



# Evaluation of a Calcium Supplementation Program for Pregnant Women in Dailekh District, Nepal

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# Table of Contents

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	<b>ACKNOWLEDGEMENTS</b>	<b>i</b>
	<b>STUDY TEAM MEMBERS</b>	<b>ii</b>
	<b>TABLE OF CONTENTS</b>	<b>iii</b>
	<b>ABBREVIATIONS</b>	<b>vi</b>
	<b>EXECUTIVE SUMMARY</b>	<b>1</b>
<b>CHAPTER 1</b>	<b>INTRODUCTION</b>	<b>7</b>
	1.1 Introduction and Background.....	7
<b>CHAPTER 2</b>	<b>METHODOLOGY</b>	<b>9</b>
	2.1 Study population and sites.....	9
	2.2 Sample design and sampling procedures.....	9
	2.3 Data collection tools.....	11
	2.4 Recruitment and training of field researchers.....	12
	2.5 Data collection and quality control.....	12
	2.6 Data management and analysis.....	13
	2.7 Ethical considerations.....	13
	2.8 Limitations and constraints of the study.....	14
<b>CHAPTER 3</b>	<b>CHARACTERISTICS OF STUDY POPULATION</b>	<b>15</b>
	3.1 Characteristics of recently delivered women (RDW) .....	15
<b>CHAPTER 4</b>	<b>ANTENATAL CARE</b>	<b>16</b>
	4.1 Utilization of ANC .....	16
	4.2 Use of iron tablets during pregnancy .....	18
	4.3 Pre-eclampsia/ eclampsia screening at ANC visit.....	21
	4.4 Place of delivery .....	24
<b>CHAPTER 5</b>	<b>CALCIUM KNOWLEDGE, COVERAGE AND COMPLIANCE</b>	<b>26</b>
	5.1 Knowledge of calcium .....	26
	5.2 Calcium coverage.....	29
	5.3 Calcium use and compliance.....	32
<b>CHAPTER 6</b>	<b>OPINIONS ON AND ATTITUDES TO CALCIUM USE</b>	<b>39</b>
	6.1 Opinion on and attitude to calcium use .....	39
	6.2 Multivariate analysis .....	42
<b>CHAPTER 7</b>	<b>LEVEL OF KNOWLEDGE AND EXPERIENCE WITH THE CALCIUM PROGRAM AMONG ANC PROVIDERS</b>	<b>43</b>
	7.1 Maternal health services .....	43
	7.2 Knowledge on calcium counselling .....	45
	7.3 Experiences working in pilot program .....	47
<b>CHAPTER 8</b>	<b>LEVEL OF KNOWLEDGE AND EXPERIENCE WITH THE CALCIUM PROGRAM AMONG FCHVS</b>	<b>49</b>
	8.1 Maternal health services .....	49
	8.2 Community meetings .....	51
	8.3 Knowledge on calcium counselling .....	52
	8.4 Experiences working in calcium pilot program .....	53

<b>CHAPTER 9</b>	<b>CONCLUSION</b>	<b>55</b>
	<b>RECOMMENDATIONS</b>	<b>56</b>
	<b>REFERENCES</b>	<b>57</b>

### List of Tables, Figures and Box

Table 2.1	Sample performance: Household Survey, Dailekh .....	3
Table 3.1	Background characteristics of respondents .....	6
Table 4.1	Number of antenatal care visits and timing of first visit .....	7
Table 4.2	Antenatal care .....	8
Table 4.3	Reasons for not visiting health facility for ANC .....	9
Table 4.4	Components of antenatal care: iron tablet .....	10
Table 4.5	Reasons for not receiving iron tablets .....	11
Table 4.6	Components of antenatal care: iron tablet .....	11
Table 4.7	Reasons for not receiving resupply of iron tablets .....	12
Table 4.8	Components of antenatal care: pre-eclampsia / eclampsia services .....	13
Table 4.9	Components of antenatal care: pre-eclampsia / eclampsia services .....	14
Table 4.10	Reasons for not planning to deliver in a health facility .....	15
Table 4.11	Place of delivery .....	15
Table 4.12	Distribution of mothers who took calcium reporting types of problems faced during last pregnancy, Dailekh, Nepal 2013 .....	16
Table 5.1	Knowledge of calcium .....	17
Table 5.2	Knowledge about calcium: number of months and time to start .....	19
Table 5.3	Knowledge about calcium and iron: number of times, number of tablets and time to take .....	19
Table 5.4	Person dispensing calcium tablets .....	21
Table 5.5	Distribution of calcium tablet bottles and promotional materials .....	22
Table 5.6	Gestational age and calcium tablet bottles distributed .....	22
Table 5.7	Types of promotional calcium materials received by respondents .....	23
Table 5.8	Calcium use: Among respondents who got calcium tablets the percentage who took calcium by months of pregnancy according to background characteristics, Dailekh, Nepal 2013 .....	24
Table 5.9	Calcium compliance: Percentage distribution of RDW by degree of compliance.....	24
Table 5.10	Reasons for stopping to take calcium .....	25
Table 5.11	Calcium storage .....	26
Table 5.12	Opinion on size of calcium tablet and side effects .....	27
Table 5.13	Types of food taken during last pregnancy .....	27
Table 5.14	FCHV and calcium programme .....	29
Table 6.1	Opinions and attitudes on calcium .....	30
Table 6.2	Reasons for advising other pregnant women to take calcium tablets, Dailekh, Nepal 2013 .....	32
Table 6.3	Reasons for not advising other pregnant women to take calcium tablets, Dailekh, Nepal 2013 .....	33
Table 6.4	Model of whether took calcium for 150 days .....	33
Table 6.5	Model of whether took 3 bottles .....	33
Table 7.1	Services provided in antenatal clinic .....	34
Table 7.2	Availability of delivery and post partum services .....	35
Table 7.3	Recent experiences of providing pre-eclampsia/ eclampsia services .....	35

Table 7.4	Availability of behavior change communication materials and distribution .....	36
Table 7.5	Reasons for administering calcium to pregnant women .....	36
Table 7.6	Knowledge on calcium counselling .....	37
Table 7.7	Knowledge of calcium .....	37
Table 7.8	Experiences from calcium pilot programme .....	39
Table 8.1	Maternal health services .....	40
Table 8.2	Maternal health services .....	41
Table 8.3	Maternal health services .....	41
Table 8.4	FCHV meetings .....	42
Table 8.5	Knowledge of calcium .....	42
Table 8.6	Knowledge on calcium counselling .....	43
Table 8.7	Knowledge on calcium use .....	43
Table 8.8	FCHV's experience from calcium pilot programme .....	44
Table 8.9	FCHV's interest in future calcium programme .....	45
Figure 5.1	Percent distribution of women taking calcium aware of iron or calcium or both or other tablets that should be taken during pregnancy, Dailekh, Nepal 2013 .....	18
Figure 5.2	Coverage of calcium distribution in percent by background characteristics and for total sample, Dailekh, Nepal 2013 .....	20
Figure 5.3	Percent distribution of respondents reporting family members aware that they were taking calcium tablets, Dailekh, Nepal 2013 .....	28
Figure 6.1	Among respondents who did not like the taste of calcium percentage recommending to change it by background characteristics, Dailekh, Nepal 2013 .....	31
Figure 6.2	Percent distribution of respondents mentioning place used to store calcium packets, Dailekh, Nepal 2013 .....	32
Box 1	Age and literacy of FCHVs, Dailekh, Nepal 2013 .....	40

# Abbreviations

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AHW	Auxiliary Health Worker
ANC	Antenatal Care
CBS	Central Bureau of Statistics
CHD	Child Health Division
DHO	District Health Office
DOHS	Department of Health Services
DPHO	District Public Health Office
FCHVs	Female Community Health Volunteer
FHD	Family Health Division
FP	Family Planning
GON	Government of Nepal
HP	Health Post
IFA	Iron Folic Acid
MCHIP	Maternal and Child Health Integrated Program
MCHW	Maternal and Child Health Worker
M&E	Monitoring and Evaluation
MER	Monitoring, Evaluation and Research
MoHP	Ministry of Health and Population
NDHS	Nepal Demographic and Health Survey
NGO	Non-Governmental Organization
NPHC	Nepal Population and Housing Census
PE/E	Pre-Eclampsia / Eclampsia
PHC	Primary Health Care Centre
PHDG	Population, Health and Development (PHD) Group
PPS	Probability Proportional to Population Size
PSU	Primary Sampling Unit
RDW	Recently Delivered Women
RH	Reproductive Health
BCC	Behaviour Change Communication
SHP	Sub Health Post
SLC	School Leaving Certificate
SPSS	Statistical Package for Social Sciences
TSV	Technical Support Visit
USAID	United States Agency for International Development
VDC	Village Development Committee
VHW	Village Health Worker
WRA	Woman of Reproductive Age



# Executive Summary

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## ***Introduction***

This study was conducted to assess the coverage and compliance of the calcium pilot programme implemented by Family Health Division with the technical and financial support from the Maternal and Child Health Integrated Program (MCHIP), led by Jhpiego, to provide calcium supplements to pregnant women for prevention of Pre/ Eclampsia (PE/E) in Dailekh district for one year ending in August 2013.

Dailekh district located in mid-western hills of Nepal has 55 Village Development Committees (VDCs) and one Municipality and according to the 2011 population census an estimated 63,073 women of reproductive age (15-49) have been living there.

## ***Methodology***

With the guidance from the Technical Working Group, FHD and MCHIP designed an evaluation study to assess the coverage and compliance of calcium supplementation programme. This includes a post-intervention household survey of recent mothers.

The household survey used a cluster sampling method to identify respondents but the sampling units were recently delivered women (RDW) who had given birth in the last 6 months. In all, 62 clusters were chosen on the basis of probability proportional to population size and from each cluster 20 RDW were randomly chosen for interview. In order to interview a woman who had either a still birth or live birth in the last 6 months preceding the survey date over 10 households were visited. The total sample size was 1,240 RDW. In addition 109 health care providers (half of them were either staff nurse or auxiliary nurse midwives) and 112 FCHVs from the respective health facilities/wards from where RDWs were selected, were also administered separate questionnaires to assess their knowledge on calcium use and their experience of implementing the pilot calcium programme.

The data processing was done in FoxPro software to generate a “cleaned” data set. The FoxPro data was transferred to SPSS system file for analysis. Data analysis was performed using simple frequency tables and two/three way cross tables. Basic statistical techniques have also been used in the analysis. The survey results have been compared with the national NDHS 2011 wherever appropriate.

## ***Characteristics of respondents or RDW***

The median age of mothers participating in the household survey was 23 years. About 18 percent of the RDW were under 20 years of age, 76 percent between 20-34 years of age and about 6 percent were 35-49 years of age. Thirty-nine percent of the respondents had no education, 14 percent had completed School Leaving Certificate (SLC) or more and 47 percent had completed primary or secondary education. In terms of caste/ethnicity, 43 percent of all respondents belonged to Chhetri/Thakuri group, followed by Dalit - 34 percent, Janjati 12 percent and Bahun/Sanyasi 12 percent.

### ***Antenatal care (ANC)***

The survey showed 95% mothers giving birth in the last 6 months reported that they attended at least one ANC visit during their last pregnancy which is higher than the national average (85%) shown by NDHS, 2011. The median duration of pregnancy at the first antenatal care visit for those with ANC was 4 months regardless of residence. In Dailekh 71 percent of pregnant women made 4 or more antenatal care visits during their entire pregnancy. More urban women (90%) have had four or more antenatal visits than rural women (69%). More mothers (75%) receiving calcium tablets had four or more antenatal visits during their pregnancy than those (71%) without calcium. Eighty-two percent of mothers received ANC from a skilled provider (a doctor, nurse, or midwife) for their most recent pregnancy.

Among those mothers who did not go for ANC, over half (55%) of them said that the health facility was too far followed by the reason "it is not necessary" (45%), "not customary" (33%), "no good service" (19%), and 9 percent each said they "did not know" and "too expensive".

Of the total respondents 95 percent received iron tablets and of them 99 percent got advice on iron tablets and 95 percent received iron tablets from a health worker or FCHVs. Most (95%) mothers receiving iron tablets at ANC visits also got resupply of iron tablets.

### ***Pre-eclampsia/ eclampsia screening at ANC visit***

Ninety-eight percent of respondents had their blood pressure taken. Ninety-seven percent and 94 percent of women had urine taken for testing and had a plan to deliver at a certain place, respectively. Of those respondents who had their blood pressure measured at first ANC visit fewer (88%) had this service at every ANC visit.

Among women who had blood pressure measured at every ANC visit, 25 percent were identified as having high blood pressure. There are substantial variations by background characteristics. Young women, rural women, women with primary and some secondary education, and Janjati and Dalit women were found having high blood pressure during pregnancy.

Of those women who had their urine sample taken at first ANC visit, 70 percent had their urine taken for testing at every ANC visit and of them 21 percent were found having problem (protein in urine) in urine. Older women, rural women, women with primary and no education, and women belonging to Bahun/ Sanyasi high castes and Dalit caste were more likely than their counterparts to have problem (protein in urine) in urine.

### ***Place of delivery***

Compared to the national rate of 63 percent deliveries that took place at home in the five years preceding the NDHS 2011 the proportion of home deliveries reported by RDW in Dailekh district was 32 percent only.

### ***Calcium knowledge, coverage and compliance***

In response to an open question demanding multiple responses about the use of calcium during pregnancy 60 percent mothers said that calcium saves mother and child from death, 40 percent mothers said that taking calcium prevents unconsciousness while 39 percent said calcium controls blood pressure. Thirteen percent mothers said that calcium helps baby become healthy/

it prevents infections/ it helps body becomes strong and other benefits mentioned were prevention of swelling of hands, legs and face, dizziness, stomach ache and headache and protection from pre-eclampsia and eclampsia. Overwhelming majority (99%) of respondents said that pregnant woman should take both iron and calcium tablets. Ninety-three percent mothers said that pregnant women should take calcium for 5 months. Overwhelming proportions (over 98%) of the respondents mentioned correct time of taking tablets, correct frequency and correct number of tablets to take everyday.

Of the survey participants 72 percent said that they started taking calcium from the 4th month, 20 percent after the 4th month and 8 percent even before the 4th month of pregnancy.

### ***Calcium coverage***

Of the total 1,240 mothers interviewed who gave birth in the last six months preceding the survey, 95 percent were counselled on calcium use and after counselling they were provided with calcium bottles. Calcium coverage is highest (98%) among women with highest education, followed by women with some secondary education and those living in urban area (97%). Staff nurse or ANM is the main dispenser of calcium to mothers as 82 percent mothers received calcium tablets from them. No mother reported receiving calcium tablets from FCHV. Among those mothers who received calcium tablets 82 percent received 3 bottles of calcium, 14 percent 2 bottles and 4 percent only one bottle.

Women receiving calcium bottles also received calcium pilot programme promotional materials such as a bag (93%) and brochure (87%) about calcium.

### ***Calcium compliance***

Of the total mothers taking part in the study, 67 percent took the full course, as they took calcium for 150 days and full course was found significantly higher among mothers living in urban areas, mothers aged 20-29, mothers with education and mothers from high caste groups such as Bahun/Sanyasi and Chhetri/Thakuri than their other counterparts. Overall, the proportion of mothers taking partial course (taking calcium for at least 90 days) was 24 percent and 9 percent mothers took short course, less than 90 days.

Multivariate analysis of the current data show that the only two variables that are significant predictors of completing a full course (by either definition—days or bottles) are gestational age at first ANC visit and the number of times they attended ANC in total. So as the total number of ANC visits attended increased, the odds of completing a full course increased. The odds of completing a full course fell as gestational age increased.

Of all respondents who received calcium, nearly all (99) took two tablets a day and they took them after food in the morning. However, not all mothers completed the course; about 10 percent stopped it for various reasons: nearly half (48%) did so because they became sick / ill followed by side effects (23%), forgot to take (20%), difficult to take the tablet as it is too big (18%), inconvenient to take every day (15%), fear of side effects (13%), vomiting (10%) and away from home (5%).

Of the respondents who discontinued taking the calcium tablets more than half (55%) of them returned the tablets to FCHVs, 30 percent mothers kept them with them, 12 percent threw them away, 3 percent returned them to health facility and a few of them said they gave to others or children threw them away.

About 71 percent mothers reported that their appetite did not change even after taking calcium tablets, 21 percent mothers reported that their appetite increased while 8 percent mothers reported the opposite.

Overwhelming proportion (97%) of study respondents said that their husbands knew that they were taking calcium while only half of their mothers-in-law knew about it followed by father-in-law (26%) and sister-in-law (8%).

Although FCHVs were not involved in distributing calcium tablets in Dailekh, over 4 in 5 respondents reported that FCHVs visited them during their last pregnancy. Over half of FCHVs visited pregnant women 4 or more times during their pregnancy; 26 percent RDW said that FCHVs visited them 3 times and 20 percent mothers visited them for 2 times or less.

### ***Opinion on calcium use***

Upon enquiry whether the mothers taking part in the calcium pilot programme liked the taste of the calcium tablet it was found that 84 percent did like the taste but one percent mothers reported difficulty in storing calcium tablet packets in their homes. The good thing is that the overwhelming majority (98%) of the mother would like to take calcium tablets if they become pregnant again, would recommend other people and pregnant women to take calcium tablets.

### ***Knowledge and experience with calcium programme among health care providers***

The antenatal care health care providers interviewed reported providing a number of antenatal care services from their health facilities. All health workers interviewed said that they assessed for swelling/oedema, did counselling on dangers signs of pregnancy, delivery and post partum and distributed iron tablets. Ninety-nine percent health workers said that they distributed calcium tablets and conducted BP examination. Ninety-eight percent health workers said that they performed urine testing for protein using dipstick, abdominal examination, TT immunization and counselling.

While assessing the knowledge of health care providers on calcium use and counselling all health care providers from hospital, PHCs and HPs spontaneously said that calcium prevents pre-eclampsia / eclampsia while the corresponding figure for SHPs was 94 percent but after prompting their proportion also increased to a 100 percent. Health care service provider's service aids such as BP set, urine sample bottles and dipstick tests for proteinuria were also found in the health facilities.

Overall, 93 percent health workers said that calcium should be used to save life of mother and child to control of high blood pressure (84%) and to prevent unconscious (82%).

About one in five (21%) health workers said that pre-eclampsia / eclampsia has been controlled and nearly equal proportion (17%) of health workers said that because of calcium programme ANC check up has become regular among pregnant women in their health facilities (Table 7.8). Equally about the same proportion (21%) of health workers shared their experience as follows: *"A great difference has been found between children born before the intake of calcium tablets and after the intake of calcium tablets by pregnant women. Children born from mothers taking calcium tablets were found to be healthy and well-nourished."*

From spot checking in 42 health facilities, it was found that the storeroom was managed according to FEFO system. Except one facility all other facilities were found managing the storeroom according to FEFO. Except in a few sub-health posts behaviour change communication materials on calcium were found in almost all health facilities. They were found displayed in waiting halls and examination rooms of service providers.

### ***Knowledge and experience with calcium programme among FCHVs***

The 112 FCHVs taking part in the study in Dailekh performed a number of services. Overall 90 percent of them referred pregnant women for ANC services in the last month. Ninety-six percent FCHVs discussed with pregnant women about birth preparedness and 72 percent distributed iron tablets, a 100 percent FCHVs discussed about calcium with pregnant women in home visits and also discussed about taking iron and calcium at different times of day in home visits. Sixty-six percent FCHVs referred pregnant women to HF for delivery services and 39 percent referred women with danger signs of pregnancy, delivery and postpartum to health facility. Seventy-six percent FCHVs were found carrying iron tablets with them.

Over 90 percent FCHVs organized monthly meetings in their respective HF in the last month and 66 percent of FCHVs organized biannual review meeting in their HF. Sixty-five percent of FCHVs participated in the meeting. FCHVs organize Mothers' Groups in their communities and conduct meeting every month where they discuss about calcium. Correct knowledge of calcium counselling and use is high among FCHVs in Dailekh.

FCHVs working for the calcium pilot programme shared their experiences with the research teams. More than half (55%) of FCHVs said they advised women to break tablet into 2 pieces if it was difficult to swallow, 31 percent each experienced improvement of health of mothers after taking calcium tablets but some women complained of dizziness, nausea after taking calcium. An interesting experience the FCHVs shared was that before women did not like calcium because they feared it was harmful but now they know the value of it and take it.

