-third of children from all other groups are stunted. In contrast, wasting (low weight-for-height) is more common among children from all groups of Terai origin.

Table 4.11 Nutritional Status and Prevalence of Anemia in Children

Percentage of children under five years who were stunted, wasted, and underweight[1], and percentage of children age 6-59 months who had any anemia, according to caste, ethnicity, and regional identity, Nepal DHS 2011

Caste. Ethnicity, and Regional Identity	Weight-for-age (stunting)	Weight-for-height (wasting)	Weight-for-age (underweight)	Number of children under age five years	Any anemia (<11.0 g/dl)	Number of children age 6-59 months
BRAHMAN/CHHETRI	36.9	9.5	24.0	724	41.6	647
Hill Brahman	30.9	9.3	14.8	236	42.1	209
Hill Chhetri	41.3	9.3	28.4	460	41.4	413
Terai/Madhesi Brahman/Chhetri	(14.3)	(10.7)	(25.0)	27	(42.3)	26
TERAI/MADHESI OTHER	45.5	18.3	42.6	231	53.5	202
DALIT	47.3	18.3	34.8	434	54.2	358
Hill Dalit	51.1	9.2	33.8	284	51.0	247
Terai/Madhesi Dalit	40.3	18.7	36.2	149	61.3	111
NEWAR	33.3	4.8	14.3	63	30.0	50
JANAJATI	41.2	11.2	26.9	779	44.0	721
Hill Janajati	44.6	9.1	25.0	542	39.5	504
Terai Janajati	33.2	16.0	31.5	238	54.6	216
MUSLIM	32.4	8.9	31.7	145	56.5	124
OTHER	*	*	*	4	*	4
ALL HILL/MOUNTAIN GROUPS	42.3	9.0	25.6	1,585	42.1	1,422
ALL TERAI/MADHESI GROUPS	37.4	15.8	35.5	791	55.1	679
SEX						
Male	41.9	12.4	29.6	1,208	43.8	1,065
Female	39.6	10.2	28.3	1,173	49.0	1,041
ALLNEPAL	**40.8**	**11.3**	**29**	**2,380**	**46.4**	**2,106**

Note: Among children with resident mothers only. Prevalence of anemia, based on hemoglobin levels, is adjusted for altitude using formulas described in CDC, 1998. Hemoglobin is measured in grams per deciliter (g/dl). Figures in parenthesis are based on 25-49 unweighted cases. An asterisk indicates that a figure is based on fewer than 25 unweighted cases and so has been suppressed.
[1] Percentage below −2 SD in all three cases.

As with non-pregnant women, children who have hemoglobin levels of less than 11.0 g/dl are considered to have "any anemia." Anemia is one of the major health problems among children in Nepal (MoHP et al., 2012). Overall, the 2011 NDHS data show that a higher proportion of children have anemia than do women, but the differentials by caste, ethnicity, and regional identity are similar in both groups. Like the women surveyed, children from the Terai/Madhesi Dalit group have the highest levels of anemia—among children, 61 percent

[9]This study looks at percentages of children below minus two standard deviations (−2 SD) in all three cases—stunting, wasting, and underweight.

compared with the national average of 46 percent (Table 4.11); and among women, 58 percent compared with the average of 35 percent (Table 4.10). Also, more than half of children from the Terai/Madhesi Other, Terai Janajati, Muslim, and Hill Dalit groups are anemic.

Differences between male and female children are slightly more prominent in the case of anemia than of nutritional status. While there is around two percentage points of differences between male and female children in the three nutritional status measures, the difference in anemia status is about five percentage points. The NDHS found that almost half of the female children (49 percent) were suffering from low levels of hemoglobin, compared with 44 percent of male children (Table 4.11).

4.6 WOMEN'S DECISION-MAKING, EXPOSURE TO MASS MEDIA, AND TOBACCO USE

In addition to specific indicators of maternal and child health, the NDHS data also provide information on women's empowerment and the status of public health knowledge. Of particular relevance to this study is information on women's decision-making in relation to their own health care, their exposure to mass media, and their use of tobacco.

4.6.1 Decision-Making on Own Health Care

Studies have shown that women's autonomy is linked with their use of health care and is often as important as other known determinants such as their education (Bloom et al., 2001). In Nepal, decision-making in most aspects of life has been men's domain, though there are differences by caste and ethnicity. For example, Hill Janajati women traditionally have relatively more autonomy and more engagement in economic activities within the family (Acharya and Bennett, 1981). This study disaggregates decision-making by women on their own health care by caste, ethnicity, and regional identity (Table 4.12). In Nepal as a whole, one-fourth of women (26 percent) make their own decisions on health care, but a greater percentage (35 percent) do not participate in decisions at all. In nearly all caste, ethnic, and religious groups are decisions on women's own health care made by women themselves or jointly with their partners; two exceptions are Terai/Madhesi women and Muslim women, where the majority do not participate in decisions about their own healthcare. In contrast, almost 32 percent of Hill Janajati women make healthcare decisions by themselves. It is interesting to note that a slightly higher percent of Hill Dalit women make such decisions alone compared with Hill Brahman and Chhetri women; for Hindu women higher social status among the so-called "upper caste" has traditionally *not* been correlated with more autonomy (Acharya and Bennett, 1981).