FCHV's would be interested to distribute calcium tablets in the future. A few FCHVs put some conditions before accepting to get involved in calcium distribution in future such as training, incentives and so on.

# Chapter 1: Introduction

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## 1.1 INTRODUCTION AND BACKGROUND

Family Health Division with the technical and financial support from the Maternal and Child Health Integrated Program (MCHIP), led by Jhpiego, implemented a pilot program to provide calcium supplements to pregnant women for prevention of Pre/ Eclampsia (PE/E) in Dailekh district for one year. This study is in response to the call by Jhpiego to conduct a follow-up household survey of recently delivered women (RDW) to assess the coverage and compliance of the calcium pilot.

Calcium is proven to reduce the risk of pre-eclampsia by 50 percent<sup>1</sup>. If undiagnosed, women with pre-eclampsia/eclampsia can have seizures and other medical conditions that put themselves and their babies at a high risk of mortality. In Nepal, eclampsia is the leading direct cause of maternal mortality<sup>2</sup>. Interventions to prevent and treat PE/E are possible from the household level and through all levels of the health care system. Calcium supplementation should begin early in pregnancy (at about 20 weeks) and should not be taken at the same time as iron folate supplements. This innovative calcium intervention could mean 50 percent fewer mothers at risk of PE/E and their babies would need emergency care, which is especially critical in places where women cannot easily reach a hospital. In the remote villages of Nepal, accessing health care can mean a several-hour walk through mountainous terrain.

This program supported by MCHIP is an example of a successful collaboration between MCHIP/Jhpiego and the Government of Nepal. Almost a decade ago, Jhpiego worked in partnership with the Ministry of Health and Population (MoHP) and concerned safe motherhood partners to help reduce the number of women dying from postpartum haemorrhage (PPH), which was the leading cause of maternal death at the time. The innovative PPH program trained community health workers to educate pregnant women and their families on the use and benefits of misoprostol, as well as how to properly distribute this lifesaving medication to women who could not reach a health facility to give birth. The program was so successful in preventing PPH at home births that the MoHP has since expanded the intervention from 31 to 75 districts.

## 1.2 BACKGROUND ON CALCIUM PILOT PROGRAM

Dailekh, one of 39 hill districts of the Mid-Western Region of Nepal, was selected for the pilot by the MoHP based on the recommendations of a Technical Advisory Group (TAG) formed to guide the pilot program implementation. Dailekh district was chosen because this is the most common type of hill district and has a greater population than mountain districts, but access to ANC is more difficult than in Terai (plains) districts. The pilot program was launched in August 2012. To help prevent PE/E during pregnancy, all ANC health care providers at all government health facilities in Dailekh were trained to counsel women about the benefits of calcium supplementation during pregnancy, to distribute the calcium during ANC visits and to use magnesium sulphate (MgSO<sub>4</sub>) for treatment of severe PE/E. The health facilities were also

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<sup>1</sup> Hofmeyr GJ et al. 2010.

<sup>2</sup> Nepal Maternal Mortality and Morbidity Study, Family Health Division, 2009.

provided with urine collection bottles and dipsticks to ensure the availability of universal PE/E detection services for pregnant women during ANC.

PE/E prevention intervention included counselling and distribution of calcium tablets to pregnant women by health workers during the first ANC visit. Each calcium intake was 1 gram daily (2 tablets of 1250mg of calcium carbonate containing 500mg elemental calcium in each tablet), starting preferably at 4th month or after. All pregnant women were given the entire supply of calcium for the remainder of their pregnancy.

Women were advised to take calcium after their morning meal and to take iron (iron folic acid or IFA) supplement after their evening meal. Iron is distributed for the first time by ANC service provider and resupplied primarily by the Female Community Health Volunteers (FCHVs). In addition, the ANC providers also performed PE/E screening—using blood pressure (BP) measurement and urine protein tests, using test stripes—at all ANC visits. FCHVs were trained to promote ANC attendance and compliance with the recommended calcium regimen among pregnant women who received calcium during ANC.

In consultation with the TAG, MCHIP/Jhpiego supported FHD to carry out eight activities which included – (1) development of a training package on calcium consisting of a health worker’s manual, an FCHV manual, and reference materials; (2) development of behavior change communication (BCC) materials, including a bag printed with calcium information, a brochure, posters with information on calcium, and two pages on the FCHV Birth Preparedness flip chart; (3) development of monitoring and evaluation (M&E) tools for the pilot in line with the health management information system tools; (4) purchased 26,500 bottles of calcium, dipstick and urine bottles; (5) organized a half-day orientation for district level stakeholders; (6) supplied calcium and offered logistics support to all health facilities prior to facility level training and (7) carried out district level training of trainers for all the ANC health workers (268) and FCHVs (810) and (8) organized one day review meeting for all ANC providers. The pilot program covered all 55 Village Development Committees (VDCs) and one Municipality of Dailekh. In order to review the pilot and to discuss progress, implementation bottlenecks, and next steps a meeting was organized in November 2012, which was participated by 119 health workers.

The pilot program was regularly monitored and the data collected showed 23,210 bottles of calcium distributed to 9,246 pregnant women from June 2012 to August 2013.

During the pilot period in Dailekh, a pregnant woman who came for even one antenatal check-up received a supply of calcium tablets for the duration of her pregnancy. Dailekh has 55 Village Development Committees (VDCs) and one Municipality. The 2011 population census shows 48,919 households with 261,770 populations (126,990 males and 134,780 females) in Dailekh<sup>3</sup>. Women of reproductive age (15-49) in Dailekh is 63,073<sup>4</sup>.

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<sup>3</sup> Central Bureau of Statistics (CBS). 2012. Vol. 02, NPHC 2011.

<sup>4</sup> Central Bureau of Statistics (CBS). 2012. Vol. 01, NPHC 2011.

# Chapter 2: Methodology

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## 2.1 STUDY POPULATION AND SITES

The primary study population comprised of Recently Delivered Women (RDW) i.e. women in the pilot area who gave birth in the past 6 months preceding the survey. In addition to RDWs, information on knowledge and experience with the calcium program intervention among FCHVs and antenatal care providers were collected.

## 2.2 SAMPLE DESIGN AND SAMPLING PROCEDURES

### *Sample Size Calculations*

**Recently Delivered Women:** The household survey used a cluster sampling method to identify respondents but the sampling units were recently delivered women (RDW) who had given birth in the last 6 months. In all, 62 clusters were chosen on the basis of probability proportional to population size and from each cluster 20 RDW were randomly chosen for interview. In order to interview a woman who had either a still birth or live birth in the last 6 months preceding the survey date over 10 households were visited. A total of 1,240 women (see sample size calculation details in Table 2.1) were interviewed during the household survey in order to estimate both ANC coverage in the general population of pregnant women and among women who received calcium and compliance with the recommended calcium regimen.

In order to enroll 1,240 RDW, it was assumed that approximately 17,577 households would needed to be screened, assuming the annual number of pregnancies was about 7,400 - the average family size of the mid-Western development region where Dailekh is situated is about 5 and the total population of the district is 261,770 according to the 2011 census.

Of the estimated universe of 7,400 pregnant women in the district over the course of one year it was assumed that 60% would go for ANC (at least one visit based on mid-western hills ANC data from the NDHS 2011)—estimating 4,440 pregnant women would be ANC attendees who would have access to the calcium program. It was estimated that 5% of pregnant women who attend ANC and are offered calcium would refuse to take it. Coverage of the program in terms of calcium distribution was therefore estimated at 55% of all pregnant women, meaning up to approximately 4,218 pregnant women would be calcium program participants over the course of one year (they would receive some calcium). It is known from the Nepal DHS 2011 that only around half (56%) of pregnant women report taking half or more of the full course of iron (90+ days of the 180-day advised regimen). It was therefore hypothesized that 60% of pregnant women in Dailekh district who received 2 or 3 bottles of calcium would take calcium daily for 90 or more days.

As the goal of the study was to assess prevalence of calcium consumption, the sample size calculations were based on estimating one-sample proportion with high precision, including a design effect of 2 for the cluster design and a non-response rate of 10%. Table 2.1 below summarizes the required sample size at a given level of prevalence and precision. Two separate



sample sizes were needed to be estimated: one for general population of pregnant women in whom the study would estimate the use of ANC services (coverage); and another for compliance among those who received calcium.

For the women who received calcium, the study aimed at estimating compliance. It was assumed (based on prior data on iron supplementation in this population) that the best estimate of compliance would be 60%. To estimate 60% compliance with 5% precision and assuming 10% non-response rate, a sample size of 820 pregnant women who received calcium (see Table 2.1 below) would be needed. It was assumed that about 60% of pregnant women would have been covered by ANC services based on DHS data.

This means that a sample of 820 recently delivered women was required to estimate ANC use, and a sample of 820 women who received calcium to estimate compliance. The second sample would be part of the first sample, since separate estimates were to be provided. But as more women were needed to be screened to get 820 who received calcium, plus additional women who received calcium by their fifth month of pregnancy, the final sample size was inflated by about 50% (to account for 40% of women who would not attend ANC and 10% non-response rate) to 1,240 women.

**Table 2.1 Sample size for a given prevalence and a level of precision**

Precision for the prevalence estimate	Prevalence		
	50%	60%	70%
5%	854	820	717
7%	436	418	366
10%	213	204	179

The selection of the RDWs was based on a three-stage cluster sampling approach. In the first stage, a listing of all Village Development Committees (VDC) and one municipality was made in alphabetical order along with their household/population in each ward using data from the Population Census 2011<sup>5</sup>. A ward(s) of a VDC/ municipality was considered a cluster and served as the Primary Sampling Unit (PSU). From the list of clusters, 62 clusters were chosen following probability proportional to population size (PPS) method, weighting the clusters by their respective population/household. From the list, the total population figure was noted, and the sampling interval was calculated by dividing population by 62. The first cluster was selected randomly using random number table with subsequent clusters selected by adding the value of the sampling interval to select the other 61 wards. Thus, a total of 62 clusters were selected. This level of selection was made in Kathmandu.

It was anticipated that not all sampled clusters will have the required number of households to achieve targeted number of 20 RDWs in each cluster. Therefore, the field researchers were instructed to combine adjoining ward(s) of the same VDC with the sample ward to form one cluster. This was followed until 20 RDW were interviewed.

In case of more than one eligible woman in the sampled household, only one woman who had the youngest child was selected. When the respondent selected was not available, the interviewer

<sup>5</sup> CBS, 2012.

made an appointment to conduct the interview later. At least two additional visits were made before the respondent was considered not available for an interview.

Table 2.2 presents sample performance in the present study. As the Table shows, a total of 12,901 households were screened, of which 11,983 households had at least one woman of reproductive age (WRA) – 15 to 49. The percentage of households having at least one woman of reproductive age was 92.9. From the households visited 17,109 women aged 15-49 were listed. This indicates 1.4 WRA per household which compares well with the census data of 2011 of Dailekh district which showed 1.3 WRA per household. Of the total women of reproductive age 1,262 women were identified as RDW in the last 6 months. However, 22 mothers could not be interviewed as they were away from home at the time interviewers visited them. Among the eligible mothers the response rate was 98 percent. On average, it was necessary to visit 10.4 households to find one RDW.

**Table 2.2 Sample performance: Household Survey, Dailekh**

	Survey
Number of households visited (screening questionnaire-I)	12,901
Total number of households that had at least one woman aged 15-49 years	11,983
Number of women aged 15-49 years	17,109
Number of women aged 15-49 years who gave birth in the last 6 months	1,262
Number of RDW interviewed (Main questionnaire)	1,240
Average number of households visited to find one RDW	10.4

In addition 109 health care providers (half of them were either staff nurse or auxiliary nurse midwives) and 112 FCHVs from the respective health facilities/wards from where RDWs were selected, were also administered separate questionnaires to assess their knowledge on calcium use and their experience of implementing the pilot calcium programme.

## 2.3 DATA COLLECTION TOOLS

Four tools were used in this study. The first tool was a household screening questionnaire which was administered to head of household or an adult household member above 18 years of age who could furnish household information. Household screening was necessary to identify households with a woman who delivered a baby (live birth or still birth) in the last six months.

The second tool was a quantitative structured household survey questionnaire developed by MCHIP; it was administered to women who delivered in the past 6 months. The tools were shared at calcium TWG meeting and approved by the committee. A total of 1,240 women were interviewed during the household survey in order to estimate both ANC coverage in the general population of pregnant women and among women who received calcium and their compliance with the recommended calcium regimen as well as IFA regimen.

The objectives of interviewing women who delivered in the past 6 months using quantitative structured questionnaire (tool two) were:

- To collect client demographic profile-related data (e.g. variables such as age, educational status, number and timing of ANC visits, etc.)
- To collect data on knowledge related to calcium and its role in prevention of PE/E

- To collect data on calcium distribution: coverage and compliance of calcium
- To collect data on experience with taking calcium, among those who received it
- To collect other maternal health-related information (such as IFA consumption, skilled attendance at birth, PE/E-related elements of ANC, complications, etc)

The third tool was a quantitative structured questionnaire developed by MCHIP for health care providers of Dailekh district. It was administered to health care providers of district hospital, Primary Health Care Centres, Health Posts and Sub-Health Posts in the sampled areas of the district. The objective of interviewing health care providers was to collect information on their knowledge and experiences of calcium and storeroom management.

The fourth tool was a quantitative structured questionnaire developed by MCHIP for Female Community Health Volunteers (FCHVs). It was administered to FCHVs in the sampled clusters of the district. The objective of interviewing health care providers was to collect information on their knowledge and experiences of calcium.

## 2.4 RECRUITMENT AND TRAINING OF FIELD RESEARCHERS

A total of 24 field researchers 8 field supervisors (7 males and 1 female) and 16 enumerators (15 females and 1 male) were hired for collecting the data. The female enumerators interviewed mothers who gave birth in the past six months. The field researchers were at least university graduates, experienced in collecting community level data in similar studies.

All the field researchers received one-week long intensive training from July 28 to August 3, 2013) on basic maternal health and calcium pilot programme, study objectives, methodology and interview techniques. The training curriculum included ethical considerations for human subjects protection, mechanism and techniques for confronting and overcoming their own biases, ways of administering specific questions and probing strategies. The training involved short lectures, mock-interviews, role plays and field trial. Two officers from MCHIP also gave training to the field researchers; they shed light on the importance of the survey and the calcium supplementation pilot programme.

The final draft of the questionnaire was pre-tested (with 10 women from two health facilities; this data was not processed and the instruments were destroyed to avoid confusion with the final completed questionnaires) by the enumerators during their last stage of training (which also served as practical exercise before embarking to actual data collection). The pretesting was done in Siuchatar VDC in Kathmandu district other than the sampled ones. This pre-testing helped detecting problems in wording, flow of questions and response coding. Based on the field-testing results, final adjustments to instrument were made in consultation with MCHIP.

On the last day of the training all field staff were given information about the logistics and work schedule for their field survey.

## 2.5 DATA COLLECTION AND QUALITY CONTROL

In view of the methodology and nature of the study, the fieldwork was strategically planned. There were 3 field teams led by 1 supervisor and 2 enumerators each. Two teams were assigned 7 clusters and another 6 teams were assigned 8 clusters. The female enumerators interviewed the RDW while the field supervisors were responsible for household listing and supervising enumerators for data quality and assurance.

Due to the extended monsoon at the time of field work the field team faced a lot of difficulties in moving from one village to another. Moving from one household to another was difficult due to landslides, muddy roads, footpaths and daunting mountains. The field team spent 28 days in the field and 4 days on travel. Data collection was carried out in August 10 and September 10, 2013.

The field researchers were closely supervised in order to ensure the quality of their work. One core team member from the centre in Kathmandu joined the field team after a week and spent 12 days in Dailekh to supervise and monitor the fieldwork. The completed questionnaires were checked by the core team member and on-the-spot feedback was given to the field researchers. Frequent telephonic communication with the field supervisors was maintained to monitor the progress and quality of data collection.

The field teams checked the questionnaires to ensure the completion and accuracy of each interview. At the end of each day, the field supervisor checked whether the questionnaires were filled completely and consistently. In case of any problems or shortcomings, the supervisor and/or enumerator took necessary action to complete/correct the form. The core team members reviewed the questionnaires during field visits and checked whether questionnaires were complete and consistent. All field enumerators wrote their names on the questionnaires allowing for follow up and clarification if certain information was not clear. In addition, meetings were arranged in the field to discuss progress and problems in the actual fieldwork and trouble-shooting tips were given if necessary. A debriefing meeting was held to share first hand information from the field teams after the completion of the fieldwork.

## 2.6 DATA MANAGEMENT AND ANALYSIS

All completed questionnaires were collected centrally in Kathmandu where they were manually edited, coded and entered by trained assistants using FoxPro, a special software package for entering survey data. A number of quality check mechanisms such as range and consistency checks were carried by developing computer programming. A Data Management Officer had closely monitored the work of data entry assistants and randomly checked entered data every day. Once the computer entry was accomplished, a number of quality check mechanisms such as range checks and skip instructions were developed which helped to detect the errors during the data entry stage. Errors not detected during this stage were detected by running the frequency printouts. Errors not resolved through these procedures were resolved again by reviewing the inconsistencies between frequency printouts and filled questionnaires. Data were analyzed using Statistical Package for Social Sciences (SPSS) software. Basic statistical techniques have been used in the analysis such as percentages and measures of central tendency and bivariate analyses on the main indicators. In bivariate analysis chi-square test of association was used. The survey results have been compared with the national NDHS 2011 wherever appropriate.

## 2.7 ETHICAL CONSIDERATIONS

In order to conduct this study ethical approval was obtained from Johns Hopkins School of Public Health Institutional Review Board and the Nepal Health Research Council (NHRC), Kathmandu.

Prior to conducting interviews, the interviewers obtained verbal informed consent from the respondents. Every respondent was told about the purpose of the study and convinced about the confidentiality of the data. The participants were explained about the purpose of the study and their consent to participate in it was sought. During the training the client rights issues such as right to share or not to share personal information, emotional problems, etc. were discussed and the field workers were instructed to act accordingly.

## 2.8 LIMITATIONS AND CONSTRAINTS OF THE STUDY

There are no major limitations in the study that affected the quality and outcomes of the study considerably. However, there were few minor limitations. One limitation of the study as briefly mentioned earlier, was that the field workers conducted the field work in the monsoon which was difficult on mountain slopes. Travelling from one village to another was challenging because of landslides and slippery steep trails. However, there were no major problems experienced in the field or with respondents that had any negative impact on the overall quality of the data.

# Chapter 3: Characteristics of Recently Delivered Women

This chapter presents the characteristics of the sample population. The current age, residence, level of education and caste/ethnicity of recently delivered women (RDW) are discussed.

## 3.1 Characteristics of recently delivered women (RDW)

Table 3.1 shows about 8 percent of the RDW living in urban area while the remaining vast majority live in the rural areas. The Table also shows that about 18 percent of the RDW were under 20 years of age, 67 percent between 20-29 years of age and about 15 percent were 30 years of age and over at the time of the survey. The median age of respondents was 23 years. Thirty-nine percent of the respondents have no education, 14 percent had completed School Leaving Certificate (SLC) or more and 47 percent had completed primary or secondary education. In terms of caste/ethnicity, 43 percent of all respondents belonged to Chhetri/Thakuri group, followed by Dalit - 34 percent, Janjati 12 percent and Bahun/Sanyasi 12 percent.

Table 3.1 Background characteristics of RDW

Percent distribution of women respondents by selected background characteristics, Dailekh, Nepal 2013				
Background characteristics	Weighted		Un-weighted	
<b>Residence</b>	Number <sup>a</sup>	Percent	Number	Percent
Rural	1,140	91.9	1,080	87.1
Urban	100	8.1	160	12.9
<b>Age</b>				
15-19	218	17.6	217	17.5
20-24	536	43.2	540	43.5
25-29	297	24.0	296	23.9
30-34	115	9.3	112	9.0
35-39	54	4.4	54	4.4
40-44	20	1.6	20	1.6
45-49	1	0.1	1	0.1
<b>Median</b>		<b>23.0</b>		
<b>Education</b>				
No education	484	39.0	473	38.1
Primary	240	19.4	236	19.0
Some secondary	338	27.3	340	27.4
SLC and above	177	14.3	191	15.4
<b>Caste/ethnicity</b>				
Chhetri/Thakuri	531	42.8	534	43.1
Bahun/Sanyasi	142	11.5	141	11.4
Janjati <sup>b</sup>	148	11.9	149	12.0
Dalit	420	33.9	416	33.5
<b>Total</b>	<b>1,240</b>	<b>100.0</b>	<b>1,240</b>	<b>100.0</b>

<sup>a</sup> Number of valid cases is different from the total count in the table because the cell counts have been rounded.

<sup>b</sup> Janjati includes 3 Muslim and 1 Terai Middle Caste women

# Chapter 4: Antenatal Care

This chapter describes the utilization of antenatal care (ANC) services as reported by RDW during their last pregnancy and the kind of preparations made for the delivery of their last child. Information related to the use of antenatal services including number and timing of ANC visits and source of antenatal services received from health service providers was sought in the survey.

## 4.1 Utilization of ANC

Utilization of ANC service by pregnant women has been high in Dailekh; the survey showed 95% mothers giving birth in the last 6 months reported that they attended at least one ANC visit during their last pregnancy (Table 4.1). The figure is higher than the national average (85%) shown by NDHS, 2011<sup>6</sup>.

Number of antenatal care visits and timing of first visit	All sample women			Women participating in calcium pilot		
	Residence		Total	Residence		Total
	Rural	Urban		Rural	Urban	
<b>Number of ANC visits</b>						
None	5.6	2.9	5.4	0.0	0.0	0.0
1	4.0	1.0	3.7	4.2	1.0	3.9
2-3	21.5	5.9	20.2	22.8	6.1	21.4
4+	68.9	90.2	70.7	73.0	92.9	74.7
Total	100.0	100.0	100.0	100.0	100.0	100.0
<b>Number of months pregnant at time of first ANC visit</b>						
No antenatal care	5.6	3.0	5.4	0.0	0.0	0.0
<4	21.3	44.6	23.2	22.6	46.4	24.6
4-5	60.4	50.5	59.6	63.9	52.6	63.0
6-7	11.4	2.0	10.6	12.1	1.0	11.2
8-9	1.3	0.0	1.2	1.4	0.0	1.3
Total	100.0	100.0	100.0	100.0	100.0	100.0
<b>Number of women</b>	<b>1,140</b>	<b>100</b>	<b>1,240</b>	<b>1,075</b>	<b>98</b>	<b>1,173</b>
Median months pregnant at first visit (for those with ANC)	4.0	4.0	4.0	4.0	4.0	4.0
<b>Type of health facility visited for first ANC</b>						
Sub health post				67.4	37.8	65.0
Health post				26.0	9.2	24.6
PHCC				4.7	0.0	4.3
Hospital				1.8	53.1	6.1
Total				100.0	100.0	100.0
<b>Number of women with ANC</b>				<b>1,075</b>	<b>98</b>	<b>1,173</b>

<sup>6</sup> MoHP, New ERA and ICF International Inc, 2012

Of all women participating in the study area, 23.2 percent made their first antenatal care visit before the fourth month of pregnancy. The median duration of pregnancy at the first antenatal care visit for those with ANC was 4 months regardless of residence (Table 4.1).

Table 4.1 also shows that 71 percent of pregnant women made 4 or more antenatal care visits during their entire pregnancy. Urban women (90%) are more likely to have had four or more antenatal visits than rural women (69%). Nationally over the past 15 years, there has been a five-fold increase in the percentage of women with four or more antenatal visits during their pregnancy (from 9 percent in 1996 to 50 percent in 2011) but in Dailekh, despite being largely a rural area the proportion of women with four or more ANC visits has increased (71%) tremendously.

Among mothers who participated in calcium pilot programme the percentage of women with four or more antenatal visits during their pregnancy was 75 percent which is higher by 4 percentage points estimated for all RDW.

Eighty-two percent of mothers received antenatal care from a skilled provider (a doctor, staff nurse or ANM) for their most recent pregnancy (Table 4.2).

Table 4.2 Antenatal care

Percent distribution of women by antenatal care (ANC) provider during last pregnancy and the percentage receiving ANC from a skilled provider according to background characteristics, Dailekh, Nepal 2013

Background characteristics	Antenatal care provider					Total	Percentage receiving ANC from a skilled provider <sup>1</sup>	Number of women <sup>a</sup>
	No ANC	Doctor	Staff nurse/A NM	MCH W	HA/AH W/CMA			
<b>Mother's age at birth**</b>								
<20	4.6	2.3	82.6	7.3	3.2	100.0	84.9	218
20-34	5.2	2.6	79.1	7.0	6.1	100.0	81.7	947
35-49	9.5	10.8	67.6	5.4	6.8	100.0	78.4	75
<b>Residence</b>								
Rural	5.6	3.1	78.4	7.4	5.5	100.0	81.4	1,140
Urban	3.0	4.0	85.1	1.0	6.9	100.0	89.1	100
<b>Education***</b>								
No education	8.5	2.7	77.7	5.0	6.2	100.0	80.4	484
Primary	5.4	4.2	72.5	10.8	7.1	100.0	76.8	240
Some secondary	3.0	2.1	84.0	7.1	3.9	100.0	86.1	338
SLC and above	1.7	4.5	81.8	6.3	5.7	100.0	86.4	177
<b>Caste/ethnicity</b>								
Chhetri/Thakuri	4.2	3.8	79.8	7.4	4.9	100.0	83.8	531
Bahun/Sanyasi	7.8	2.1	73.8	6.4	9.9	100.0	76.1	142
Janjati <sup>b</sup>	9.5	2.7	76.9	4.8	6.1	100.0	79.1	148
Dalit	4.8	2.6	80.5	7.1	5.0	100.0	83.1	420
<b>Total</b>	<b>5.4</b>	<b>3.1</b>	<b>78.9</b>	<b>6.9</b>	<b>5.6</b>	<b>100.0</b>	<b>82.0</b>	<b>1,240</b>

<sup>a</sup>Number of valid cases is different from the total count in the cross tabulation table because the cell counts have been rounded.

<sup>b</sup>Janjati includes 3 Muslim and 1 Terai Middle Caste women

<sup>1</sup> Skilled provider includes doctor, nurse, and midwife

Significant at \*p<0.05; \*\*p<0.01; \*\*\*p<0.001.



In addition, 12.6 percent of mothers received antenatal care from trained health workers such as a health assistant or auxiliary health worker (AHW), a maternal and child health worker (MCHW), or a village health worker (VHW) (Table 4.2). None received antenatal care from female community health volunteer (FCHV) although less than 1 percent of women did so from an FCHV in 2011<sup>7</sup>.

Younger mothers (less than age 20) and urban mothers are more likely to receive antenatal care from a skilled provider than older and rural mothers (Table 4.2). Women with some secondary and School Leaving Certificate (SLC) and higher are more likely to receive antenatal care from a skilled provider (86%) than women with no education (80%).

In Dailekh caste/ethnicity does not appear to affect ANC utilization much as lower proportion of high caste group such as Bahun received antenatal care from a skilled provider than Dalit and Janjati although highest proportion of Chhetri/Thakuri received antenatal care from a skilled provider.

Information on reasons for not utilizing ANC services was also gathered from mothers (n=67) who did not go for antenatal care from a health facility. Over half (55%) of those mothers said that the health facility was too far followed by the reason "it is not necessary" (45%), "not customary" (33%), "no good service" (19%), and 9 percent each said they "did not know" and "too expensive" (Table 4.3). Twenty-eight percent mothers mentioned other reasons for not going for ANC.

Reasons for not visiting health facility for ANC (Multiple responses)	Number of respondents=67		
	Unprompted	Prompted	Total
Health facility too far	46.3	9.0	55.2
Not necessary/needed	35.8	9.0	44.8
Not customary	23.9	9.0	32.8
No good service	9.0	10.4	19.4
No one was there to accompany	7.5	10.4	17.9
Did not know where to go	0.0	9.0	9.0
Too expensive	0.0	9.0	9.0
Other <sup>(1)</sup>	28.4	0.0	28.4

(1) Other includes embarrassing to see a medical person (n=8), away from home/in India (n=4), family members did not allow (n=3), unmarried (n=1), health facility does not identify sex of foetus (n=1), health provider unavailable (n=1) and no time to visit health facility (n=1)

## 4.2 Use of iron tablets during pregnancy

Table 4.4 presents information on the percentage of women who took iron tablets during their most recent pregnancy preceding the survey. The table shows the percentage of women who got health workers' advice on iron tablets, percentage who received iron tablets and number of iron tablets received.

<sup>7</sup> MoHP, New ERA and ICF International Inc, 2012

Of the total mothers interviewed 95.2 percent (n=1,180) received iron tablets from health workers and of them 99 percent got advice on iron tablets. (Table 4.4)<sup>8</sup>. There is little variation by background characteristics of women receiving iron tablets.

Women were asked about the number of iron tablets they received at first ANC visit and overall 82 percent received 30 tablets (Table 4.4).

Table 4.4 Components of antenatal care: iron tablet

The percentage distribution of women who got advice from health care provider, percentage who received iron tablets and number of iron tablets received according to background characteristics, Dailekh, Nepal 2013

Background characteristics	Iron tablets		Among respondents who got iron tablets					Total Number <sup>a</sup>				
	Got health worker's advise to take	Received	Percent of women receiving number of tablets at first visit									
			10-20	30	40-50	60	70-150					
%	Number <sup>a</sup>	%	Number <sup>a</sup>	%	%	%	%					
<b>Mother's age at birth</b>												
<20	98.1*	204	94.5**	206	2.4	84.1	3.4	9.2	1.0	100.0	207	
20-34	99.1*	889	95.7**	906	3.9	81.6	3.5	10.7	0.3	100.0	907	
35-49	95.5*	64	90.5**	67	6.0	71.6	7.5	13.4	1.5	100.0	67	
<b>Residence</b>												
Rural	98.5	1,060	94.9	1,082	3.8	81.7	3.1	11.0	0.4	100.0	1,082	
Urban	100.0	98	97.0	98	3.1	80.6	9.2	6.1	1.0	100.0	98	
<b>Education</b>												
No education	98.6	437	93.0	451	4.7	84.2	3.3	7.3	0.4	100.0	451	
Primary	99.1	226	94.2	227	2.2	82.3	2.7	12.4	0.4	100.0	227	
Some secondary	98.8	324	96.7	327	3.1	77.7	4.3	14.4	0.6	100.0	327	
SLC and above	98.3	171	98.9	175	4.0	81.7	4.6	9.1	0.6	100.0	175	
<b>Caste/ethnicity</b>												
Chhetri/Thakuri	99.6	506	97.7	519	2.7	80.4	5.6	10.6	0.8	100.0	519	
Bahun/Sanyasi	96.9	127	95.0	134	1.5	85.2	3.0	9.6	0.7	100.0	134	
Janjati <sup>b</sup>	97.8	131	87.8	130	3.8	80.0	3.1	12.3	0.8	100.0	130	
Dalit	98.5	394	94.5	397	5.8	82.1	1.5	10.6	0.0	100.0	397	
<b>Total</b>	<b>98.7</b>	<b>1,158</b>	<b>95.2</b>	<b>1,180</b>	<b>3.7</b>	<b>81.5</b>	<b>3.6</b>	<b>10.7</b>	<b>0.5</b>	<b>100.0</b>	<b>1,180</b>	

<sup>a</sup>Number of valid cases is different from the total count in the cross tabulation table because the cell counts have been rounded.

<sup>b</sup>Janjati includes 3 Muslim and 1 Terai Middle Caste women

Significant at \*p<0.05; \*\*p<0.01; \*\*\*p<0.001.

Young, urban and women with higher education are more likely to receive iron tablets than their counterparts, who are older, live in rural areas and less educated (Table 4.4). Among caste/ethnic groups, relatively fewer (88%) Janjati women received calcium tablets compared to women of other castes including Dalit.

<sup>8</sup> Every pregnant woman receives iron tablets first from a health facility where she is examined for contraindication but afterwards she gets supplementary iron tablets from her community FCHV.

Table 4.5 Reasons for not receiving iron tablets  
Percent of RDW reporting reasons for not receiving iron tablets during last pregnancy, Dailekh, Nepal 2013

Reasons for not receiving Iron tablets (Multiple responses)	Percent of cases
Did not want it	57.4
None was available (stock-out)	34.4
Needed to discuss with husband	4.9
Needed to discuss with mother-in-law	3.3
It is embarrassing	1.6
Lived in India	3.3
Health facility too far	3.3
Total n	60

A small percentage of mothers (about 5 percent) did not receive iron tablets during their last pregnancy and, of those, more than half (57%) of them said that they did not receive them because they did not want the iron tablets (Table 4.5). Another reason 34% of these mothers did not receive iron was due to tablet stock-out at the health facility. Other reasons

mentioned by mothers were that they needed to discuss taking IFA with their husband or mother-in-law, it was embarrassing to visit a health facility, and some lived in India or in places where the health facility was too far to visit.

Of those mothers who received iron tablets at ANC visits, they were asked whether they got resupplies of iron tablets and in case they did the source of resupply. Most mothers (94.7% or n=1,117) got resupply of iron tablets (Table 4.6).

Table 4.6 Components of antenatal care: iron tablet

The percentage distribution of women who got resupply of iron tablets and source of resupply of iron tablets according to background characteristics, Dailekh, Nepal 2013

Background characteristics	Iron tablets		Among respondents who got resupply of iron tablets				Total	
	Got a resupply of iron tablets		Source of resupply of iron tablets					
	%	Number <sup>a</sup>	ANC/health facility	FCHV	Pharmacy/medical shop	%	Number <sup>a</sup>	
<b>Mother's age at birth</b>								
<20	94.6	208	37.4	62.6	0.0	100.0	195	
20-34	94.9	897	35.9	63.3	0.8	100.0	860	
35-49	92.5	67	35.5	62.9	1.6	100.0	62	
<b>Residence</b>								
Rural	94.5	1,082	34.9	64.5	0.6	100.0	1,023	
Urban	95.9	98	50.0	48.9	1.1	100.0	94	
<b>Education *</b>								
No education	92.0	451	30.8	69.2	0.0	100.0	415	
Primary	96.5	227	39.4	60.6	0.0	100.0	218	
Some secondary	96.0	327	36.9	61.8	1.3	100.0	314	
SLC and above	96.6	175	43.2	54.4	2.4	100.0	169	
<b>Caste/ethnicity *</b>								
Chhetri/Thakuri	96.7	519	34.6	64.4	1.0	100.0	503	
Bahun/Sanyasi	93.3	134	37.6	62.4	-	100.0	125	
Janjati <sup>b</sup>	91.5	130	39.8	59.3	0.8	100.0	118	
Dalit	93.5	397	36.4	63.1	0.5	100.0	371	
<b>Total</b>	<b>94.7</b>	<b>1,180</b>	<b>36.1</b>	<b>63.2</b>	<b>0.7</b>	<b>100.0</b>	<b>1,117</b>	

<sup>a</sup>Number of valid cases is different from the total count in the cross tabulation table because the cell counts have been rounded.

<sup>b</sup>Janjati includes 3 Muslim and 1 Terai Middle Caste women

Significant at \*p<0.05; \*\*p<0.01; \*\*\*p<0.001.

FCHVs were the major source (63%) of resupply of iron tablets after the first contact with health facility (Table 4.6). In rural areas FCHVs distribute iron tablets in their community and at least there is one FCHV in one ward of VDC. Health facility was the second major source of resupply of iron tablets while very few mothers got resupply of iron tablets from pharmacy/medical shop. Among the few mothers (5%) who did not receive resupply of iron tablets, 39 percent reported stock-out, 33 percent could not collect them and 29 percent didn't want them (Table 4.7).

Table 4.7 Reasons for not receiving resupply of iron tablets

Percent of RDW (n=63) reporting reasons for not receiving resupply of iron tablets during last pregnancy, Dailekh, Nepal 2013			
Reasons for not receiving resupply of iron tablets (Multiple responses)	Percent of cases	Reasons for not receiving resupply of iron tablets (Multiple responses)	Percent of cases
Not available (stock-out)	38.7	Forgot to collect them	1.6
Could not collect them	32.3	Nurse advised not to take anymore	1.6
Did not want them	29.0	Caused vomiting	1.6
Needed to discuss with husband	6.5	Did not know	1.6
Needed to discuss with mother-in-law	1.6		

### 4.3 Pre-eclampsia/ eclampsia screening at ANC visit

Pregnant women who came for ante natal care check up were screened for Pre/ Eclampsia (PE/E) in Dailekh. The survey respondents were enquired about Pre/ Eclampsia screening when they visited a health facility for their last pregnancy. Ninety-eight percent of pregnant women who participated in calcium pilot programme seeking antenatal care had their blood pressure taken. Ninety-seven percent of women had urine sample taken for testing and 94 percent had a plan to deliver at a certain place (Table 4.8). Of those women who had their blood pressure measured at first ANC visit fewer (87.5%) had this service at every ANC visit.

Overall, among pregnant women who received calcium tablets and whose blood pressure was measured at every ANC visit, 25.4 percent were identified as having high blood pressure during at least one ANC visit. There are substantial variations by background characteristics. Women less than 20 years of age, rural women, women with primary and some secondary education, and women belonging to Janjati and Dalit groups were more likely than their counterparts to have high blood pressure during pregnancy (Table 4.8).

Although 97 percent of pregnant women receiving calcium tablets during their last pregnancy had their urine sample taken at first ANC visit, fewer (70%) of them had their urine taken for testing at every ANC visit (Table 4.8).

Table 4.8 Components of antenatal care: pre-eclampsia / eclampsia services

Among respondents who got calcium tablets the percentage receiving specific service according to background characteristics, Dailekh, Nepal 2013

Background characteristics	Among respondents who got calcium tablets the percentage who had				Among respondents who had blood pressure measured had		
	Blood pressure measured at first visit	Urine sample taken	A plan to deliver at home, HF and other place	Number <sup>a</sup>	Blood pressure measured at every ANC visit	High blood pressure identified	Number <sup>a</sup>
<b>Mother's age at birth</b>							
<20	98.1	97.6	94.2	207	82.8*	27.1	204
20-34	97.9	96.8	93.8	898	88.5*	25.4	879
35-49	100.0	98.5	91.0	67	88.1*	19.4	67
<b>Residence</b>							
Rural	98.2	97.4*	93.3	1,076	87.4**	26.8	1,056
Urban	95.9	92.9*	96.9	98	88.3**	9.6	94
<b>Education</b>							
No education	98.4	97.1	93.0	443	89.0**	24.3	436
Primary	98.2	97.8	93.4	227	87.9**	30.0	223
Some secondary	97.3	97.0	93.0	328	84.6**	27.9	319
SLC and above	98.3	96.0	96.6	174	88.9**	17.0	171
<b>Caste/ethnicity</b>							
Chhetri/Thakuri	98.2	97.8	93.3	508	87.6	22.0	499
Bahun/Sanyasi	99.2	96.9	90.8	131	86.2	26.9	130
Janjati <sup>b</sup>	97.0	94.8	94.8	134	88.5	30.0	130
Dalit	98.0	96.3	94.5	400	87.5	27.6	392
<b>Total</b>	98.0	97.0	93.6	1,173	87.5	25.4	1,150

<sup>a</sup>Number of valid cases is different from the total count in the cross tabulation table because the cell counts have been rounded.<sup>b</sup>Janjati includes 3 Muslim and 1 Terai Middle Caste women

Significant at \*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001.

Of the women who had their urine tested at every ANC visit, 21 percent were found having problem (protein in urine) in urine during their pregnancy. Older women, rural women, women with primary and no education, and women belonging to Bahun/ Sanyasi high castes and Dalit caste were more likely than their counterparts to have problem (protein in urine) in urine during pregnancy (Table 4.9).

Most women (96.2%) participating in calcium supplementation pilot programme planned to deliver in a health facility. Despite the existence of a large number of birthing centres in Dailekh, still about 4 percent women did not plan to deliver in a health facility (Table 4.9).