Table 4.12 Decision-making on Own Health Care

Percentage of currently married women age 15-49 who make decisions on their own health care, according to caste, ethnicity, and regional identity, Nepal DHS 2011

Caste, Ethnicity, and Regional Identity	Decision-making on own health care			
	Respondent alone	Respondent with husband/partner	Husband or others alone	Number of married women
BRAHMAN/CHHETRI	26.0	44.8	29.2	3,310
Hill Brahman	26.6	49.5	23.9	1,345
Hill Chhetri	26.3	41.2	32.6	1,861
Terai/Madhesi Brahman/Chhetri	11.5	49.0	39.4	104
TERAI/MADHESI OTHER	17.3	30.4	52.2	831
DALIT	25.5	35.9	38.6	1,433
Hill Dalit	27.7	36.0	36.2	949
Terai/Madhesi Dalit	21.1	35.5	43.4	484
NEWAR	21.5	51.4	27.0	381
JANAJATI	28.9	38.7	32.4	3,266
Hill Janajati	31.4	40.0	28.7	2,300
Terai Janajati	22.9	35.8	41.3	964
MUSLIM	18.8	26.7	54.5	367
OTHER	13.6	45.5	40.9	22
ALL HILL/MOUNTAIN	28.0	42.3	29.7	6,836
ALL TERAI	20.0	33.4	46.7	2,750
ALL NEPAL	25.7	39.7	34.6	9,608

4.6.2 Exposure to Mass Media

The mass media are an important channel for learning about health services and outcomes, which in turn is likely to influence their health care seeking behavior. Studies have shown that exposure to mass media is related to childbearing behavior, including preferences for smaller families, weaker son preference, and favorable attitudes toward contraceptive use (Barber and Axinn, 2004). Exposure to mass media has also been shown to increase use of maternal health services (Navaneetham and Dharmalingam, 2002). In Nepal, mass media such as radio, television, and newspapers are important ways that the government communicates messages about maternal and child health services to the public. Such messages broadcast over the radio, for instance, are often the key source of such information, particularly in remote areas that have limited access to transportation or other communication.

In the 2011 NDHS, as in the 2006 NDHS (Bennett et al., 2008), the level of media exposure varied among social groups. Among women age 15-49, the highest percentages who were exposed to at least one mass medium—radio, television, or newspaper—at least once a week were found among Newar and among Brahman/Chhetri from both the Hill and the Terai regions (figures not shown). Among Muslim, Dalit, and Terai/Madhesi other women, less than half had such exposure—much lower than the national average of 67 percent. There is also a continuing gender difference in media exposure, which has an adverse impact on access to health-related messages and information particularly relevant to women.

4.6.3 Tobacco Use

Smoking and other forms of tobacco use contribute to cardiovascular diseases, cancer, pneumonia, emphysema, and chronic bronchitis and can eventually lead to death (MoHP et al., 2012). Tobacco use is also very harmful for pregnant women and their fetuses. Moreover, all forms of tobacco use (cigarettes, *bidis*, etc.) are associated with low BMI among both women and men (Chhabra and Chhabra, 2011; Pednekar et al., 2006). In the 2011 NDHS women age 15-49 were asked whether they were currently using *any* form of tobacco, such as cigarettes, pipe smoking, chewing tobacco, or snuff. The use of tobacco among women varies from only 2 percent among Terai/Madhesi Brahman/Chhetri women to 24 percent among Hill Dalit women. Additionally, tobacco use among Hill Chhetri and Hill Janajati women is above the national average of 13 percent (figures not shown).

5 DETERMINANTS OF MATERNAL AND CHILD HEALTH

The second objective of this paper is to examine the association of caste, ethnicity, and regional identity with use of antenatal care services and with maternal and child nutritional status. This section of the paper presents the results of multivariate analysis examining these associations. A two-step analysis is carried out in each case. The first step examines the net effect of caste, ethnicity, and regional identity. The second step examines the *independent effects* of social group, after taking into consideration a number of other variables that might influence the outcome of interest. The results are presented as odds ratios (OR), which express the difference—whether greater (OR>1.00) or less (OR<1.00)—in relation to the reference category in the odds of the variable of interest occurring for a given value of the explanatory variable.

5.1 THE EFFECT OF CASTE/ETHNICITY, AND REGIONAL IDENTITY ON ANTENATAL CARE SERVICE UTILIZATION

The logistic regression (Table 5.1) that tests the effect of caste/ethnicity and regional identity on the likelihood of women receiving antenatal care services finds an influence of caste/ethnicity for some groups. Model 1 examines the net effect of social identities and finds that compared with Dalit women (the reference group), Brahman/Chhetri and Newar women have 2.6 and 7.0 times higher odds of using ANC services, respectively. The other caste groups are not significantly different from the Dalits.

In Model 2 we introduce additional factors such as wealth status, age of women, number of children ever born, educational attainment, employment status, women's health care decision-making, and mass media exposure, all of which also play a role in the likelihood of using ANC services. In Model 2 caste/ethnicity continues to have highly significant effects for certain groups. After controlling for all the other factors, we find that, compared with Dalit women, Newar women have significantly *higher* odds of ANC service utilization (OR 2.0). In contrast, Terai/Madhesi other women have significantly *lower* odds of using ANC services (OR 0.37).