Table 4.9 Components of antenatal care: pre-eclampsia /eclampsia services

Among respondents who got calcium tablets the percentage receiving specific service according to background characteristics, Dailekh, Nepal 2013

Background characteristics	Among respondents who had urine sample taken		Problem in urine		Among respondents who planned for a place of delivery			
	Urine sample taken at every visit	Number <sup>a</sup>	(protein in urine)	Number <sup>a</sup>	Home delivery	Health facility delivery	%	Number <sup>a</sup>
<b>Mother's age at birth</b>								
<20	62.9**	202	16.5	127	0.5*	99.5*	100.0	195
20-34	72.6**	869	21.7	631	4.5*	95.5*	100.0	841
35-49	57.6**	67	24.3	37	4.9*	95.1*	100.0	62
<b>Residence</b>								
Rural	74.1**	1,047	21.3	776	4.1	95.9	100.0	1,003
Urban	23.1**	91	14.3	21	1.1	98.9	100.0	94
<b>Education</b>								
No education	77.2**	430	25.0**	332	3.1*	96.9*	100.0	413
Primary	73.5**	223	23.8**	164	7.0*	93.0*	100.0	213
Some secondary	62.4**	319	14.1**	198	2.6*	97.4*	100.0	304
SLC and above	61.1**	167	16.7**	102	3.6*	96.4*	100.0	168
<b>Caste/ethnicity</b>								
Chhetri/Thakuri	68.3	498	18.3	339	4.2	95.8	100.0	475
Bahun/Sanyasi	68.5	127	25.3	87	5.0	95.0	100.0	119
Janjati <sup>b</sup>	67.2	128	17.4	86	4.8	95.2	100.0	126
Dalit	73.6	386	23.9	284	2.6	97.4	100.0	378
<b>Total</b>	<b>70.0</b>	<b>1,139</b>	<b>21.0</b>	<b>796</b>	<b>3.8</b>	<b>96.2</b>	<b>100.0</b>	<b>1,098</b>

<sup>a</sup>Number of valid cases is different from the total count in the cross tabulation table because the cell counts have been rounded.<sup>b</sup>Janjati includes 3 Muslim and 1 Terai Middle Caste women

Significant at \*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001.

The respondents who did not plan to deliver in a health facility (4% of mothers) were asked for reasons for not planning to deliver in a health facility during their pregnancy. In order to internalize the reasons it is necessary to understand the geography of Dailekh district. Despite the fact that many health facilities in Dailekh have birthing centres women still find it difficult to get there because of difficult terrains where there are no motor able roads. It is no wonder over half of mothers who did not plan to deliver in a facility, (56%) of them mentioned transportation problem or health facility being too far on foot up and down the mountains (Table 4.10).

Second important reason for not planning to deliver in a health facility was that it is not customary (17%) for Dailekh women to deliver in a health facility. About 10 percent each mentioned that it "costs too much" or "husband/family do not allow". Seven percent each mentioned "do not trust facility/poor quality service" and "no female provider at a facility" (Table 4.10).

Reasons for not planning to deliver in a health facility during last pregnancy, Dailekh, 2013			
Reasons for not planning to deliver in a health facility	Number of respondents=42		Total
	Unprompted	Prompted	
Costs too much	2.4	7.1	9.5
Too far/no transportation	53.5	2.3	55.8
Do not trust facility/poor quality service	2.4	4.8	7.1
No female provider at a facility	2.4	4.8	7.1
Husband/family did not allow	4.8	4.8	9.5
Not customary	4.8	11.9	16.7
Other <sup>(1)</sup>	4.8	0.0	4.8

<sup>(1)</sup> Other includes not necessary (n=1) and no one was there to accompany (n=1)

#### 4.4 Place of delivery

Table 4.11 shows the place of birth of last child. Compared to the national rate of 63 percent deliveries that took place at home in the five years preceding the survey of 2011 (MoHP, New ERA and ICF International, 2012) the proportion of home deliveries found in this study in Dailekh is low (32%).

Table 4.11 Place of delivery

Background characteristics	Place of delivery			Total	
	Home	Health facility	Other <sup>1</sup>	%	Respondents <sup>a</sup>
<b>Mother's age at birth</b>					
<20	28.4	69.7	1.9	100.0	208
20-34	32.3	66.4	1.3	100.0	898
35-49	32.8	65.7	1.5	100.0	67
<b>Residence**</b>					
Rural	33.2	65.2	1.6	100.0	1,075
Urban	14.4	85.6	0.0	100.0	98
<b>Education ***</b>					
No education	37.0	61.9	1.1	100.0	444
Primary	33.5	65.2	1.3	100.0	228
Some secondary	28.7	69.8	1.5	100.0	328
SLC and above	21.3	77.0	1.7	100.0	173
<b>Caste/ethnicity</b>					
Chhetri/Thakuri	33.1	66.1	0.8	100.0	508
Bahun/Sanyasi	29.0	68.7	2.3	100.0	131
Janjati <sup>b</sup>	30.6	66.4	3.0	100.0	134
Dalit	31.3	67.5	1.3	100.0	400
<b>Total</b>	31.7	66.9	1.4	100.0	1,173

<sup>1</sup> Delivered on the way to health facility.

<sup>a</sup> Number of valid cases is different from the total count in the cross tabulation table because the cell counts have been rounded.

<sup>b</sup> Janjati includes 3 Muslim and 1 Terai Middle Caste women

Significant at \*p<0.05; \*\*p<0.01; \*\*\*p<0.001.

Table 4.11 presents the place of birth of last child by selected background characteristics for survey respondents. The proportion of institutional delivery has increased substantially in 2013 (66.9%, Table 4.11) compared to 2011 in Dailekh because it was only 24.5% in 2011 (MOHP, 2012) in the Mid-western hill region to which Dailekh belongs. Table 4.8 also shows that there is a positive relationship of education with institutional delivery in that more educated RDW are

more likely to have their delivery in health institutions. With age, however, institutional delivery is inversely related. The NDHS 2011<sup>9</sup> found a very strong association between health facility delivery and RDW's education. This association has been corroborated by the calcium pilot programme survey results too.

Attempt has been made to find out association between caste/ethnicity and place of delivery using logistic regression method. However, the data do not show any pattern between higher and lower caste/ethnic groups and place of delivery; there is very little variations among different caste/ethnic groups.

All respondents or mothers who took part in calcium pilot supplementation programme were asked whether they experienced any problem during their pregnancy and in response 51% of them mentioned that they had a problem(s) (Table 4.12). About one in four (23%) reported severe headache, followed by upper abdominal pain (18%), swelling of hands and face (12%), blurred vision (10%), lower abdominal pain (8%), accelerated/ reduced foetal movement (7%), convulsion and fit, high fever, vomiting and difficulty in breathing (6% each), bleeding (4%), dizziness and body pain/back pain/heaviness (3% each), and so on (Table 4.12). It must, however, be noted that it is not clear whether the pregnant women experienced those problems before taking calcium tablets or after taking them; it may well be that many mothers had those problems before visiting the health facility.

Table 4.12 Distribution of mothers who took calcium reporting types of problems faced during last pregnancy, Dailekh, Nepal 2013

Problems faced during last pregnancy	Distribution		Problems faced during last pregnancy	Distribution	
	Number	%		Number	%
Severe headache	272	23.2	Unconscious	22	1.9
Upper abdominal pain	209	17.8	Weakness	13	1.1
Swelling of hands and face	142	12.1	Loss of appetite	10	0.9
Blurred vision	115	9.8	Watery discharge	9	0.8
Lower abdominal pain	89	7.6	Water broke without labour	8	0.7
Accelerated/reduced foetal movement	79	6.7	Burning urination	7	0.6
Convulsion and fit	71	6.1	Chest in-drawing	5	0.4
High fever	71	6.1	Lower abdominal pain	2	0.2
Vomiting/ nausea	70	6.0	Body itching	2	0.2
Difficulty breathing	69	5.9	Typhoid	2	0.2
Bleeding	47	4.0	Blood spotting	1	0.1
Dizziness	35	3.0	Cholera	1	0.1
Body pain/back pain/heaviness	33	2.8	Nothing	573	48.8
			Total	1,173	

<sup>9</sup> Ibid., p. 125.



# Chapter 5: Calcium Knowledge, Coverage, and Compliance

## 5.1 Knowledge of calcium

Mothers who took part in calcium pilot supplementation programme were asked about their knowledge of use of calcium during pregnancy. Sixty percent mothers said that calcium saves mother and child from death and interestingly mothers with no education and mothers living in rural areas mentioned this more than their other counterparts (Table 5.1). Forty percent mothers said that taking calcium prevents unconsciousness while 39 percent said calcium controls blood pressure

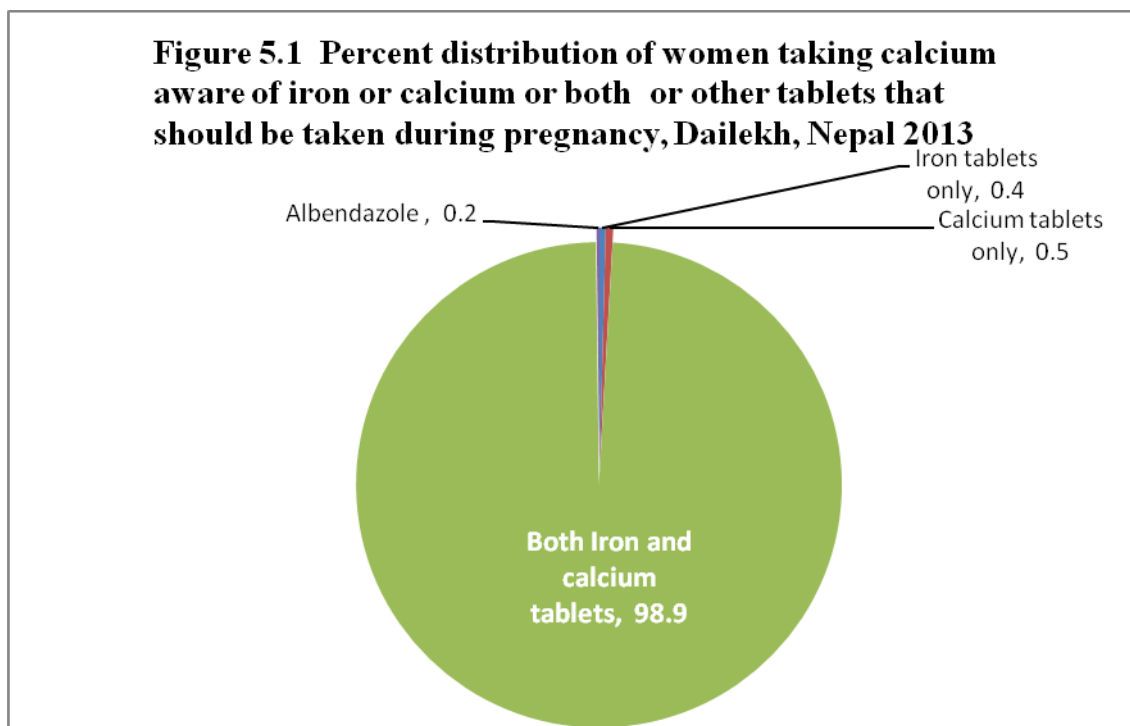
Table 5.1 Knowledge of calcium

Knowledge of use of calcium during pregnancy	Background characteristics									Total	
	Age group			Residence		Education			%	Number	
	<20	20-34	35-49	Rural	Urban	No education	Primary	Some secondary			SLC & above
Saves mother and child from death	58.7	61.6	50.7	61.4	50.0	61.6	57.9	61.9	58.0	60.4	708
Prevents unconsciousness	44.2	39.2	31.3	42.2	12.2	40.0	40.4	41.2	35.1	39.7	466
Controls blood pressure	36.1	40.1	31.3	39.6	30.6	39.3	40.8	39.3	34.5	38.9	456
Baby becomes healthy/prevents infections/ body becomes strong	15.4	11.9	20.9	10.3	42.9	9.0	15.4	14.0	17.8	13.0	153
Increases blood in mother	6.7	6.8	11.9	6.3	16.3	9.3	5.3	6.1	6.3	7.1	83
Prevents swelling of hands, legs and face	7.7	6.9	3.0	7.3	2.0	6.1	9.2	7.6	4.0	6.8	80
Mother's health improves/ prevents infections/ person becomes healthy	4.3	6.1	9.0	4.7	19.4	4.1	6.6	6.1	9.8	6.0	70
Strengthens baby's bone development	4.3	5.3	4.5	5.2	4.1	3.2	3.1	6.1	11.5	5.1	60
Prevents dizziness	4.8	4.7	1.5	4.8	1.0	4.3	3.5	5.8	4.0	4.5	53
Prevents/ reduces stomachache and headache	5.8	4.3	1.5	4.8	0.0	4.3	4.8	5.2	2.9	4.4	52
Protects from pre-eclampsia and eclampsia	3.8	2.8	1.5	3.0	3.1	0.9	0.9	3.4	9.8	2.9	34
Prevents weakness in mothers	1.0	1.9	4.5	2.0	1.0	2.0	1.3	2.7	0.6	1.9	22
Giving birth becomes easy	0.5	0.6	1.5	0.7	0.0	0.2	1.3	0.9	0.0	0.6	7
Increases blood in baby	0.5	0.4	0.0	0.1	3.1	0.2	0.0	0.6	0.6	0.3	4
Prevents blurred vision	0.5	0.2	0.0	0.3	0.0	0.0	0.9	0.3	0.0	0.3	3
Prevents vomiting	0.0	0.2	0.0	0.2	0.0	0.5	0.0	0.0	0.0	0.2	2
Increases appetite	0.0	0.2	0.0	0.2	0.0	0.2	0.0	0.3	0.0	0.2	2
Prevents convulsion	0.0	0.1	0.0	0.1	0.0	0.2	0.0	0.0	0.0	0.1	1
Do not know	0.0	0.1	0.0	0.0	1.0	0.2	0.0	0.0	0.0	0.1	1

Total	208	898	67	1,075	98	443	228	328	174	1,173
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Thirteen percent mothers said that calcium helps baby become healthy/ it prevents infections/ it helps body becomes strong (Table 5.1). Other benefits of taking calcium during pregnancy mentioned by sample respondents were increases blood in mother, prevents swelling of hands, legs and face, mother's health improves/ prevents infections, strengthens baby's bone development, prevents dizziness, prevents/ reduces stomach ache and headache, protects from pre-eclampsia and eclampsia, prevents weakness in mothers, giving birth becomes easy and so on.

Inquiry was made with mothers who took part in calcium pilot supplementation programme by asking them what drugs should be taken by a woman during her pregnancy. Overwhelming majority (98.9%) of respondents said that pregnant woman should take both iron and calcium tablets (Figure 5.1).



Mothers who took part in calcium pilot supplementation programme were asked how long a pregnant woman should take calcium and in response 93 percent said that she should take it for 5 months (Table 5.2). Young mothers, mothers living in rural areas, mothers with even low education and mothers belonging to high caste groups such as Bahun/Sanyasi and Chhetri/Thakuri were more likely to have correct knowledge of the length of taking calcium tablets than their other counterparts. Four percent mothers said that calcium should be taken for 6 months, 7 months, 8 months or 9 months. About 3 percent mothers said that calcium should be taken for less than 5 months.

Eighty percent mothers said that calcium should be taken from the 4th month of pregnancy (Table 5.2). Young mothers and mothers living in rural areas were more likely to have

knowledge of taking calcium tablets from the 4th month of pregnancy than their other counterparts.

Table 5.2 Knowledge about calcium: number of months and time to start

Among respondents who got calcium tablets the percentage who know how long, when and how many tablets to take according to background characteristics, Dailekh, Nepal 2013

Background characteristics	Number of months calcium should be taken				Month from which pregnant woman should take calcium				Total	
	<5 months	5 months	6-9 months	%	Before 4th month	4th month	From 5-9 months	Don't know	%	Number <sup>a</sup>
<b>Mother's age at birth**</b>										
<20	1.0	94.2	4.8	100.0	6.7	84.1	5.3	3.8	100.0	208
20-34	3.0	93.7	3.3	100.0	6.9	78.7	6.5	7.9	100.0	898
35-49	3.0	86.6	10.4	100.0	10.4	74.6	9.0	6.0	100.0	67
<b>Residence***</b>										
Rural	2.9	93.4	3.7	100.0	3.9	81.5	6.9	7.7	100.0	1,075
Urban	1.0	91.8	7.1	100.0	41.4	56.6	1.0	1.0	100.0	98
<b>Education***</b>										
No education	3.4	93.2	3.4	100.0	4.7	76.6	7.2	11.5	100.0	443
Primary	2.2	93.8	4.0	100.0	7.0	82.5	7.5	3.1	100.0	227
Some secondary	1.5	93.9	4.6	100.0	7.6	82.7	5.2	4.6	100.0	328
SLC and above	3.4	92.0	4.6	100.0	12.6	75.9	5.2	6.3	100.0	175
<b>Caste/ethnicity*</b>										
Chhetri/Thakuri	2.6	94.1	3.3	100.0	8.7	77.6	6.1	7.7	100.0	508
Bahun/Sanyasi	2.3	94.7	3.1	100.0	3.8	87.7	6.2	2.3	100.0	131
Janjati <sup>b</sup>	1.5	89.6	9.0	100.0	9.0	85.1	4.5	1.5	100.0	134
Dalit	3.3	93.3	3.5	100.0	5.5	77.5	7.0	10.0	100.0	400
<b>Total</b>	<b>2.6</b>	<b>93.4</b>	<b>4.0</b>	<b>100.0</b>	<b>7.1</b>	<b>79.5</b>	<b>6.2</b>	<b>7.2</b>	<b>100.0</b>	<b>1,173</b>

<sup>a</sup>Number of valid cases is different from the total count in the cross tabulation table because the cell counts have been rounded.

<sup>b</sup>Janjati includes 3 Muslim and 1 Terai Middle Caste women

Significant at \* $p \leq 0.05$ ; \*\* $p \leq 0.01$ ; \*\*\* $p \leq 0.001$ .

The respondents in the survey were tested about their knowledge on correct time and doses of calcium and iron tablets. The overwhelming proportions (over 98%) mentioned correct time of taking tablets, correct frequency and correct number of tablets to take everyday (Table 5.3).

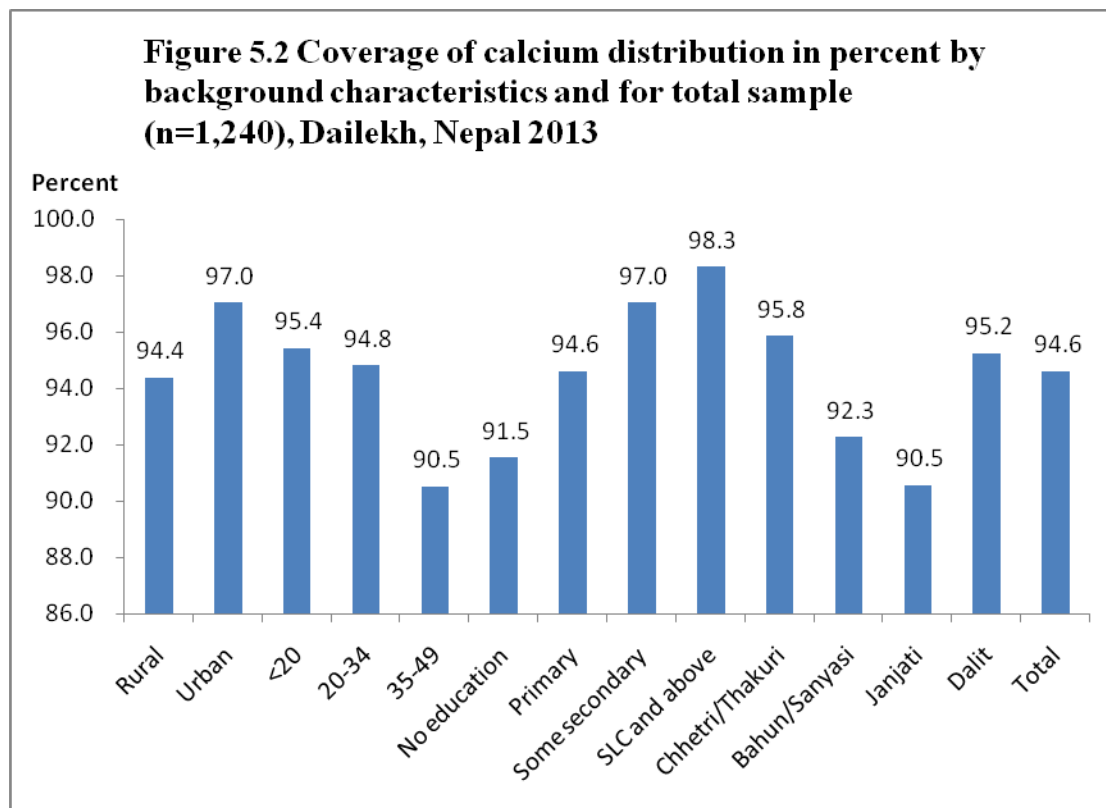
Table 5.3 Knowledge about calcium and iron: number of times, number of tablets and time to take

Among respondents who got calcium tablets the percentage who reported correct number of times and tablets and time of day calcium and iron should be taken, Dailekh, Nepal 2013

Knowledge tested (n=1,173)	Correct answer	% correct answer
Number of times a day calcium should be taken	One time	97.9
Number of calcium tablets should be taken each day	Two tablets	99.6
Time calcium tablets should be taken each day	In the morning after a meal	99.6
Number of iron tablets should be taken each day	One tablet	99.1
Time iron tablets should be taken each day	In the evening after a meal	98.7

## 5.2 Calcium coverage<sup>10</sup>

Of the total 1,240 mothers interviewed who gave birth in the last six months preceding the survey, 94.6 percent were counselled on calcium use and after counselling they were provided with calcium bottles<sup>11</sup>. Calcium coverage is highest (98.3%) among women with highest education, i.e., women with SLC and above followed by women with some secondary education and those living in urban area (97%) (Figure 5.2).



Younger the mothers are higher the possibility of receiving calcium tablets. With respect to caste/ethnicity, the results are mixed because highest proportion (95.8%) of Chhetri/Thakuri received calcium and nearly equal proportion (95.2%) of Dalit also received calcium while fewer (92.3%) Bahun/Sanyasi high caste women received calcium and significantly lowest proportion (90.5%) of Janjati in Dailekh received calcium tablets (Figure 5.2).

The survey data shows that staff nurse or ANM was the main dispenser of calcium to mothers in Dailekh as 82.1 percent mothers received calcium tablets from them (Table 5.4). Some 8 percent MCHWs and 7 percent health workers (HA/AHW/CMA) dispensed calcium tablets while the proportion of doctors and TBAs<sup>12</sup> dispensing calcium tablets was about 1 percent each. No

<sup>10</sup> The percentage of RDW taking part in the study receiving calcium tablets.

<sup>11</sup> One bottle contained 100 calcium tablets.

<sup>12</sup> Officially TBAs are not supposed to deliver calcium tablets but as in some villages some respondents get confused with TBAs and local female health providers it may be that they reported TBAs instead of local female health providers. Besides, TBAs have made deep impressions in women in villages as it was a strong programme in the past.

mother reported receiving calcium tablets from FCHV. Young, urban and more educated mothers were more likely to receive calcium tablets from staff nurse or ANM.

In Dailekh, during the calcium programme period, a pregnant woman who came for even one prenatal care check-up received a supply of calcium tablets for the duration of her pregnancy. Ideally a pregnant woman should take 3 bottles containing 300 tablets of calcium for 150 days.

Table 5.4 Person dispensing calcium tablets

The percentage distribution of women by source of calcium tablets according to background characteristics, Dailekh, Nepal 2013

Background characteristics	Among respondents who got calcium tablets						Total Number <sup>a</sup>
	Source of calcium tablets					%	
	Doctor	Staff nurse/ANM	MCHW	HA/AHW/ CMA	TBA <sup>13</sup>		
<b>Mother's age at birth</b>							
<20	1.4	84.1	6.3	7.2	1.0	100.0	207
20-34	1.2	82.1	8.0	7.3	1.3	100.0	899
35-49	0.0	74.6	16.4	6.0	3.0	100.0	67
<b>Residence</b>							
Rural	1.3	81.3	8.3	7.7	1.4	100.0	1,076
Urban	1.0	88.8	8.2	1.0	1.0	100.0	98
<b>Education*</b>							
No education	1.6	82.8	8.6	5.9	1.1	100.0	443
Primary	0.4	74.4	10.1	11.9	3.1	100.0	227
Some secondary	1.2	84.8	7.6	5.8	0.6	100.0	328
SLC and above	1.1	85.1	6.3	6.9	0.6	100.0	174
<b>Caste/ethnicity</b>							
Chhetri/Thakuri	1.2	82.7	7.3	7.9	1.0	100.0	508
Bahun/Sanyasi	1.5	77.1	12.2	5.3	3.8	100.0	131
Janjati <sup>b</sup>	1.5	83.6	9.7	5.2	0.0	100.0	134
Dalit	1.0	82.5	7.8	7.5	1.3	100.0	400
<b>Total</b>	1.2	82.1	8.3	7.2	1.3	100.0	1,173

<sup>a</sup>Number of valid cases is different from the total count in the cross tabulation table because the cell counts have been rounded.

<sup>b</sup>Janjati includes 3 Muslim and 1 Terai Middle Caste women

Significant at \* $p \leq 0.05$ ; \*\* $p \leq 0.01$ ; \*\*\* $p \leq 0.001$ .

In the survey mothers were asked about the number of calcium bottles, containing 100 calcium tablets in each, they received. Calcium tablets were given to mothers at their first ANC visit<sup>14</sup> (four months pregnancy period) and were advised to take two tablets every morning after meal. It was recommended that they take the calcium tablets from the fourth month of pregnancy.

In terms of calcium tablet distribution, among those mothers who received calcium 82.2 percent received 3 bottles of calcium, 13.8 percent 2 bottles and 4 percent only one bottle (Table 5.5).

<sup>13</sup> See footnote above

<sup>14</sup> If the pregnant women came at four months of pregnancy (first visit as per national standard) they will receive all 300 tablets of calcium. But if the women come later than the calcium given accordingly. Such as 4-5 months of pregnancy (300 tablets), 6-7 months pregnancy (200 tablets) and 8-9 months of pregnancy (100 tablet).

Older women, women living in rural areas and with no education received fewer bottles of calcium compared to their counterparts who are younger, live in urban areas and have acquired primary or higher level of education (Table 5.5). Lowest proportion (79.8%) of Dalit women received calcium tablets compared to higher caste/ethnic women such as Bahun/Sanyasi (84.7%), Chhetri/Thakuri (83.5%) and Janjati women (82.1%) (Table 5.5).

Most (97.4%) women receiving calcium tablets also received calcium promotional materials (small clothes made bag containing calcium related information and tablet calcium). Very high proportion (98% or more) of women less than 20 years of age and women with primary or SLC or higher level of education received calcium bottles (Table 5.5).

Table 5.5 Distribution of calcium tablet bottles and promotional materials

The percentage distribution of women who calcium tablet bottles and promotional materials according to background characteristics, Dailekh, Nepal 2013

Background characteristics	Number of calcium tablet bottles received				Percentage receiving promotional materials	Total respondents <sup>a</sup>
	1	2	3	Total		
<b>Mother's age at birth *</b>						
<20	1.9	16.8	81.3	100.0	98.1	208
20-34	4.0	12.4	83.6	100.0	97.6	898
35-49	9.0	23.9	67.2	100.0	94.0	67
<b>Residence ***</b>						
Rural	4.1	14.7	81.2	100.0	97.7	1,075
Urban	3.1	3.1	93.9	100.0	95.9	98
<b>Education***</b>						
No education	6.8	17.4	75.8	100.0	97.1	443
Primary	1.8	17.1	81.1	100.0	98.2	228
Some secondary	1.8	10.4	87.8	100.0	96.6	328
SLC and above	3.4	6.9	89.7	100.0	98.9	174
<b>Caste/ethnicity</b>						
Chhetri/Thakuri	4.1	12.4	83.5	100.0	97.8	508
Bahun/Sanyasi	2.3	13.0	84.7	100.0	97.7	131
Janjati <sup>b</sup>	3.7	14.2	82.1	100.0	95.5	134
Dalit	4.5	15.8	79.8	100.0	97.5	400
<b>Total</b>	4.0	13.8	82.2	100.0	97.4	1,173

<sup>a</sup> Number of valid cases is different from the total count in the cross tabulation table because the cell counts have been rounded.

<sup>b</sup> Janjati includes 3 Muslim and 1 Terai Middle Caste women

Significant at \*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001.

Distribution of calcium bottles by gestational age at which RDW started taking calcium tablets (which is assumed to be the same month they received it) is shown in Table 5.6.

Table 5.6 Gestational age and calcium tablet bottles distributed

Distribution of calcium tablet bottles received by RDW by gestational age they started taking calcium (RDW=1,173)

Gestational age	Number of bottles received	Percentage receiving promotional materials	Total respondents
<20	1.9	98.1	208
20-34	4.0	97.6	898
35-49	9.0	94.0	67
<b>Total</b>	4.0	97.4	1,173

GESTATIONAL AGE AT TIME STARTED TAKING CALCIUM	NUMBER OF BOTTLES RECEIVED			Total %
	One	Two	Three	
Month 3 (n=88, 7.5%)	0.0	2.3	97.7	100.0
Month 4 (n=856, 72.9%)	0.5	2.6	97.0	100.0
Month 5 (n=60, 5.1%)	0.0	25.0	75.0	100.0
Month 6 (n=118, 10.1%)	5.9	90.7	3.4	100.0
Month 7 (n=31, 2.6%)	61.3	38.7	0.0	100.0
Month 8 (n=18, 1.5%)	77.8	22.2	0.0	100.0
Month 9 (n=3, 0.3%)	100.0	0.0	0.0	100.0

Table 5.6 shows that of all women in the sample 7.5% started taking calcium at month 3 of gestation and of those, 2.3% received 2 bottles and 97.7% received 3 bottles. Similarly, of all sampled women highest proportion – 72.9% started taking calcium at month 4 of gestation and of those, 0.5% received 1 bottle, 2.6% received 2 bottles and 97.0% received 3 bottles and so on.

Table 5.7 Types of promotional calcium materials received by respondents			
Among RDW who received promotional materials percentage distribution by types of promotional calcium materials received from health facility according to selected background characteristics, Dailekh, Nepal 2013			
Background characteristics	Percent of cases receiving types of promotional materials (Multiple responses)		
	Bag	Brochure	Total respondents
<b>Education</b>			
No education	91.4	83.1	431
Primary	94.2	84.8	224
Some secondary	92.7	90.9	317
SLC and above	95.9	92.4	172
<b>Caste/ethnicity</b>			
Chhetri/Thakuri	94.0	89.7	497
Bahun/Sanyasi	93.0	79.7	128
Janjati <sup>b</sup>	94.5	82.8	128
Dalit	91.5	87.2	390
<b>Total</b>	93.2	87.1	1,143

<sup>b</sup> Janjati includes 3 Muslim and 1 Terai Middle Caste women

Among women who received calcium bottles and also received calcium pilot programme promotional materials such as a calcium bag and brochure about calcium, proportionately more (93.2%) women received calcium bag than brochure (87.1%) (Table 5.7).

### 5.3 Calcium use and compliance

As per recommendations, a pregnant woman should take calcium tablet from the 4th month of pregnancy until a child is born—with a target of taking 300 calcium tablets. Mothers who took part in calcium supplementation programme in Dailekh were counselled on this by health workers and they were also given several promotional materials. Among the mothers who gave birth in the last 6 months preceding the survey and also took calcium during their last pregnancy 72 percent said that they started taking calcium from the 4th month, 20 percent after the 4th month and 8 percent even before the 4th month of pregnancy (Table 5.8). Mothers aged 20-34, mothers living in rural areas, educated mothers and mothers belonging to high castes such as

Bahun/Sanyasi and Chhetri/Thakuri were more likely to start taking calcium tablets from the 4th month of pregnancy than their other counterparts.

Of the total mothers who took calcium during their last pregnancy, 67 percent took the full course as they took calcium for 150 days (Table 5.9) and full course was found significantly higher among mothers living in urban areas, mothers aged 20-34, mothers with education and mothers from high caste groups such as Bahun/Sanyasi and Chhetri/Thakuri than their other counterparts. Overall, the proportion of mothers taking a partial course, defined as taking calcium for at least 90 days, was 24 percent and 9 percent mothers took short course, defined as taking calcium for less than 90 days. The highest proportion (79%) of mothers whose gestational age was between 3 to 5 months took the full course, taking tablets for 150 days.

Table 5.8 Calcium use: Among respondents who got calcium tablets the percentage who took calcium by months of pregnancy according to background characteristics, Dailekh, Nepal 2013

Background characteristics	Month of pregnancy from which calcium taken			Total	
	Before 4th month	From 4th month	After 4th month	%	Number
<b>Mother's age at birth*</b>					
<20	8.2	69.6	22.2	100.0	208
20-34	7.1	74.8	18.0	100.0	898
35-49	10.4	58.2	31.3	100.0	67
<b>Residence*</b>					
Rural	4.4	74.5	21.1	100.0	1,076
Urban	43.9	50.0	6.1	100.0	98
<b>Education**</b>					
No education	5.6	69.1	25.3	100.0	443
Primary	6.6	73.2	20.2	100.0	227
Some secondary	7.9	76.2	15.9	100.0	328
SLC and above	13.8	72.4	13.8	100.0	175
<b>Caste/ethnicity</b>					
Chhetri/Thakuri	9.3	73.6	17.1	100.0	508
Bahun/Sanyasi	4.6	73.8	21.5	100.0	131
Janjati b	10.4	70.1	19.4	100.0	134
Dalit	6.0	71.1	22.9	100.0	400
<b>Total</b>	<b>7.8</b>	<b>72.4</b>	<b>19.9</b>	<b>100.0</b>	<b>1,173</b>

<sup>a</sup> Number of valid cases is different from the total count in the cross-tabulation table because the cell counts have been rounded,

<sup>b</sup> Janjati includes 3 Muslim and 1 Terai Middle Caste women. Significant at \*p<0.10; \*\*p<0.05; \*\*\*p<0.01; \*\*\*\*p<0.001

Table 5.9 Calcium compliance: Percentage distribution of RDW by degree of compliance

Background characteristics	Degree of compliance			Total %	Total N
	Full course	Partial course	Low course		
<b>Mother's age at birth**</b>					
<20	62.0	29.3	8.7	100.0	208
20-34	69.4	23.3	7.3	100.0	898
35-49	64.5	21.5	14.0	100.0	67
<b>Residence*</b>					
Rural	66.4	24.9	8.7	100.0	1,076
Urban	76.5	15.3	8.2	100.0	98



<b>Literacy***</b>					
Illiterate	63.9	24.2	12.0	100.0	443
Literate	69.5	24.1	6.4	100.0	730
<b>Gestational age (months)****</b>					
3 - 5 months	78.7	17.2	4.1	100.0	1,004
6 - 9 months	0.0	65.1	34.9	100.0	169
<b>Caste/ethnicity</b>					
Chhetri/Thakuri	68.6	23.8	7.7	100.0	508
Bahun/Sanyasi	67.9	24.4	7.6	100.0	131
Janjati	65.7	26.9	7.5	100.0	134
Dalit	66.0	23.5	10.5	100.0	400
<b>Total</b>	<b>67.3</b>	<b>24.1</b>	<b>8.6</b>	<b>100.0</b>	<b>1,173</b>

<sup>a</sup>Number of valid cases is different from the total count in the cross-tabulation table because the cell counts have been rounded,

<sup>b</sup> Janjati includes 3 Muslim and 1 Terai Middle Caste women. Significant at \* $p \leq 0.10$ ; \*\* $p \leq 0.05$ ; \*\*\* $p \leq 0.01$ ; \*\*\*\* $p \leq 0.001$

All respondents who received calcium tablets said they took them every day, nearly all (99.5%) of them reported taking two tablets a day and nearly all (99.7%) of them reported taking calcium tablets after food in the morning as recommended. However, not all mothers who received calcium tablets from a health facility continued taking calcium until they delivered; about 10 percent of them stopped taking the tablets. Of those who discontinued taking calcium tablets nearly half (48%) did so because they became sick / ill followed by experience of side effects (23%), forgot to take (20%), difficult to take the tablet i.e., due to its size (18%), inconvenient to take every day (15%), fear of side effects (13%), vomiting (10%), away from home/their supply (5%), could not find suitable time (3%), lost or misplaced the tablets, family members did not allow them to take their tablets, thought that it would affect the unborn baby and headache (about 2% each) and so on (Table 5.10).

Table 5.10 Reasons for stopping to take calcium prior to delivery

Among mothers who stopped taking calcium before delivering percent mentioning reasons for stopping, Dailekh, Nepal 2013

Reasons	Number of respondents=120		
	Unprompted	Prompted	Total
Sick/illness	45.8	1.7	47.5
Was experiencing side effects attributed to calcium	22.5	0.8	23.3
Forgot to take	18.3	1.7	20.0
Difficulty taking the calcium e.g. due to tablet size	16.7	1.7	18.3
Inconvenient to take every day	12.5	2.5	15.0
Fear of side effects	10.0	3.3	13.3
Vomiting	10.0	0.0	10.0
Away from home	3.3	1.7	5.0
Could not find suitable time	2.5	0.0	2.5
Lost or misplaced the tablets	0.8	0.8	1.7
Family members (mother-in-law) did not allow	0.8	0.8	1.7
Thought of affecting the unborn baby	0.8	0.8	1.7
Headache	1.7	0.0	1.7
Jaundice	0.8	0.0	0.8
Due to family/husband	0.8	0.0	0.8
Dizziness	0.8	0.0	0.8
Bad smell of tablets/did not want to take	0.8	0.0	0.8

The respondents who discontinued taking the calcium tablets were asked what they did with the unused calcium. More than half (55%) of them returned the tablets to FCHVs, 30 percent mothers kept them with them, 12 percent threw them away, 3 percent returned them to health facility and a few of them said they gave to others or children (Table 5.11).

Young mothers, mothers living in urban area, educated mothers and Janjati mothers are more likely to keep the unused calcium at home than their counterparts (Table 5.11). Comparatively older mothers, mothers living in rural areas, uneducated mothers and Dalit mothers gave the remaining calcium tablets to FCHVs.

Table 5.11 Calcium storage

Among respondents who got calcium tablets but did not complete the course reporting about the whereabouts of unused calcium according to background characteristics, Dailekh, Nepal 2013

Background characteristics	Whereabouts of unused calcium						Total	
	Kept with respondent	Thrown away	Gave to FCHV	Given to others	Children threw away	Returned to health facility	%	Number <sup>a</sup>
<b>Mother's age at birth</b>								
<20	35.8	9.4	52.8	0.0	0.0	1.9	100.0	54
20-34	27.0	13.2	55.2	0.6	0.6	3.4	100.0	174
35-49	33.3	0.0	58.3	0.0	0.0	8.3	100.0	12
<b>Residence</b>								
Rural	28.0	12.4	55.5	0.5	0.5	3.2	100.0	218
Urban	42.9	4.8	47.6	0.0	0.0	4.8	100.0	21
<b>Education</b>								
No education	24.7	11.1	61.7	0.0	0.0	2.5	100.0	81
Primary	18.4	5.3	68.4	0.0	0.0	7.9	100.0	38
Some secondary	34.6	14.8	45.7	1.2	1.2	2.5	100.0	81
SLC and above	38.5	12.8	46.2	0.0	0.0	2.6	100.0	39
<b>Caste/ethnicity</b>								
Chhetri/Thakuri	29.3	10.1	56.6	1.0	0.0	3.0	100.0	99
Bahun/Sanyasi	27.6	13.8	55.2	0.0	0.0	3.4	100.0	29
Janjati <sup>b</sup>	45.2	22.6	29.0	0.0	3.2	0.0	100.0	31
Dalit	24.7	8.6	61.7	0.0	0.0	4.9	100.0	81
<b>Total</b>	29.6	11.7	54.6	0.4	0.4	3.3	100.0	240

<sup>a</sup> Number of valid cases is different from the total count in the cross tabulation table because the cell counts have been rounded.

<sup>b</sup> Janjati includes 3 Muslim and 1 Terai Middle Caste women

Significant at \* $p \leq 0.05$ ; \*\* $p \leq 0.01$ ; \*\*\* $p \leq 0.001$ .

During calcium pilot programme implementation some people said that the calcium tablets distributed in Dailekh were too large and this issue was raised with the survey respondents. Slightly over half (51%) of the survey respondents said that the size of calcium tablet was too large (Table 5.12). Comparatively older mothers, urban mothers, educated mothers, and high caste Chhetri/Thakuri and Dalit women mentioned that the size of calcium tablet was too large. To overcome this, FCHVs advised pregnant women to split the tablet so it is easier to take.