These results also show that wealth, educational attainment, number of children, and decision-making by women on their own health care all have highly significant effects on the odds of using ANC services. Although wealth seems to have a stronger impact on ANC service utilization, caste, ethnicity, and regional identity still matter for some groups.

Table 5.1 Caste, Ethnicity, and Regional Identity and Utilization of Antenatal Care Services

Logistic regression: The association of caste, ethnicity, and regional identity with utilization of antenatal care (4+ visits) among women age 15-49who had one or more births in the five years preceding the survey, Nepal DHS 2011

Background characteristics	Model 1		Model 2	
	Odds ratio	Confidence interval	Odds ratio	Confidence interval
Caste/ethnicity and regional identity				
Dalit (reference)	1.0		1.0	
Brahman/Chhetri	2.64***	1.91-3.64	1.25	0.93-1.68
Terai/Madhesi Other	0.86	0.57-1.29	0.63*	0.43-0.93
Newar	7.00***	3.60-13.61	2.02*	1.13-3.61
Janajati	1.31	0.91-1.90	0.82	0.57-1.18
Muslim	0.83	0.48-1.43	0.83	0.50-1.38
Wealth quintile				
Lowest (reference)			1.0	
Second			1.39*	1.05-1.85
Middle			1.73**	1.23-2.42
Fourth			2.50***	1.71-3.65
Highest			4.32***	2.81-6.65
Age of woman				
15-24 years (reference)			1.0	
25-34 years			1.09	0.89-1.33
35-49 years			0.78	0.57-1.07
No. of children ever born				
1 child only (reference)			1.0	
2 children			0.73**	0.57-0.93
3+ children			0.49***	0.38-0.64
Respondent's education				
No education (reference)			1.0	
Primary			1.84***	1.48-2.30
Secondary			2.42***	1.87-3.14
Higher			6.57***	2.93-14.72
Respondent's employment				
Other types (reference)			1.0	
Cash only			1.11	0.83-1.50
Residence				
Rural (reference)			1.0	
Urban			1.13	0.84-1.51
Decision-making on own health care				
Others (reference)			1.0	
Respondent alone			1.58***	1.25-2.00
Respondent/others			1.35**	1.10-1.64
Media exposure				
Not exposed (reference)			1.0	
Exposed			1.12	0.90-1.40
N	**4,093**		**4,093**	

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

5.2 THE EFFECT OF CASTE/ETHNICITY AND REGIONAL IDENTITY ON THE NUTRITIONAL STATUS OF WOMEN AND CHILDREN

5.2.1 Nutritional Status of Women

Table 5.2 shows the effect of caste, ethnicity, and regional identity on women's likelihood of being thin or undernourished (BMI<18.5 kg/m^2). In Model 1 we examine the net effect of social identity on the nutritional status of women and find that, compared with Dalit women, Brahman/Chhetri, Newar, and Janajati women have between 54 and 75 percent *lower* odds of being undernourished, and the difference is statistically significant.

Table 5.2: Caste, Ethnicity, and Regional Identity and Nutritional Status of Women

Logistic regression: The association of caste, ethnicity, and regional identity with the nutritional status of women age 15-49 (women who are "thin"—that is, who have a Body Mass Index of less than 18.5), Nepal DHS 2011

Background characteristics	Model 1		Model 2	
	Odds ratio	Confidence interval	Odds ratio	Confidence interval
Caste, ethnicity, and regional identity				
Dalit (reference)	1.0		1.0	
Brahman/Chhetri	0.56***	0.41-0.75	0.82	0.61-1.11
Terai/Madhesi Other	1.38	0.89-2.15	1.44	0.94-2.20
Newar	0.25***	0.14-0.45	0.42**	0.23-0.76
Janajati	0.46***	0.32-0.66	0.53***	0.37-0.76
Muslim	1.65	0.86-3.16	1.39	0.71-2.72
Wealth quintile				
Lowest (reference)			1.0	
Second			1.06	0.81-1.39
Middle			1.22	0.90-1.65
Fourth			1.05	0.74-1.49
Highest			0.89	0.60-1.32
Age of woman				
15-24 years (reference)			1.0	
25-34 years			0.70*	0.53-0.93
35-49 years			0.44***	0.33-0.60
No. of children ever born				
No child (reference)			1.0	
1 child only			0.70*	0.51-0.95
2 children			0.40***	0.28-0.58
3+ children			0.74	0.52-1.05
Respondent's education				
No education (reference)			1.0	
Primary			0.61***	0.46-0.83
Secondary			0.58***	0.43-0.78
Higher			0.56*	0.36-0.87
Respondent's employment				
Other types (reference)			1.0	
Cash only			1.06	0.80-1.41
Residence				
Rural (reference)			1.0	
Urban			1.01	0.76-1.33
Media exposure				
No			1.0	
Yes			0.63***	0.50-0.79
Tobacco use				
No			1.0	
Yes			1.44*	1.10-1.88
N	**5,790**		**5,790**	

Note: 10 cases of 'other' ethnicity were dropped from the regression.
*p<0.05, **p<0.01, ***p<0.001

In Model 2 we control for additional variables that are likely to have an influence on women's nutritional status, such as wealth status, age, number of children ever born, educational attainment, employment status, mass media exposure, and tobacco use. We find that caste/ethnicity and regional identity continue to have a *statistically significant* and *independent* effect on the likelihood of women being undernourished, particularly in the comparison of Newar and Janajati women with Dalit women: When all other factors are taken into consideration, Newar and Janajati women still have lower odds of being thin compared with Dalit women. Educational attainment, mass media exposure, and tobacco use also have an impact on the nutritional status of women after all the other factors are controlled. Women with any level of education and those with mass media exposure have lower odds of being thin. The odds of being thin are 44 percent higher for women who use any kind of tobacco compared with those who do not use tobacco.