Nine percent mothers participating in the calcium pilot programme included in the sample said that they experienced side effects after taking calcium tablets (Table 5.12). Young, educated and rural mothers and mothers belonging to Dalit and Chhetri/Thakuri castes were more likely to report side effects than their other counterparts.

Some 71 percent mothers reported that their appetite did not change even after taking calcium tablets (Table 5.12). However, slightly over one in five (21.4%) mothers reported that their appetite increased after taking calcium tablets while 8 percent mothers reported the opposite experience. High proportion (55%) of urban mothers and mothers with highest education (31%) reported that their appetite increased.

Table 5.12 Opinion on size of calcium tablet and side effects

Among respondents who got calcium tablets the percentage who gave their opinion on size of calcium tablet, percentage experiencing side effects and appetite while taking calcium according to background characteristics, Dailekh, Nepal 2013

Background characteristics	Opinion on size of calcium tablet		Total	Experienced side effects	Appetite during the time calcium taken			Total	
	Just right	Too large			%	< than usual	Same as usual		> than usual
<b>Mother's age at birth*</b>									
<20	53.4	46.6	100.0	12.5	9.1	70.7	20.2	100.0	208
20-34	46.7	53.3	100.0	8.7	7.3	70.6	22.0	100.0	898
35-49	61.8	38.2	100.0	7.4	7.5	76.1	16.4	100.0	67
<b>Residence**</b>									
Rural	49.1	50.9	100.0	9.4	8.2	73.6	18.2	100.0	1,075
Urban	44.9	55.1	100.0	8.2	3.1	41.8	55.1	100.0	98
<b>Education**</b>									
No education	52.8	47.2	100.0	8.4	6.5	76.7	16.7	100.0	443
Primary	50.2	49.8	100.0	4.0	7.0	71.9	21.1	100.0	227
Some secondary	43.5	56.5	100.0	11.3	9.8	67.6	22.6	100.0	328
SLC and above	46.0	54.0	100.0	14.5	7.5	61.5	31.0	100.0	175
<b>Caste/ethnicity</b>									
Chhetri/Thakuri	47.4	52.6	100.0	9.6	7.1	69.2	23.8	100.0	508
Bahun/Sanyasi	52.7	47.3	100.0	6.1	11.5	64.9	23.7	100.0	131
Janjati <sup>b</sup>	55.2	44.8	100.0	8.1	6.0	73.9	20.1	100.0	134
Dalit	46.8	53.3	100.0	10.5	8.0	74.0	18.0	100.0	400
<b>Total</b>	48.7	51.3	100.0	9.4	7.8	70.9	21.4	100.0	1,173

<sup>a</sup> Number of valid cases is different from the total count in the cross tabulation table because the cell counts have been rounded.

<sup>b</sup> Janjati includes 3 Muslim and 1 Terai Middle Caste women

Significant at \*p<0.05; \*\*p<0.01; \*\*\*p<0.001.

Table 5.13 Types of food taken during last pregnancy

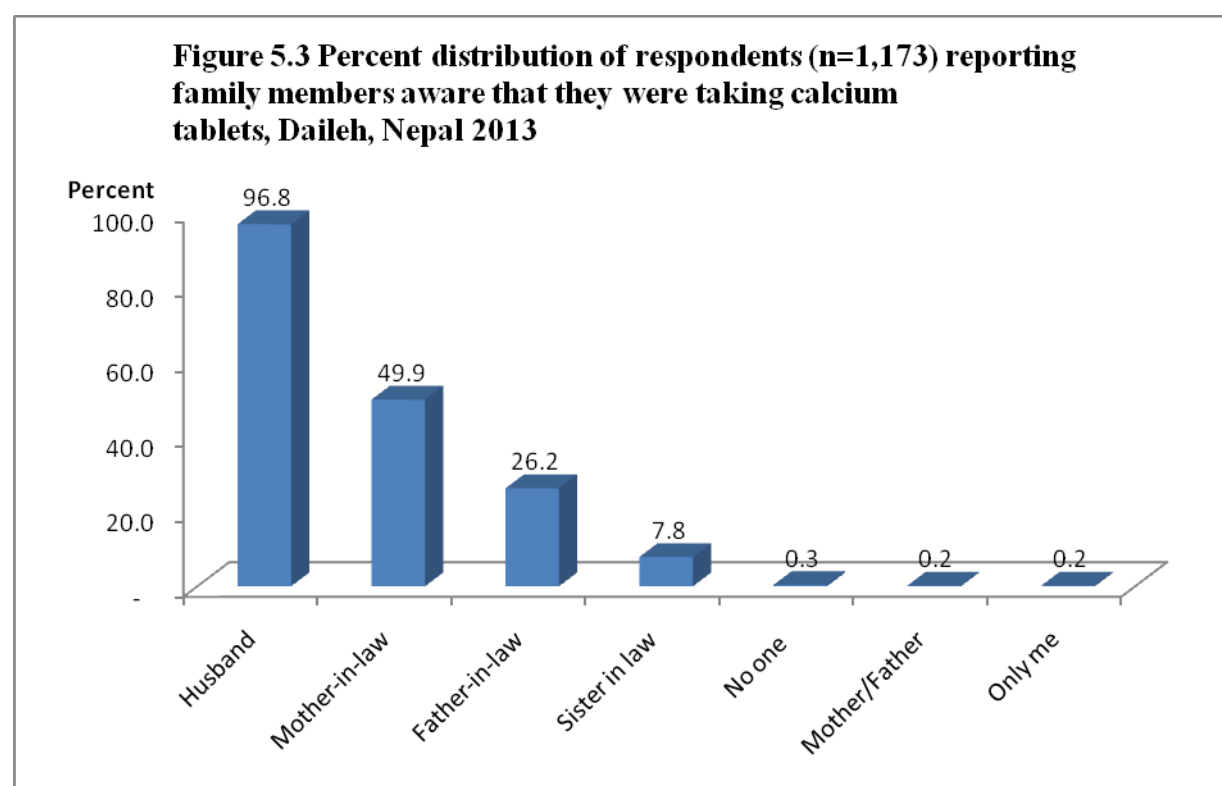
Among the survey respondents percent mentioning the types of food taken, Dailekh, Nepal 2013

Food	Number of respondents=1,173		
	Unprompted	Prompted	Total
Green vegetables	81.2	17.7	98.9
Meat/fish	75.7	19.2	94.9
Milk and other dairy products	58.1	33.1	91.1
Eggs	46.2	39.3	85.5

Fruits	16.6	0	16.6	All mother who took part in the calcium programme by taking calcium tablets during their last pregnancy gave information about the types of food they took during pregnancy. Nearly everybody
Pulses	12.9	0	12.9	
Maize Chapati	1.6	0	1.6	
Millet Chapati	0.9	0	0.9	
Sour foods	0.3	0	0.3	
Wheat Chapati	0.3	0	0.3	

(99%) reported taking green vegetables, followed by meat/fish (95%), milk and other dairy products (91%), eggs (86%), fruits (17%), pulses (13%) and so on (Table 5.13). A few mothers also mentioned Chapati and sour food items.

Mothers taking part in the survey who had taken calcium during their last pregnancy were asked whether any of their family members knew about them taking calcium tablets and in response overwhelming proportion (97%) said that their husbands knew about it (Figure 5.3). In contrast only half of their mothers-in-law knew about it followed by father-in-law (26%) and sister-in-law (8%).



During the calcium pilot programme implementation FCHVs were also given basic training and orientation on calcium use and they were asked to counsel pregnant women on ANC including calcium tablet, make regular visits to pregnant women's homes and so on. FCHVs were, however, not given the responsibility of distributing calcium tablets in their communities.

The survey respondents were enquired about FCHV's activities in the district. Over 4 in 5 respondents reported that FCHVs visited them during their last pregnancy (Table 5.14). Over half of FCHVs visited pregnant women 4 or more times during their pregnancy; 26 percent

mothers said that FCHVs visited them 3 times and 20 percent mothers visited them for 2 times or less.

Young, educated and urban mothers and mothers belonging to Dalit and Chhetri/Thakuri castes were more likely to report higher frequency of FCHV visits than their other counterparts. Nearly all FCHVs counselled pregnant women on calcium use, iron tablets and about ante natal care (Table 5.14).

Table 5.14 FCHV and calcium programme

Among respondents who got calcium tablets percent mentioning FCHV visit during last pregnancy, frequency of visits, whether counselled on calcium, iron and the value of ANC visits according to background characteristics, Dailekh, Nepal 2013

Background characteristics	FCHV visit		Frequency of visits			Counselled on			Number <sup>a</sup>
	%	Number <sup>a</sup>	1 - 2 times	3 times	4+	Calcium use	Iron tablets	ANC	
<b>Mother's age at birth</b>									
<20	82.1	207	23.5	28.2	48.2	99.4	100.0	100.0	170
20-34	81.1	894	20.0	25.0	55.0	99.3	99.7	99.9	725
35-49	86.6	67	15.5	34.5	50.0	100.0	100.0	100.0	58
<b>Residence</b>									
Rural	81.7	1,071	20.6	26.0	53.4	99.3	99.8	99.9	875
Urban	80.4	97	16.7	28.2	55.1	100.0	100.0	100.0	78
<b>Education**</b>									
No education	86.7	443	19.3	26.3	54.4	99.7	99.5	100.0	384
Primary	82.0	228	18.2	30.5	51.3	98.9	100.0	99.5	187
Some secondary	74.7	324	24.8	26.0	49.2	98.8	100.0	100.0	242
SLC and above	80.3	173	18.0	20.1	61.9	100.0	100.0	100.0	139
<b>Caste/ethnicity *</b>									
Chhetri/Thakuri	84.6	506	16.6	26.7	56.7	98.8	100.0	100.0	427
Bahun/Sanyasi	73.8	130	25.8	27.8	46.4	99.0	99.0	100.0	97
Janjati <sup>b</sup>	76.7	133	23.5	30.4	46.1	100.0	99.0	100.0	102
Dalit	81.5	400	22.6	23.5	53.8	100.0	100.0	99.7	327
<b>Total</b>	<b>81.4</b>	<b>1,168</b>	<b>20.4</b>	<b>26.1</b>	<b>53.5</b>	<b>99.4</b>	<b>99.8</b>	<b>99.9</b>	<b>953</b>

NOTE: 5 FCHVs who were respondents in the survey excluded

a Number of valid cases is different from the total count in the cross tabulation table because the cell counts have been rounded.

b Janjati includes 3 Muslim and 1 Terai Middle Caste women

Significant at \*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001.

# Chapter 6: Opinions on and Attitudes to Calcium Use

## 6.1 Opinion on and attitude to calcium use

During the implementation phase of the calcium pilot programme several issues were raised and rumours floated such as the calcium tablet was not tasty and it was difficult for mothers to store them in their homes. In this survey some attempts have been made to respond to those issues.

Upon enquiry whether the mothers taking part in the calcium pilot programme liked the taste of the calcium tablet it was found that over 4 out of 5 mothers (84%) did like the taste (Table 6.1). It was also found that about one percent mothers reported difficulty in storing calcium tablet packets in their homes. The good thing is that the overwhelming majority of the mothers would like to take calcium tablets if they become pregnant again.

Table 6.1 Opinions and attitudes on calcium

Among respondents who got calcium tablets percent mentioning the taste, storing difficulty, whether intends to use if pregnant again, would recommend other to take calcium and whether would recommend other pregnant women to take calcium according to background characteristics, Dailekh, Nepal 2013

Background characteristics	Whether liked the taste of calcium? % Yes	Any difficulty in storing calcium packet? % Yes	Whether intends to use if pregnant again? % Yes	Would recommend others to take calcium? % Yes	Would recommend other pregnant women to take calcium? % Yes	Number <sup>a</sup>
<b>Mother's age at birth</b>						
<20	80.8	0.5	98.6	88.4	97.6	208
20-34	84.0	1.7	97.9	86.4	97.6	898
35-49	89.7	0.0	95.6	83.8	97.0	67
<b>Residence</b>						
Rural	84.4*	1.5	98.0	85.6	97.4	1,075
Urban	76.5*	1.0	95.9	98.0	99.0	98
<b>Education</b>						
No education	86.7**	2.5	97.1	85.3	95.7	443
Primary	88.1**	0.9	99.1	88.1	99.1	228
Some secondary	81.1**	0.9	97.9	87.2	98.5	328
SLC and above	76.4**	0.0	98.3	87.4	98.3	174
<b>Caste/ethnicity</b>						
Chhetri/Thakuri	84.4	0.8	97.8	81.3	97.4	509
Bahun/Sanyasi	77.1	1.5	97.7	88.5	97.7	131
Janjati <sup>b</sup>	80.6	0.7	99.3	96.3	98.5	134
Dalit	86.3	2.3	97.5	89.5	97.3	399
<b>Total</b>	<b>83.9</b>	<b>1.4</b>	<b>97.9</b>	<b>86.6</b>	<b>97.5</b>	<b>1,173</b>

<sup>a</sup> Number of valid cases is different from the total count in the cross tabulation table because the cell counts have been rounded.

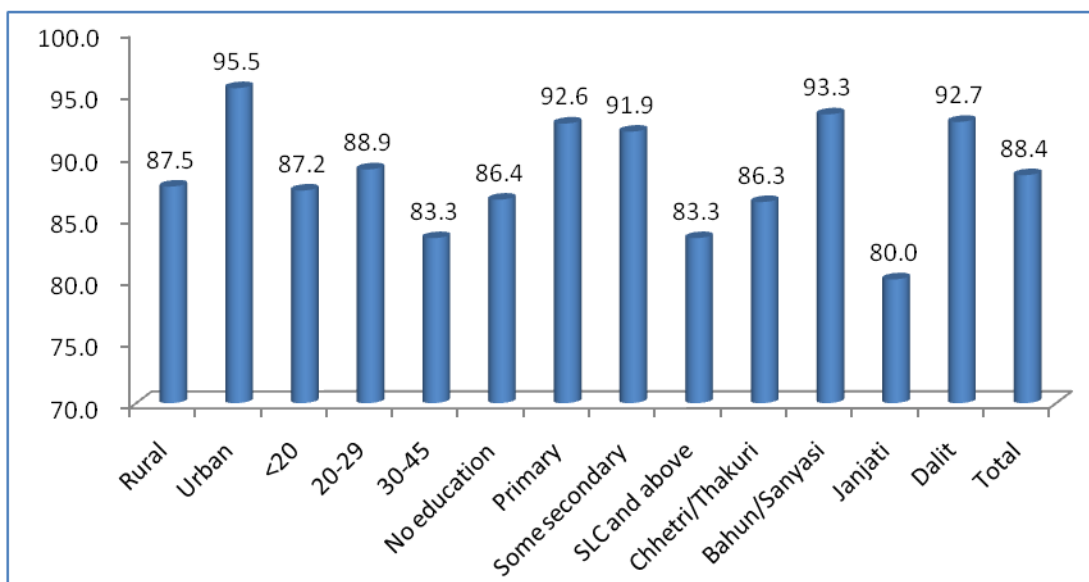
<sup>b</sup> Janjati includes 3 Muslim and 1 Terai Middle Caste women

Significant at \* $p \leq 0.05$ ; \*\* $p \leq 0.01$ ; \*\*\* $p \leq 0.001$ .

The mothers (87%) said that they would recommend other people to take calcium tablets. The overwhelming proportion of these mothers (98%) would recommend pregnant women to take calcium tablets (Table 6.1).

Among the 16% mothers taking part in the survey who did not like the taste of Calcium tablet 88.4 percent recommended to change the taste of it (Figure 6.1). The proportions in favour of changing the taste of the calcium tablet were higher among urban, mothers aged 20-29, mothers with primary and secondary education, and mothers belonging to Bahun, Sanyasi and Dalit castes.

**Figure 6.1 Among respondents (n=190) who did not like the taste of calcium percentage recommending to change it by background characteristics, Dailekh, Nepal 2013**



Information related to proper storing of calcium bottles was given at ANC visit and through brochure and flip chart. Messages of proper storing of calcium bottles included keeping bottle out of reach of children, in dry place and save it from direct sunlight. About one in five mothers each kept calcium tablet bottles either under the roof ceiling (22%) or in the cupboard (21%), followed by under the pillow (14%), hanging on the wall (13%), in a bag (12%), under the bed (6%), in the wall hole (5%) and in the trunk (5%) (Figure 6.2).

Mothers advising other pregnant women to take calcium gave a number of reasons why they would advise. Prominent reasons were calcium would improve child health/saves baby's life/helps child to grow (59%) and improvement of mother's health /saving life/ giving strength (58%, Table 6.2).

Other reasons in order of importance were - calcium prevents swelling of hands, legs and face, protects from becoming unconscious, prevents and controls high and low blood pressure, makes bones of mother and child strong, prevents dizziness, prevents headache, protects from pre-

eclampsia and eclampsia/ protects from dangers of pregnancy, increases blood in the body, can save mothers from different diseases and so on (Table 6.2).

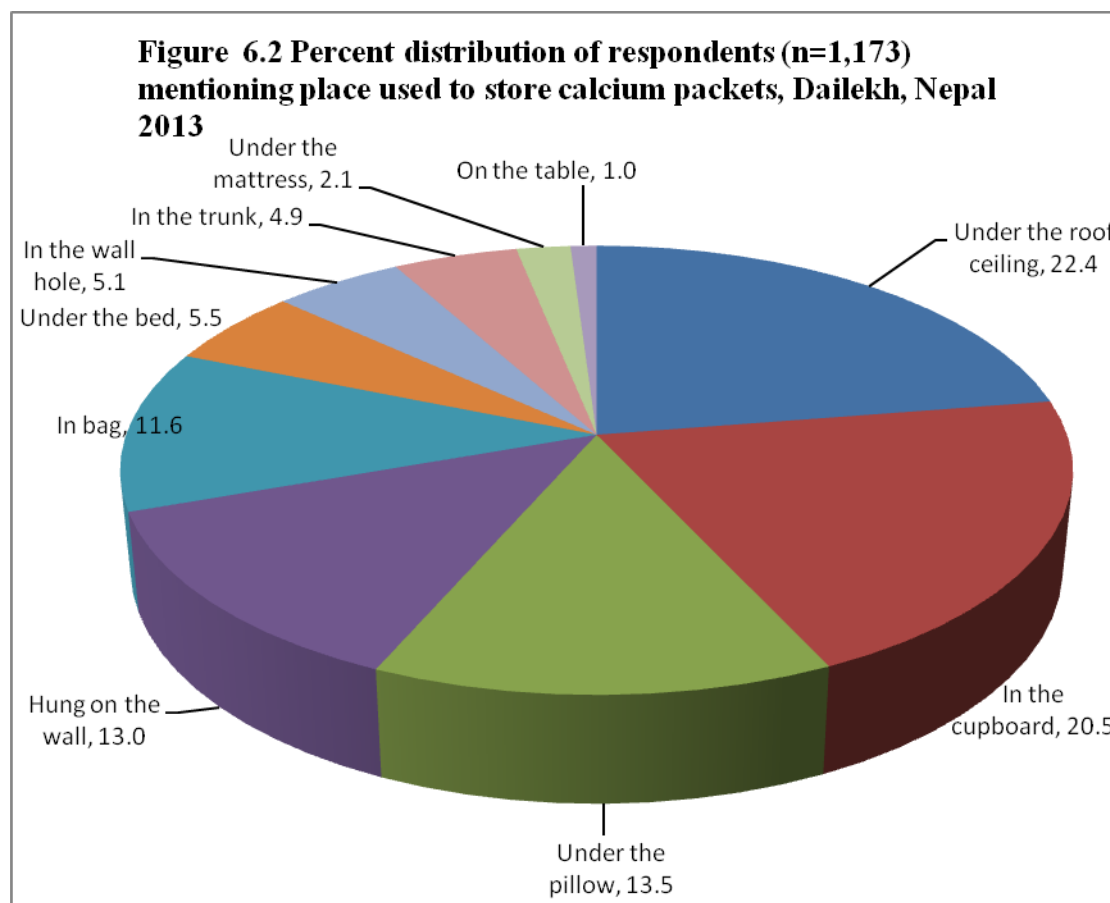


Table 6.2 Reasons for advising other pregnant women to take calcium tablets, Dailekh, Nepal 2013

Reasons for advising other pregnant women to take calcium (Multiple responses)	n=1,144	
	Percent of cases	
Improves child health/saves baby's life/helps child to grow	58.7	
Improves mother's health /saves life/ gives strength	57.5	
Prevents swelling of hands, legs and face	10.3	
Protects from becoming unconscious	8.3	
Prevents and controls high and low blood pressure	7.7	
Makes bones of mother and child strong	7.2	
Prevents dizziness	7.0	
Prevents headache	6.0	
Protects from pre-eclampsia and eclampsia/ protects from dangers of pregnancy	4.9	
Increases blood	4.7	
Can save mothers from different diseases	3.8	
Baby becomes healthy	2.2	
Beneficial to health	1.7	
Prevents bleeding	1.7	
Reduces stomachache	1.7	
Reduces maternal mortality	1.4	
Protects child from disability	0.7	
Prevents blurred vision and improves vision	0.7	



Increases breast milk flow	0.5
Makes teeth strong	0.2

Table 6.3 Reasons for not advising other pregnant women to take calcium tablets, Dailekh, Nepal 2013

Reasons for not advising other pregnant women to take calcium (Multiple responses)	n=29
	Percent of cases
Difficult to swallow	27.6
Calcium smells bad	20.7
Calcium does not help	20.7
Embarrassing	13.8
Causes vomiting	10.3
Do not know	6.9

A few mothers taking part in the survey gave their reasons for not advising other pregnant women to take calcium. The reasons they gave were difficult to swallow, calcium smells bad, calcium does not help, it is embarrassing to go and get calcium from a health facility, calcium causes vomiting and so on (Table 6.3).