In contrast to the findings of many other studies, wealth does not seem to have an impact on women's nutritional status. This finding needs further examination. Also, for Brahman women the odds of being thin are not statistically different from the odds for Dalits; in this case factors other than caste are likely to be more important to nutritional status that the traditional caste hierarchy.

5.2.2 Nutritional Status of Children

The final logistic regression analysis of this study examines the effect of caste, ethnicity, and regional identity on the nutritional status of children (Table 5.3). We examine the association of caste/ethnicity and regional identity with the likelihood of children age 0-59 months being underweight below−2 SD. In Model 1 we find a net effect of social identity on the nutritional status of children. Compared with Dalit children, Brahman/Chhetri, Newar, and Janajati children have lower odds of being underweight, whereas Terai/Madhesi other and Muslim children are not statistically different from Dalits.

These results change when we introduce a number of other factors that are also likely to effect the nutritional status of children—wealth status, sex and age of child, educational attainment and employment status of the mother, whether the mother had an SBA at the birth of the child, mother's decision-making on her own health care, and mass media exposure. In Model 2,after controlling for all the other factors, we see that, compared with Dalit children, children from Terai/Madhesi Other have much higher odds of being underweight (OR 1.93). For children from other caste/ethnic groups, there are no statistically significant differences. In contrast to the case of women's nutritional status, wealth status has a relatively strong impact on children's nutrition once social status is taken into account as well as other factors. Compared with those in the lowest quintile, children from wealth quintiles middle and above have significantly lower odds of being underweight. Additionally, children of mothers who had an SBA at delivery have lower odds of being underweight. Children age 12-60 months have significantly higher odds of being underweight than those under 12 months, once other factors are controlled.

Table 5.3 Caste, Ethnicity, and Regional Identity and Nutritional Status of Children

Logistic regression: The association of caste, ethnicity, and regional identity with the nutritional status of children age 0-59 months (underweight, below−2 SD), Nepal DHS 2011

Background characteristics	Model 1		Model 2	
	Odds ratio	Confidence interval	Odds ratio	Confidence interval
Caste, ethnicity, and regional identity				
Dalit (reference)	1.0		1.0	
Brahman/Chhetri	0.59***	0.45-0.78	0.83	0.62-1.11
Terai/Madhesi Other	1.40	0.89-2.18	1.93**	1.22-3.06
Newar	0.30**	0.13-0.70	0.75	0.30-1.85
Janajati	0.69*	0.50-0.95	0.76	0.56-1.04
Muslim	0.87	0.53-1.43	0.92	0.52-1.61
Wealth quintile				
Lowest (reference)			1.0	
Second			0.75	0.51-1.10
Middle			0.67*	0.47-0.95
Fourth			0.58*	0.37-0.93
Highest			0.30***	0.16-0.54
Sex of child				
Female			1.0	
Male			1.13	0.93-1.38
Age of child				
0-11 months (reference)			1.0	
12-60 months			1.68***	1.23-2.30
Age of woman				
15-24 years (reference)			1.0	
25-34 years			1.20	0.89-1.60
35-49 years			1.11	0.72-1.71
No. of living children				
1 child only (reference)			1.0	
2 children			1.01	0.71-1.43
3+ children			1.06	0.72-1.55
SBA at delivery				
All other types (reference)			1.0	
Delivered by SBA			0.58***	0.42-0.81
Respondent's education				
No education (reference)			1.0	
Primary			0.75	0.56-1.01
Secondary			0.77	0.53-1.12
Higher			0.56	0.24-1.29
Respondent's employment				
Other types (reference)			1.0	
Cash only			0.99	0.65-1.49
Residence				
Rural (reference)			1.0	
Urban			0.98	0.71-1.35
Decision-making on own health care				
Others (reference)			1.0	
Respondent alone			0.87	0.64-1.18
Respondent/others			0.97	0.73-1.28
Media exposure				
No			1.0	
Yes			0.91	0.69-1.20
N	**2,376**		**2,376**	

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

6 CONCLUSIONS AND POLICY IMPLICATIONS

Overall, Nepal has made numerous improvements in maternal and child health services and outcomes over the years that these outcomes have been monitored, and the country is getting closer to meeting some of the MDGs. Still, persistent gender, caste/ethnic, regional, and wealth inequities are making it harder to close many of the remaining gaps, the causes of which are rooted in historical, social, and cultural discrimination against certain groups of people. In combination, social, structural, and financial barriers remain powerful forces impeding universal access to and utilization of health services throughout the country and, more specifically, among some groups of people. The results of the bivariate and multivariate analyses show that caste, ethnicity, and regional identity continue to have an impact on health service utilization and health outcomes. Although one particular group of people cannot necessarily be singled out to focus public policy attention, there is sufficient evidence of a persistent pattern among a number of groups that have been lagging behind and merit more attention. In the following discussion we highlight key findings, discuss areas of concern, and consider some policy implications.[10]

Family Planning

The unmet need for contraception among Dalit and Muslim women continues to be much higher than in other groups. Closer attention needs to be paid to understanding the reasons that Dalit and Muslim women continue to have higher levels of unmet need. While the intersection between gender, poverty, and social exclusion (particularly for poor Dalit women) might be creating barriers for Dalit women, a better comprehension of the mechanisms to work through the existing cultural barriers that Muslim women face is a dimension that needs to be addressed.

Policy Implications: Programs specifically for Dalit and Muslim women could play a significant role in understanding and overcoming the barriers they face and thus to increase demand for and use of contraception. Special awareness-raising programs led by women from similar social and cultural backgrounds and conducted in local languages can be one way to increase outreach and generate more demand in the Muslim community. Sustained work with men and other family decision-makers is necessary to change their attitudes and beliefs about use of contraception.

[10]Annex 3 offers a summary table of the disaggregated results that ranks the caste/ethnic groups as above average or below average in a selection of the study indicators.

Maternal Health Service Utilization

Although Nepal has made commendable improvements in maternal health and has also been awarded an MDG Award for its commitment and progress,[11] there continue to be social and economic inequities in access to critical maternal health services.

a) While the use of ANC services has been increasing over the years, social inequities in access to these services continue to be alarmingly high. Compared with the customarily more privileged Newar and Brahman women, Terai/Madhesi Dalit women are one-quarter as likely to have had the optimum number of ANC visits (i.e., four or more) (Table 4.4).

b) Despite dramatic increases recently, still only a little over one-third of births have been attended by an SBA. The more privileged Newar and Brahman women are twice as likely as women in the Hill Chhetri, Muslim, and Terai/Madhesi Other to have an SBA at delivery (Table 4.5). For Dalits and Janajatis the difference from Newars and Brahmans is even greater.

c) Social differentials in postnatal care service utilization follow a similar pattern. Dalit and Hill Janajati women are half as likely to have had a PNC check-up as Newar women (Figure 4.4).

These key findings, including those of the multivariate analysis, show how caste, ethnicity, and economic status have *statistically significant* associations with levels of ANC service utilization even after controlling for confounding factors. Thus, barriers related to caste and ethnicity matter just as much as poverty. The lower rates of service utilization by Dalits in general and Terai/Madhesi Dalits in particular suggest that continued social discrimination against these so-called "untouchable" caste groups by service providers and other community members may impede their access to services. A recent study highlights the perceptions of community members that persistent discriminatory practices create barriers to such services (NHSSP, 2012).[12]

Additionally, the evidence that rates of postnatal care for newborns from all social groups are consistently lower than that for mothers suggests that there may be gaps in knowledge about the importance of PNC for newborns. Appropriate communication of such an important practice can go a long way to assuring preventive care of newborns and thereby reduce neonatal morbidity and mortality.

Policy Implications: Here, too, outreach may increase if personnel of similar social and cultural backgrounds provide health services and are equipped with specific communication materials tailored to disadvantaged groups—the Terai/Madhesi Dalit group, for example. Additionally, knowledge about the importance of PNC services for infants needs to be communicated. Mothers' Groups and Female Community Health Volunteers (FCHV) may be appropriate channels for this information, as are ANC providers. It is important for MoHP programs to integrate focused interventions that address the barriers faced by groups with poor PNC indicators.

[11]http://www.ipas.org/en/News/2010/September/Nepal-receives-MDG-Award-for-improving-maternal-health.aspx Accessed November 20, 2012.
[12]Based on a presentation of the study findings at the Ministry of Health and Population, GoN, November 23, 2012.

Child Health Service Utilization

a) Although breastfeeding within one hour of birth is known to be crucial to the survival and better health of an infant, the nationwide prevalence of this practice is less than 45 percent. While the prevalence of breastfeeding within one hour of birth is lowest among the Terai/Madhesi Dalit group, this group has the highest rate of exclusive breastfeeding, at 92 percent. This finding suggests poor understanding among mothers of the importance of colostrums feeding, as described in a study by Joshi and colleagues (2012).

b) The extent and equity in immunization coverage over the years has been highly encouraging in Nepal. Coverage has increased among nearly all social groups. The only exception is Muslim children, where coverage of all basic vaccine actually decreased substantially between 2006 and 2011, and the coverage of measles vaccination also was one of the lowest.

Policy Implications: Gaps in knowledge of the value of starting breastfeeding within one hour of birth need to be addressed with specific communication materials tailored to the Terai/Madhesi Dalit group, as suggested above. In terms of vaccination coverage, while it is important to ensure continuity of such coverage, it is equally important to better understand the causes of the recent decrease in coverage in one specific group, the Muslims, and to develop interventions that address the causes.