## 6.2 Multivariate analysis

Tables 6.4 and 6.5 show the results of the multivariate analysis of predictors of completing a full course of calcium during pregnancy. The two tables or models show that the only two variables that are significant predictors of completing a full course (by either definition—number of days or number of bottles women reported consuming) are gestational age at first ANC visit and the number of times they attended ANC in total. The odds of completing a full course fell as gestational age increased. But as the total number of ANC visits attended increased, the odds of completing a full course also increased. Attempt was also made to look at age as a continuous variable and that was also not significant.

Table 6.4 Model of whether took calcium for 150 days

Characteristics	Odds Ratio -Estimate	95% C. I. for Odds Ratio		Significant level
		Lower	Upper	p value
Age 20-29	1.30	0.86	1.97	0.22
Age 30-45	1.12	0.66	1.92	0.67
Illiterate	1.27	0.88	1.84	0.20
Month pregnant when first made ANC visit	0.42	0.30	0.61	0.00
Number of ANC visits	1.74	1.36	2.21	0.00
Urban	0.79	0.51	1.23	0.30

Table 6.5 Model of whether took 3 bottles of calcium

Characteristics	Odds Ratio -Estimate	95% C. I. for Odds Ratio		Significant level
		Lower	Upper	p value
Age 20-29	1.11	0.66	1.86	0.70
Age 30-45	0.94	0.47	1.89	0.85
Illiterate	0.86	0.56	1.32	0.48
Month pregnant when first made ANC visit	0.36	0.21	0.60	0.00
Number of ANC visits	1.59	1.28	1.98	0.00
Urban	0.61	0.34	1.10	0.10

# Chapter 7: Level of Knowledge and Experience with the Calcium Program Among ANC Providers

Health care providers in Dailekh district were given orientation and training on calcium counselling, administration and use. In order to examine their level of knowledge and experience with the calcium programme a separate questionnaire was administered. The result of the survey is presented below.

## 7.1 Maternal health services

The health care providers<sup>15</sup> provided a number of antenatal care services from their health facilities of Dailekh district. A hundred percent health workers<sup>16</sup> interviewed said that they examined for swelling/oedema, did counselling on dangers signs of pregnancy, delivery and post partum and distributed iron tablets (Table 7.1). Ninety-nine percent health workers said that they distributed calcium tablets and conducted BP examination. Ninety-eight percent health workers said that they performed urine testing for protein using dipstick, abdominal examination, TT immunization and counselling. Other 12 types of services were also provided by the health workers (Table 7.1).

Table 7.1 Services provided in antenatal clinic

Percent of health care providers mentioning various services provided at antenatal clinic, Dailekh, Nepal 2013			
Services provided in antenatal clinic	Number of health workers=109		
	Unprompted	Prompted	Total
Cared for swelling/oedema	96.3	3.7	100.0
Counseling on dangers signs of pregnancy, delivery and post partum	86.2	13.8	100.0
Iron tablets distributed	66.1	33.9	100.0
Calcium tablets distributed	89.0	10.1	99.1
BP examination	72.5	26.6	99.1
Urine testing for protein using dipstick	92.7	5.5	98.2
Abdominal examination	88.1	10.1	98.2
TT immunization and counseling/suggestion	66.1	32.1	98.2
Chest examination	11.0	0.0	11.0
Nutrition and weight	9.2	0.0	9.2
De-worming tablets	8.3	0.0	8.3
Jaundice examination	8.3	0.0	8.3
Anaemia examination	4.6	0.0	4.6
Heart beat examination of baby from second visit	4.6	0.0	4.6
Advised to seek assistance of skilled birth attendant /HF for delivery	2.8	0.0	2.8
Breast examination	1.8	0.0	1.8
Examination from head to toe	1.8	0.0	1.8

<sup>15</sup> 52 ANMs, 23 AHWs, 12 Senior AHWs/CMAs, 3 VHWs, 4 Public Health Supervisors, 7 MCHWs, 5 Has, 1 nurse, and 2 Senior ANMs

<sup>16</sup> ANMs, AHWs, Sr. AHWs/CMAs, VHWs, Public Health Supervisors, MCHWs, HAs, Nurses and Sr. ANMs

Counseling on iron and calcium tablets	1.8	0.0	1.8
Video X-ray services	0.9	0.0	0.9
Counseling on family planning	0.9	0.0	0.9

Of the 109 health workers interviewed all HWs belonging to hospital, PHC and HP mentioned availability of delivery and post partum services while 75 percent and 88 percent health workers from SHPs mentioned the availability of these services (Table 7.2). A few health workers from SHPs reported diagnosing pre-eclampsia / eclampsia cases in the last month.

Table 7.2 Availability of delivery and post partum services

Percent of health workers (HW) mentioning availability of delivery and post partum services and whether any pre-eclampsia / eclampsia cases diagnosed in last month, Dailekh, Nepal 2013

Type of facility HW belonged to	Delivery services	Postpartum services	PE/E cases diagnosed in last month	Total health workers
	%	%	%	Number
Hospital	100.0	100.0	0.0	3
PHC	100.0	100.0	0.0	7
HP	100.0	100.0	0.0	34
SHP	75.4	87.7	4.6	65
Total	85.3	92.7	2.8	109

Health workers from three SHPs diagnosed two clients each in last month while health workers from other facilities did not report diagnosing any pre-eclampsia /eclampsia cases in the last month. Services given to pregnant women diagnosed with pre-eclampsia /eclampsia included routine screening (BP, dipstick), giving MgSO<sub>4</sub> according to protocol, cases referred to another health facility and inquiring about outcome for referred mothers and her foetus. It was reported by health workers that the referred cases improved (Table 7.3).

Table 7.3 Recent experiences of providing pre-eclampsia/ eclampsia services

Percent of health workers (HW) reporting their experiences of providing pre-eclampsia/ eclampsia services to two cases in last month in sub-health posts, Dailekh, Nepal 2013

Services given to pregnant women diagnosed with pre-eclampsia / eclampsia	First cases	Second cases
	%	%
Pregnant woman diagnosed through routine screening (BP, dipstick)	100.0	100.0
MgSO <sub>4</sub> given according to protocol	100.0	100.0
Cases referred to another health facility	66.7	66.7
Outcome for referred mothers: health improved	66.7	66.7
Outcome for referred mothers' baby: health improved	66.7	66.7
Number of health workers	3	3

The field researchers also examined the record books of the store of health facilities. They checked whether the storeroom was managed according to First Expiry First Out (FEFO) system. Out of 42 health facilities observed, except one facility all other facilities were found managing the storeroom according to FEFO (Table not shown).

Behavior change communication materials on calcium were found in almost all health facilities except in a few sub-health posts. They were found displayed in waiting halls and examination

rooms of service providers (Table 7.4). In a few SHPs magnesium sulphate for severe Pre-eclampsia / eclampsia management flex/posters were not seen in examination rooms.

Health care service provider's service aids such as BP set, urine sample bottles, dipstick tests for proteinuria, etc were also found in the health facilities (Table 7.4). They were available even in sub-health posts.

Table 7.4 Availability of behavior change communication materials and distribution

Percent of health workers (HW) reporting availability of behavior change communication materials and service aids in their place of work, Dailekh, Nepal 2013				
Behavior change communication materials and service aids seen in waiting hall or examination room	Type of facility HW belonged to			
	Hospital	PHC	HP	SHP
<b>In waiting hall:</b>				
Pregnancy, delivery and post-natal related poster seen in waiting hall	100.0	100.0	100.0	92.3
Calcium flex poster seen in waiting hall	100.0	100.0	100.0	93.8
<b>In examination room:</b>				
Calcium brochure seen in examination room	100.0	100.0	100.0	100.0
Magnesium sulfate for severe PE/E management flex/poster seen in examination room	100.0	100.0	100.0	92.3
BP set	100.0	100.0	100.0	100.0
Urine sample bottles	100.0	100.0	100.0	100.0
Dipstick tests for proteinuria	100.0	100.0	100.0	100.0
Total respondents	3	7	34	65

## 7.2 Knowledge on calcium counselling

Attempt was made to assess the knowledge of health care providers on calcium use and counselling. All health care providers from hospital, public health care centres and health posts spontaneously said that calcium prevents pre-eclampsia / eclampsia while the corresponding figure for sub-health posts health care providers was 94 percent but after prompting their proportion also increased to a 100 percent (Table 7.5).

Table 7.5 Reasons for administering calcium to pregnant women

Percent of health workers reporting perceived reasons for administering calcium, Dailekh, Nepal 2013									
		Perceived reasons for administering calcium to pregnant women							
Type of respondents	Type of response	Prevent complications (pre-eclampsia/eclampsia)	Improve pregnant woman's health	Improve baby's health	Prevent severe headache and blurred vision	Prevent upper abdominal pain	Helps develop bones	Prevents unconsciousness	Total respondents
		Health workers belonging to Hospital	Unprompted	100.0	100.0	100.0	0.0	0.0	
	Prompted	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	Total yes	100.0	100.0	100.0	0.0	0.0	0.0	0.0	
Health workers belonging to PHCs	Unprompted	100.0	85.7	85.7	0.0	0.0	0.0	0.0	7
	Prompted	0.0	14.3	14.3	0.0	0.0	0.0	0.0	
	Total yes	100.0	100.0	100.0	0.0	0.0	0.0	0.0	
Health workers belonging to HPs	Unprompted	100.0	91.2	88.2	2.9	2.9	8.8	0.0	34
	Prompted	0.0	8.8	11.8	0.0	0.0	0.0	0.0	
	Total yes	100.0	100.0	100.0	2.9	2.9	8.8	0.0	

Health workers belonging to SHPs	Unprompted	93.8	86.2	78.5	1.5	3.1	13.8	1.5	65
	Prompted	6.2	13.8	21.5	0.0	0.0	0.0	0.0	
	Total yes	100.0	100.0	100.0	1.5	3.1	13.8	1.5	

All health care providers from hospital spontaneously said calcium improves pregnant woman's as well as baby's health while the respective figures for health care providers from public health care centres were 86 percent each and from health posts they were 91 percent and 88 percent (Table 7.5). Eighty-six percent of health care providers from sub-health posts spontaneously said that calcium improves pregnant woman's health and 79 percent said calcium improves baby's health. A few health care providers from HPs and SHPs also said that calcium prevents severe headache and blurred vision, prevents upper abdominal pain, helps develop bones and prevents unconsciousness.

All health workers from Hospital and PHCs correctly mentioned the month from which a pregnant woman should start taking calcium, number of calcium tablets that should be taken every day, time of day calcium tablets should be taken, time of day iron tablets should be taken and whether calcium and iron tablets can be taken together or not (Table 7.6). A few health workers from HPs and SHPs faltered on knowledge; health workers from SHPs faltered more.

Table 7.6 Knowledge on calcium counselling

Percent of HWs mentioning correct knowledge about the use of calcium and iron tablets, Dailekh, Nepal 2013		health workers interviewed at			
Knowledge inquired about	Correct answer	Hospital	PHCs	HPs	SHPs
Time from which a pregnant woman should start taking calcium	4th month	100.0	100.0	100.0	96.9
Number of calcium tablets should be taken a day	2 tablets	100.0	100.0	97.1	98.5
Time calcium tablets should be taken	After morning meal	100.0	100.0	97.1	100.0
Time iron tablets should be taken	After evening meal	100.0	100.0	100.0	98.5
Whether calcium and iron can be taken together or not	No	100.0	100.0	100.0	95.4
Total respondents		3	7	34	65

Overall, 93 percent health workers said that calcium should be used to save life of mother and child to control of high blood pressure (84%) and to prevent unconscious (82%, Table 7.7).

Table 7.7 Knowledge of calcium

Percent of health workers mentioning perceived knowledge on the use of calcium, Dailekh, Nepal 2013		Type of health facility HWs belong to:					Total n
Health workers' perceived knowledge calcium used to:	Hospital	PHC	HP	SHP	%		
Save life of mother and child	100.0	100.0	91.2	92.3	92.7	101	
Control high blood pressure	33.3	100.0	85.3	84.6	84.4	92	
Prevent unconscious	33.3	85.7	82.4	83.1	81.7	89	
Help strengthen bones	0.0	14.3	14.7	6.2	9.2	10	
Maintain good health of pregnant mother and baby	0.0	14.3	2.9	3.1	3.7	4	
Prevent upper abdominal pain	0.0	0.0	2.9	3.1	2.8	3	
Prevent swelling of hands, legs and face	0.0	0.0	2.9	3.1	2.8	3	
Prevent severe headache	0.0	0.0	2.9	1.5	1.8	2	

Prevent dizziness and blurred vision	0.0	0.0	2.9	0.0	0.9	1
Protect from Jaundice	0.0	0.0	0.0	1.5	0.9	1
Total respondents	3	7	34	65		109

Other reasons for taking calcium given by health workers were help strengthen bones, maintain good health of pregnant mother and baby, prevent upper abdominal pain, prevent swelling of hands, legs and face, prevent severe headache, deliver healthy baby, prevent dizziness and blurred vision and protect from Jaundice (Table 7.7).

### 7.3 Experiences working in pilot programme

The health workers (n=109) in the study were asked to share their experiences working in the pilot calcium programme in Dailekh. In all, 28 different experiences were shared by health worker respondents in the survey (Table 7.8). Of all respondents, 59 percent said that women found it difficult to swallow because the calcium tablet is too big, 48 percent women learned to store tablets in proper places such as places where sun and water do not damage them, 39 percent respondents said that women have been counselled to take tablets in pieces and with a lot of water so that gastritis and burning of stomach problems would be prevented (table 7.8).

Similarly, 33 percent respondents said that calcium tablets are essential for pregnant women and therefore this supplementation program should be continued while 31 percent respondents said some women did not like the smell and taste of calcium tablets and felt dizzy or nauseated. About one in 5 (24%) health workers mentioned that health seeking behaviour of women has improved; women have understood the value of health service and nearly same proportion (23%) of health workers said that women have learned that calcium is important and it is essential to take calcium. This is a great program (Table 7.8).

About one in five (21%) health workers said that pre-eclampsia / eclampsia has been controlled and nearly equal proportion (17%) of health workers said that because of calcium programme ANC check up has become regular among pregnant women in their health facilities (Table 7.8). Equally about the same proportion (21%) of health workers shared their experience as follows: *"A great difference has been found between children born before the intake of calcium tablets and after the intake of calcium tablets by pregnant women. Children born from mothers taking calcium tablets were found to be healthy and well-nourished."*

Some 10 to 14 percent health workers said that calcium helps the growth of mother and child; it strengthens bones; before the calcium programme, pregnant women experienced problems like dizziness, burning urination but after they started taking calcium none of these problems were seen instead their appetite increased and they became strong; calcium helps mother and child become healthy; some women complain of gastric irritation after taking calcium; some women fear that calcium causes babies to grow too big and making delivery difficult; proper information is given to such women to clearly understand the use of calcium; women are now aware of the fact that calcium tablets saves women and baby from risks and if the program is closed, they would be in trouble and since the demand for calcium is high, its distribution should be continued.

In addition the health workers shared other experiences too such as calcium prevents unconsciousness; the program should be implemented in all 75 districts; women are aware of the fact that 10-12 glasses of milk is equal to 2 tablets of calcium; distribution of the tablets through FCHVs by training them on this program would be better as extra programme puts pressure on health facility to manage time; lack of space for storing calcium in health post; no complaints about the calcium programme and so on (Table 7.8).

Table 7.8 Experiences of health workers from calcium pilot programme  
Percent of health workers mentioning their experiences working for calcium pilot programme, Dailekh, Nepal 2013

Experiences from calcium pilot programme (multiple responses)	Type of health facility HWs belong to:					Total n
	Hospital	PHC	HP	SHP	%	
Women found it difficult to swallow because the calcium tablet is too big	66.7	14.3	67.6	58.5	58.7	64
Women learned to store tablets in proper places such as places where sun and water do not damage them	0.0	71.4	47.1	47.7	47.7	52
Women have been counseled to take tablets in pieces and with a lot of water so that gastritis and burning of stomach problems are prevented	66.7	14.3	38.2	40.0	38.5	42
Calcium tablets are essential for pregnant women and therefore this supplementation program should be continued.	33.3	14.3	35.3	33.8	33.0	36
Some women did not like the smell and taste of calcium tablets and felt dizzy or nauseated.	0.0	14.3	47.1	26.2	31.2	34
Health seeking behaviour of women has improved; women have understood the value of health service	33.3	57.1	23.5	20.0	23.9	26
Women have learned that calcium is important and it is essential to take calcium. This is a great program.	66.7	14.3	11.8	27.7	22.9	25
A great difference has been found between children born before the intake of calcium tablets and after the intake of calcium tablets by pregnant women. Children born from mothers taking calcium tablets were found to be healthy and well-nourished.	33.3	0.0	20.6	23.1	21.1	23
Pre-eclampsia / eclampsia has been controlled.	0.0	14.3	20.6	23.1	21.1	23
Because of calcium programme ANC check up has become regular.	0.0	28.6	17.6	16.9	17.4	19
Calcium helps the growth of mother and child; it strengthens bones	0.0	0.0	23.5	10.8	13.8	15
Before the calcium programme, pregnant women experienced problems like dizziness, yellow pus in urine, burning urination but after they started taking calcium none of these problems were seen instead their appetite increased and they became strong	33.3	14.3	11.8	13.8	13.8	15
Calcium helps mother and child become healthy	0.0	0.0	17.6	10.8	11.9	13
Some women complain of gastritis after taking calcium	0.0	14.3	11.8	10.8	11.0	12
Some women fear that calcium causes babies to grow too big and making delivery difficult; proper information is given to such women to clearly understand the use of calcium	0.0	0.0	11.8	12.3	11.0	12
Women are now aware that calcium tablets save women and baby from risks. If the program is closed, we - health workers will be in trouble.	0.0	14.3	14.7	7.7	10.1	11
As the demand for calcium is high, its distribution should be continued.	0.0	14.3	8.8	6.2	7.3	8
Calcium prevents unconsciousness.	0.0	0.0	8.8	7.7	7.3	8
This program should be implemented in all 75 districts.	0.0	0.0	8.8	7.7	7.3	8
Women are aware of the fact that 10-12 glasses of milk is equal to 2 tablets of calcium.	0.0	0.0	11.8	3.1	5.5	6
Distribution of the tablets through FCHVs by training them on this program would be better. Extra programme puts pressure on health facility to manage time.	0.0	28.6	5.9	0.0	3.7	4
Lack of space for storing calcium in health post.	0.0	0.0	2.9	4.6	3.7	4
No complaints about the calcium programme. FCHVs monitor women taking calcium	33.3	14.3	2.9	1.5	3.7	4
Women give feedback through FCHVs instead of visiting HF because of the difficult terrains and unavailability of transportation facilities	0.0	0.0	0.0	6.2	3.7	4
Calcium tablets like iron tablets should be small in the form of syrup.	0.0	0.0	5.9	0.0	1.8	2
Untimely delivery of calcium created problems in distribution.	0.0	14.3	0.0	1.5	1.8	2
Calcium program has benefited poor women	0.0	0.0	0.0	3.1	1.8	2

FCHVs, school students and others were informed about the usefulness of calcium tablets. This has increased the importance of calcium tablets	0.0	0.0	2.9	0.0	0.9	1
Women who took calcium in pregnancy found it easier to deliver	0.0	0.0	2.9	0.0	0.9	1
Number of respondents	3	7	34	65		109



# Chapter 8: Level of Knowledge and Experience with the Calcium Program Among FCHVs

## 8.1 Maternal health services

Calcium pilot programme in Dailekh gave orientation and training to 810 FCHVs and their involvement was sought in locating pregnant women. The FCHVs after the training counselled pregnant women in their localities and encouraged them to visit health facility for antenatal check up and to collect calcium bottles. The FCHVs monitored pregnant women taking calcium tablets.