Maternal and Child Nutrition

a) Regional identity seems to be more important than specific caste or ethnicity in explaining variations in the prevalence of undernourishment and anemia among women in Nepal. Levels of undernourishment and anemia are higher in women from all the terai-based caste/ethnic groups than in other groups. The results of the multivariate analysis show that a woman's caste, ethnicity, and regional identity have a significant and *independent* effect on the likelihood of being undernourished for Dalit women compared with Newar and Janajati women, while the other groups are not significantly different from the Dalits once wealth and other influential variables are taken into consideration. Thus, caste, ethnicity, and regional identity seem to be a stronger predictor than economic status once other variables are controlled.

b) In contrast to the results related to maternal nutrition, for children under five years of age, our study found that caste/ethnicity was significant only when comparing children from Dalit and Terai/Madhesi Other. Economic status has a more significant association with being underweight. The fact that girls suffer higher anemia rates than boys reflects gender-based discrimination in Nepali society.

Policy Implications: Increasing initiatives for improved food security, providing more access to complementary foods for children under age five, and improving feeding practices are likely to improve nutritional status, particularly for children from poorer households. Focused programs for specific communities such as the

Terai/Madhesi Dalits, Muslims, and Terai/Madhesi Other, who have poor indicators for almost all services and outcomes, are essential. Specific program initiatives to reduce anemia among girls are called for, along with activities to change gender-based discriminatory practices in families and communities.

There is a serious need for the MoHP to better understand and address the existing social, cultural, and economic barriers that prevail, resulting in continuing disparities and inequities in utilization of health services and in health outcomes. Meeting this need requires additional systematic qualitative data collection and analysis to complement the quantitative monitoring system currently in place. Additional data and analysis will help to guide specific policy directives formulating and adapting programs that address groups with poor indicators. Since groups such as the Terai/Madhesi Dalits, Muslims, and Terai/Madhesi Other have poor indicators for almost all services and outcomes, specific programs that reach out to these communities are essential. It is crucial to identify the barriers that these groups face in access to services and then to develop interventions that can address the different socioeconomic and cultural constraints of each group.

As mentioned at the start of this paper, gender equality and social inclusion (GESI) has long been a political priority of the Government of Nepal. The Nepal Health Sector Program–II (NHSP-II), covering the period 2010 to 2015, has identified a critical need to address the remaining social and economic disparities in access to and utilization of essential health care services. GESI-responsive activities need to be better integrated into the national programs for safe motherhood, family planning, and child health. Additionally, all activities should address the policies, mind-sets, and beliefs that constrain women, the poor, and the excluded from using various services.

Examples of possible actions include:

- Identification and training of service providers from the excluded communities
- Strengthening the skills of all the health workforce to work with GESI sensitivity
- Developing and strengthening policies that address the barriers faced by unreached groups and underserved areas
- Focused social mobilization of women from excluded groups to build their capacities to negotiate within the family and to have the confidence to access available health services
- Sustained advocacy with men and other family decision-makers to change beliefs and values that constrain women's access to services
- Categorically addressing supply-side issues that hamper effective service provision and utilization.

These approaches would help to ensure that health programs provide high-quality services to all women, and would help to build women's voice and ability to influence policy and program decisions.

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ANNEXES

Annex 1: Selected Indicators of the NHSP 2 Logical Framework, with NDHS 2011 Findings

	Indicators	BRAHMAN/ CHHETRI	Hill Brahman	Hill Chhetri	Terai/Madhesi Brahman/Chhetri	TERAI/MADHESI OTHER	DALIT	Hill Dalit	Terai/Madhesi Dalit	NEWAR	JANAJATI	Hill Janajati	Terai Janajati	MUSLIM	OTHER	NEPAL
G9	% of children under five years of age who are stunted	37	31	41	(14)	46	47	51	40	33	41	45	33	32	*	41
G10	% of children under five years of age who are underweight	24	15	28	(25)	43	35	34	36	14	27	25	32	32	*	29
G11	% of children under five years of age who are wasted	10	9	9	(11)	18	18	9	19	5	11	9	16	9	*	11
P4	% of children age 6-59 months who have received vitamin A supplements	93	93	94	(83)	79	89	90	88	93	92	92	94	89	*	90
P5	% of children age 6–59 months suffering from anemia	42	42	41	(42)	54	54	51	61	30	44	40	55	57	*	46
P8	% of pregnant women attending at least four ANC visits	64	81	55	(49)	36	40	49	23	83	46	45	51	35	*	50
P10	% of deliveries conducted by a skilled birth attendant	46	65	35	(60)	39	27	30	22	72	29	29	28	33	*	36
P12	% of women of reproductive age (15-49) with complications from abortion (surgical and medical)	25	27	23	*	*	41	(46)	*	*	25	25	(38)	*	*	25
OC1.6	% of deliveries by cesarean section	7	12	5	(13)	6	2	2	2	8	3	3	2	3	*	5
OC2.1	% of children under 5 with diarrhea treated with zinc and ORS	6	6	7	*	1	9	16	0	*	4	5	(3)	(3)	*	5
OC2.3	Unmet need for family planning	27	24	29	24	20	31	35	24	20	28	34	16	39	*	28
OC2.4	% of institutional deliveries	49	62	34	(57)	38	26	29	22	68	29	29	30	32	*	35
OP5.1	% of women of reproductive age (15–49) aware of safe abortion sites	66	69	63	64	65	55	54	57	64	51	49	58	62	(41)	59

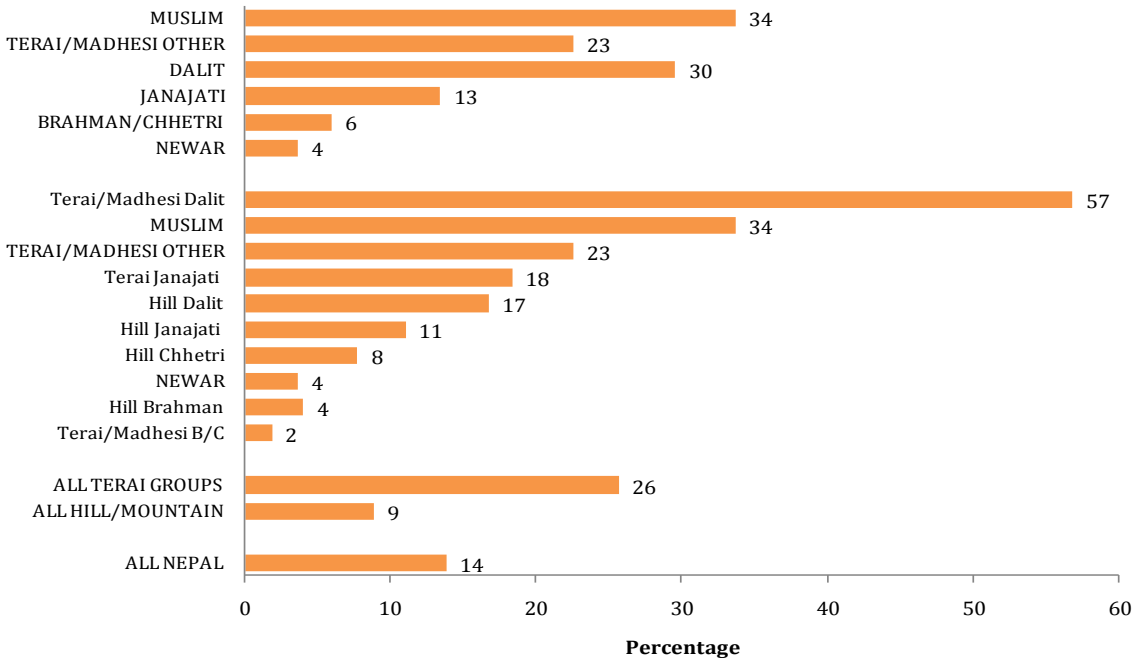
Note: Figures in parenthesis are based on 25-49 unweighted cases. An asterisk indicates that a figure is based on fewer than 25 unweighted cases and so has been suppressed.

Annex 2: Background Characteristics: Men

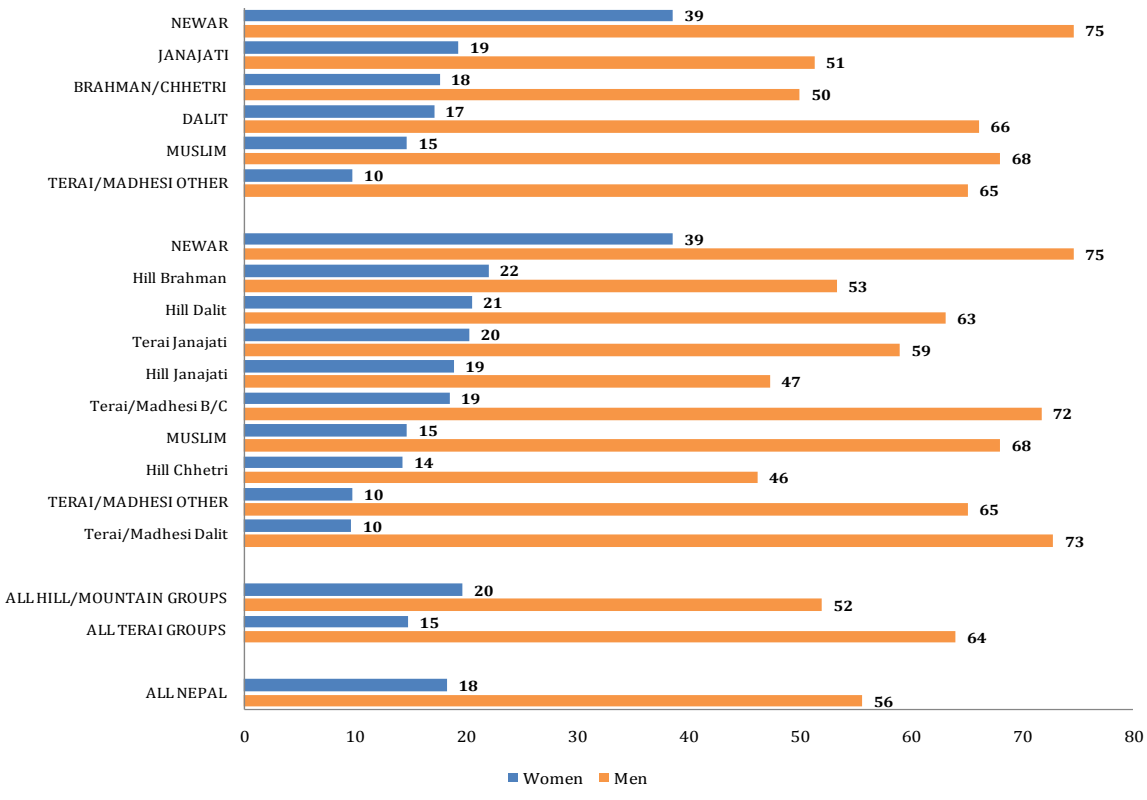
Annex 2a: Percentage of men age 15-49 by selected background characteristics, according to caste, ethnicity, and regional identity, Nepal DHS 2011

Caste, Ethnicity, and Regional Identity	Educational attainment				Marital status			Employment					Residence	
	No education	Primary	Secondary	Higher	Never married	Married	Divorced/ separated/ widowed	Not paid	Cash only	Cash and in-kind	In-kind only	Not working	Urban	Rural
BRAHMAN/CHHETRI	5.9	12.2	56.0	25.9	36.0	62.0	2.0	19.9	50.0	9.6	5.7	14.8	19.4	80.6
Hill Brahman	4.0	6.7	55.3	34.0	37.5	61.0	1.5	14.1	53.3	8.7	4.2	19.8	25.0	75.0
Hill Chhetri	7.7	16.4	57.2	18.7	33.8	63.7	2.6	25.5	46.2	10.5	6.8	10.9	14.0	86.0
Terai/MadhesiBrahman/ Chhetri	1.8	10.9	45.5	41.8	51.9	48.1	0	3.8	71.7	5.7	3.8	15.1	35.2	64.8
TERAI/MADHESI OTHER	22.5	19.0	43.7	14.7	31.7	67.7	0.5	8.3	65.1	11.6	3.5	11.6	24.2	75.8
DALIT	29.5	28.9	38.4	3.1	29.5	69.1	1.4	10.9	66.1	7.6	6.0	9.3	8.3	91.7
Hill Dalit	16.7	33.4	45.3	4.5	28.7	70.5	0.9	14.8	63.1	6.8	6.5	8.8	9.1	90.9
Terai/Madhesi Dalit	56.7	18.9	23.8	0.6	31.3	66.3	2.5	2.5	72.8	9.3	4.9	10.5	6.8	93.2
NEWAR	3.6	12.3	60.0	24.1	41.3	58.7	0	4.1	74.6	6.1	0.5	14.7	44.9	55.1
JANAJATI	13.4	24.8	52.9	8.8	35.4	63	1.6	15.4	51.3	13.9	6.8	12.6	12.6	87.4
Hill Janajati	11.0	28.8	51.9	8.4	35.4	63.2	1.3	19.3	47.3	14.0	7.9	11.5	12.3	87.7
Terai Janajati	18.3	17.1	54.9	9.7	35.3	62.7	2.0	7.8	59.0	13.5	4.8	14.9	13.1	86.9
MUSLIM	33.6	20.3	36.7	9.4	34.4	65.6	0	3.1	68	10.9	10.2	7.8	21.3	78.7
OTHER	0	42.9	42.9	14.3	33.3	66.7	0	0	71.4	7.1	14.3	7.1	50.0	50.0
ALL HILL/MOUNTAIN	8.8	20.4	53.7	17.0	35.0	63.4	1.6	18.3	52.0	10.6	6.2	12.9	17.2	82.8
ALL TERAI/MADHESI	25.6	18.0	45.1	11.4	34.3	64.3	1.3	6.6	64.0	11.9	4.9	12.6	17.5	82.5
ALL NEPAL	13.8	19.7	51.1	15.4	21.4	75.8	2.8	14.8	55.6	10.9	5.8	12.8	17.4	82.6
TOTAL MEN	568	814	2,108	634	1,434	2,627	61	610	2,293	449	240	527	716	3,402

Appendix 2b: Percentage of Men without Any Education by Caste, Ethnicity, and Regional Identity, Nepal DHS 2011



Appendix 2c: Percentage Distribution of Women and Men who are Employed and have Cash Earnings, Nepal DHS 2011



Annex 3: Summary of Selected Nepal DHS Indicators of Maternal and Child Health Services and Outcomes

Caste, Ethnicity, and Regional Identity	Background Characteristics			Maternal Health Services							Child Health Services					Nutrition			
	% with no education	% in lowest wealth quintile	% employed (cash)	% unmet need for FP	% ANC 4+ visits	% receiving 180+ iron tablets	% with TT2+	% delivery by SBA	% receiving cash for institutional delivery	% PNC for mothers within 2 days of birth	% PNC for newborns within 2 days of birth	% breastfeeding within one hour of birth	% exclusive breastfeeding 0-5 months	% complete immunization coverage	% vitamin A supplements	% women w/ BMI <18.5	% women w/ any anemia	% underweight children	% children w/ any anemia
BRAHMAN/CHHETRI																			
Hill Brahman	√					√	√							√					
Hill Chhetri																			
Terai/Madhesi Brahman/Chhetri									*			*	*	*					
TERAI/MADHESI OTHER																			
DALIT																			
Hill Dalit									√										
Terai/Madhesi Dalit													√						
NEWAR		√	√		√			√		√	√	√	*			√	√	√	√
JANAJATI																			
Hill Janajati																			
Terai Janajati				√										√	√				
MUSLIM																			
ALL HILL/MOUNTAIN																			
ALL TERAI/MADHESI																			

Key

- Poorest performance
- Below national average performance
- Above national average performance
- √ Highest performance