This pilot study assessment interviewed 112 FCHVs and their background characteristics are as shown in Box 1. The median age of FCHVs participating in the study was 35 years and of them 109 (97.3%) were literate (Box 1).

Age	Number	Percent
20-29	32	28.6
30-39	50	44.6
40-49	25	22.3
50+	5	4.5
Total	112	100.0
Median age		35
Percent literate		97.3

The FCHVs in calcium pilot programme district Dailekh were found performing a number of services. Overall 90 percent of them referred pregnant women for ANC services in the last month although this varied by age group of FCHVs - slightly fewer younger FCHVs referred pregnant women for ANC services compared to their older counterparts (Table 8.1).

Table 8.1 Maternal health services

Percent of Female Community Health Volunteers (FCHVs) performing maternal health services involved in calcium pilot programme in the last month preceding the survey, Dailekh, Nepal 2013

Age	Referred pregnant women for ANC services	Discussed with pregnant women about birth preparedness	Distributed iron tablets	Discussed about calcium with pregnant women in home visits	Discussed about taking iron and calcium at different times of day with pregnant women in home visits	Referred pregnant women to HF for delivery services	Referred women with danger signs of pregnancy, delivery and postpartum to HF	Total n
20-29	78.1	93.8	75.0	100.0	100.0	59.4	31.3	32
30-39	98.0	100.0	68.0	100.0	100.0	70.0	38.0	50
40-49	88.0	92.0	76.0	100.0	100.0	64.0	48.0	25
50+	100.0	100.0	80.0	100.0	100.0	80.0	60.0	5
Total	90.2	96.4	72.3	100.0	100.0	66.1	39.3	112

Ninety-six percent FCHVs discussed with pregnant women about birth preparedness and 72 percent distributed iron tablets (Table 8.1). A hundred percent FCHVs discussed about calcium with pregnant women in home visits and also discussed about taking iron and calcium at different times of day with pregnant women in home visits. Sixty-six percent FCHVs referred pregnant women to HF for delivery services and 39 percent referred women with danger signs of pregnancy, delivery and postpartum to health facility (Table 8.1).

In the past month preceding the survey 72 percent FCHVs distributed iron tablets to pregnant women in Dailekh and 27 percent of them distributed 20-30 tablets, 21 percent 40-60 tablets and 24 percent 80-250 tablets (Table 8.2).

Table 8.2 Maternal health services

Percent of FCHVs reporting number of iron tablets distributed last month, Dailekh, Nepal 2013						
Age	Number of iron tablets distributed last month				Total %	Total n
	20-30	40-60	80-250	None		
20-29	31.3	34.4	9.4	25.0	100.0	32
30-39	30.0	16.0	22.0	32.0	100.0	50
40-49	12.0	20.0	44.0	24.0	100.0	25
50+	40.0	0.0	40.0	20.0	100.0	5
<b>Total</b>	<b>26.8</b>	<b>21.4</b>	<b>24.1</b>	<b>27.7</b>	<b>100.0</b>	<b>112</b>

The field researchers also inquired about the availability of iron tablets at the time of the survey and 24 percent FCHVs reported unavailability of iron tablets then while the rest reported holding 2 tablets to 250 tablets (Table 8.3) with them<sup>17</sup>. About 57 percent FCHVs were carrying 30-250 iron tablets with them at the time of survey.

Table 8.3 Maternal health services

Percent of FCHVs reporting availability of iron tablets at the time of survey, Dailekh, Nepal 2013					
Background	Number of iron tablets available at the time of survey				Total n
	None	2-25	30-50	60-250	
Age					
20-29	28.1	18.8	18.8	34.4	32
30-39	30.0	14.0	34.0	22.0	50
40-49	8.0	32.0	40.0	20.0	25
50+	20.0	0.0	20.0	60.0	5
FCHV working for					
Hospital	0.0	0.0	0.0	100.0	1
PHC	16.7	0.0	50.0	33.3	6
HP	30.4	30.4	21.7	17.4	23
SHP	23.2	17.1	31.7	28.0	82
<b>Total</b>	<b>24.1</b>	<b>18.8</b>	<b>30.4</b>	<b>26.8</b>	<b>112</b>

<sup>17</sup> FCHVs carry with them pills, condoms, oral rehydration solution and iron tablets.

## 8.2 Community meetings

Despite the fact that FCHVs are volunteers they are heavily involved in their community health programme activities. They are supposed to meet local district and local health facility authorities every month and report on their respective activities. In addition whenever a new health programme is launched in the district they are made part of it by the government and sometimes by the NGOs too. As mentioned earlier, they were also involved in calcium pilot supplementation programme in Dailekh.

Upon enquiring whether FCHVs organized monthly meeting in their respective HF last month 94 percent mentioned that they did and 92 percent of them participated in that meeting (Table 8.4). Also 66 percent of FCHVs participate biannual review meeting in their HF and 65 percent of them participated in that meeting. FCHVs organize Mothers' Groups meeting in their communities every month. Among the FCHVs participating in the study, 88 percent conducted Mothers' Group meeting in the last month and nearly all, as answered by them upon questioning, discussed about calcium at the mothers' group meeting last month (Table 8.4).

Table 8.4 FCHV meetings

Percent of FCHVs reporting number of meetings held and their participation, Dailekh, Nepal 2013								
Age	FCHV monthly meeting organized in HF last month	FCHV participated in that meeting	FCHV biannual review meeting organized in her HF	FCHV participated in that meeting	Mothers' group meeting conducted last month	Discussed about calcium at the mothers' group meeting last month	Total %	Total n
20-29	93.8	90.6	59.4	56.3	84.4	84.4	96.9	32
30-39	94.0	94.0	68.0	68.0	96.0	96.0	100.0	50
40-49	92.0	92.0	72.0	72.0	76.0	72.0	100.0	25
50+	100.0	80.0	60.0	60.0	100.0	100.0	100.0	5
Total	93.8	92.0	66.1	65.2	88.4	87.5	99.1	112

Correct knowledge of calcium counselling is high among FCHVs in Dailekh. Spontaneously two in three FCHVs said that calcium should be taken by pregnant women to prevent pre-eclampsia / eclampsia but when probed everybody mentioned this (Table 8.5). Similarly all FCHVs said that pregnant women should take calcium to improve their and their baby's health.

Table 8.5 Knowledge of calcium

Percent of FCHVs mentioning perceived knowledge on the use of calcium, Dailekh, Nepal 2013			
Pregnant women should take calcium to:	Unprompted	Prompted	Total
Prevent complications (pre-eclampsia/eclampsia)	66.1	33.0	99.1
Improve her health	75.0	24.1	99.1
Improve her baby's health	70.5	27.7	98.2
Make baby's bone in side womb strong	5.4	0.0	5.4
Prevent swelling of hands and face	3.6	0.0	3.6
Prevent unconsciousness	2.7	0.0	2.7
Reduce BP	1.8	0.0	1.8

Reduce upper abdominal pain	0.9	0.0	0.9
Prevent delivery related risks and complications	0.9	0.0	0.9
Number of respondents			112

### 8.3 Knowledge on calcium counselling

FCHVs were enquired about the use of calcium with respect to from what month of pregnancy calcium should be taken, how many tablets to take everyday, what time of day to take it, what time of day iron should be taken and whether calcium and iron tablets should be taken together. Overall, 97 percent of FCHVs said that pregnant woman should take calcium from the 4th month of pregnancy, all FCHVs said that 2 tablets should be taken everyday and in the morning after meal (Table 8.6). Similarly 97 percent FCHVs said that iron tablet should be taken after evening meal and 98 percent FCHVs said that iron and calcium tablets should not be taken together.

Table 8.6 Knowledge on calcium counselling

Percent of FCHVs mentioning correct knowledge about the use of calcium and iron tablets, Dailekh, Nepal 2013						
Knowledge inquired about	Correct answer	Age of respondents				Total n
		20-29	30-39	40-49	50+	
Month from which a pregnant woman should start taking calcium	4th month	96.9	98.0	96.0	100.0	97.3
Number of calcium tablets that should be taken a day	2 tablets	100.0	100.0	100.0	100.0	100.0
Time calcium tablets should be taken	After morning meal	100.0	100.0	100.0	100.0	100.0
Time iron tablets should be taken	After evening meal	100.0	96.0	96.0	100.0	97.3
Whether calcium and iron can be taken together or not	No	100.0	98.0	96.0	100.0	98.2
Total respondents		32	50	25	5	112

Table 8.7 Knowledge on calcium use

Percent of FCHVs mentioning their knowledge of benefits of taking calcium during pregnancy, Dailekh, Nepal 2013 (Multiple responses)

Calcium should be taken to:	Percent of cases
Save life of mother and child	84.8
Prevent unconsciousness	83.0
Control high blood pressure	74.1
Control pre-eclampsia / eclampsia	16.1
Prevent swelling of hands, legs & face	10.7
Make bones of child strong	8.0
Prevent anaemia	3.6
Prevent stomachache	1.8
Prevent headache	1.8
Baby becomes healthy	1.8
Prevent nutritional deficiency in mother and child	1.8
Prevent presence of protein in urine	0.9
Prevent haemorrhage during pregnancy	0.9
Baby develops well in the womb	0.9
Teeth of child develop well	0.9

Child develops physical and mentally well	0.9	In response to why pregnant women should
Prevent dizziness	0.9	
Total respondents	112	

take calcium 85 percent

FCHVs said that it should be taken to save life of pregnant mother and her child (Table 8.7).

High proportion (83%) of FCHVs said that calcium should be taken to prevent unconsciousness followed by control high blood pressure (74%), control pre-eclampsia / eclampsia (16%), prevent swelling of hands, legs & face (11%), make bones of child strong (8%), prevent anaemia (4%) and so on (Table 8.7).

#### 8.4 Experiences working in calcium pilot programme

FCHVs working for the calcium pilot programme had a number of experiences and they have shared them with the research team as follows. More than half (55%) of FCHVs said they advised women to break tablet into 2 pieces if it was difficult to swallow, 31 percent each experienced improvement of health of mothers after taking calcium tablets but some women complained of dizziness, nausea after taking calcium (Table 8.8). Over one in four (26%) FCHVs learned that mothers take calcium to improve child's health. An interesting experience the FCHVs shared was that before women did not like calcium because they feared it was harmful but now they know the value of it and take it. Similarly FCHVs working with pregnant women and calcium programme had several experiences as shown in Table 8.8.

Table 8.8 FCHV's experience from calcium pilot programme

FCHVs' experiences from calcium programme	Age group				Total
	20-29	30-39	40-49	50+	
Women were advised to break tablet into 2 pieces if difficult to swallow	46.9	62.0	48.0	60.0	54.5
Calcium tablets have improved mothers' health	43.8	20.0	36.0	40.0	31.3
Some women complain of dizziness, nausea after taking calcium	28.1	38.0	24.0	20.0	31.3
Women take calcium to improve child's health	34.4	16.0	36.0	40.0	26.8
Before women did not like calcium as they feared it was harmful but now they know the value of it and take it	9.4	18.0	12.0	20.0	14.3
Calcium program is good	18.8	8.0	8.0	60.0	13.4
Storing calcium tablets is not difficult as some people think	21.9	10.0	12.0	0.0	13.4
We suggest women to drink lots of water when taking calcium	9.4	10.0	16.0	20.0	11.6
Taste and odour of calcium tablet are not liked	12.5	8.0	20.0	0.0	11.6
Women believe that taking calcium will increase the size of baby making it difficult deliver	6.3	14.0	12.0	0.0	10.7
Prevent unconsciousness	9.4	8.0	4.0	40.0	8.9
Pregnant women say they got rid of headache after taking calcium	18.8	4.0	4.0	0.0	8.0
Women agree to take calcium after we explained them about pre-eclampsia and eclampsia	3.1	8.0	4.0	20.0	6.3
FCHVs complain that they have no time for calcium programme	9.4	4.0	8.0	0.0	6.3
Gastritis problem	3.1	8.0	8.0	0.0	6.3
Continuity of calcium distribution program is recommended	6.3	4.0	12.0	0.0	6.3
Complaints of burning in stomach after taking calcium tablets	3.1	4.0	8.0	20.0	5.4
Women are told that calcium is taken to prevent excessive bleeding.	9.4	2.0	8.0	0.0	5.4

Few pregnant women had increased appetite after taking calcium	6.3	4.0	4.0	0.0	4.5
Women say that calcium tablets are easy to take	6.3	4.0	0.0	0.0	3.6
Headache and constipation complained b\y some women	12.5	0.0	0.0	0.0	3.6
Because of negative rumors few women do not come to HF for calcium	3.1	6.0	0.0	0.0	3.6
Problems like white discharge, lower abdominal pain, swelling of hands and joints, dizziness have been cured after taking calcium	6.3	2.0	0.0	0.0	2.7
It would have been easier to carry tablets if they were provided in strips	0.0	4.0	4.0	0.0	2.7
Women complain of hands, legs & stomach pain	0.0	2.0	4.0	0.0	1.8
It strengthens bones of both mother & child	6.3	0.0	0.0	0.0	1.8
Prevents blurred vision	3.1	2.0	0.0	0.0	1.8
BP during pregnancy was under control after taking calcium	0.0	2.0	0.0	0.0	0.9
Calcium supplementation program decreased deformed births	0.0	0.0	0.0	20.0	0.9
Total respondents	32	50	25	5	112

FCHV's attitude to calcium programme was also explored in the study. They were asked whether they would be interested to distribute calcium tablets in the future and in response 38 percent of them said that they would be as it is their responsibility as health volunteers (Table 8.9). Another 19 percent FCHVs also gave reasons that pregnant women have good understanding; they listen to their suggestions. Some pregnant women, however, do not go for ANC check up in health facilities and therefore they would distribute calcium tablets just like they distribute iron tablets. Some 15 percent or less FCHVs put some conditions before accepting to get involved in calcium distribution in future such as training, incentives and so on.

Table 8.9 FCHV's interest in future calcium programme

Percent of FCHVs mentioning their interest in future calcium programme, Dailekh, Nepal 2013					
Whether interested to distribute calcium in future	Age group				Total
	20-29	30-39	40-49	50+	
Yes, I am willing to distribute calcium tablet. It is our responsibility	40.6	44.0	20.0	40.0	37.5
Yes. Pregnant women have good understanding. They agree on our suggestions. Also some pregnant women do not go for ANC checkup in health facilities therefore we are assigned to distribute calcium tablets like iron tablets.	6.3	20.0	32.0	20.0	18.8
No. I am not willing because all pregnant women visit the health facility for ANC and receive calcium tablets from there. We don't have the skills for ANC check up	15.6	14.0	20.0	0.0	15.2
If the organization provides training for calcium distribution. I will distribute calcium tablets	15.6	16.0	8.0	20.0	14.3
Yes, because it benefits the health of both mother and child	15.6	12.0	8.0	20.0	12.5
I would be willing to distribute if I am paid for the service offered.	9.4	4.0	8.0	0.0	6.3
Even though I am willing to distribute calcium but I wish some incentives could have been provided for us.	6.3	6.0	4.0	0.0	5.4
Yes, because everyone will have access to calcium tablets if I distribute them. Some pregnant women do not go for ANC visits because health facilities are too far	9.4	0.0	8.0	0.0	4.5
Yes, I am willing as we are the ones who also monitor and evaluate calcium distribution.	0.0	2.0	0.0	0.0	0.9
Total respondents	32	50	25	5	112

# Chapter 9: Conclusion

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Maternal mortality in Nepal has gone down by more than 50% from 539 per 100,000 live births in 1996 to 229 in 2008/2009, yet it is still high. Many factors are responsible for high maternal mortality and pre-eclampsia/eclampsia is one of the major contributors to it. The Government of Nepal, Ministry of Health and Population with technical and financial support from MCHIP/USAID piloted a calcium supplementation programme for pregnant women in a hill district Dailekh for a year from June 2012 to August 2013. The project was not meant for measuring the efficacy of the calcium in reducing PE/E per se but to assess the coverage and compliance of calcium distributed through the antenatal platform. To help prevent PE/E during pregnancy, all ANC health providers at all government health facilities in Dailekh were trained to counsel women about the benefits of calcium supplementation during pregnancy and to distribute the calcium during ANC visits. In addition, the health facilities were provided with urine collection bottles and dipsticks to ensure the availability of universal PE/E detection services for pregnant women during ANC, at all government health facilities. They were trained in the use of magnesium sulphate (MgSO<sub>4</sub>) for treatment of severe PE/E. FCHVs, on the other hand, were trained to promote ANC attendance and compliance with the recommended calcium regimen among pregnant women who received calcium during ANC.

The calcium supplementation pilot program was evaluated at the end of intervention by an independent research agency. The assessment covered the whole district.

The analysis of primary data collected from RDWs of Dailekh on calcium pilot supplementation programme indicates that the pilot programme to address pre-eclampsia / eclampsia problems prevailing among pregnant women in the country are yielding positive results. Analysed information on different aspects of calcium distribution programme through health care system prevailing in the country suggests that calcium tablets distributed through antenatal care service is effective in reaching a high percentage of women. The value of calcium appears to be highly appreciated by pregnant women. This is supported by the data, i.e., high compliance, with the calcium intake instructions and a low discontinuation rate.

Distribution of calcium through ANC services can produce very high coverage of calcium among pregnant women, with 95% of all women surveyed receiving calcium. Compliance was high, with 67% of women who received calcium taking the full course (150 days), and additional 24% met partial course. And the vast majority of all women who received calcium reporting they took it as instructed with respect to dosage, timing and frequency.

High levels of knowledge about calcium among RDW, FCHVs and ANC health care providers were achieved through this program approach. Calcium consumption did not appear to reduce iron consumption and majority women who received calcium and iron followed consumption instructions to take at a different time of day.

# Recommendations

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Based on the findings of the evaluation of calcium pilot programme in Dailekh district, the government should consider providing calcium supplementation to all pregnant women for the prevention of PE/E. With the government providing incentive for ANC visits and an increase in antenatal attendance, this platform can be used while scaling up the program, thus making it very cost effective.



# References

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- Central Bureau of Statistics (CBS). 2012. *National Population and Housing Census 2011 (National Report)*. Government of Nepal. National Planning Commission Secretariat. Kathmandu. November. Volume 01. NPHC 2011.
- Central Bureau of Statistics (CBS). 2012. *National Population and Housing Census 2011 (Village Development Committee/Municipality)*. Government of Nepal. National Planning Commission Secretariat. Kathmandu. November. Volume 02. NPHC 2011.
- Hofmeyr GJ, Lawrie TA, Atallah AN, Duley L. 2010. *Calcium Supplementation during pregnancy for preventing hypertensive disorders and related problems*. Cochrane Database Systematic Reviews 2010, Issue 8.
- Ministry of Health & Population. 2011. *Annual Report 2009/10*. Department of Health Services. His Majesty's Government, Kathmandu, Nepal. March.
- Central Bureau of Statistics (CBS) and UNFPA. 2002. *Population Census 2001: National Report*. National Planning Commission Secretariat (NPCS), Kathmandu, Nepal.
- Ministry of Health and Population (MoHP). 2012. *Nepal Demographic and Health Survey 2011 (NDHS)*. New ERA and IFC International Inc.
- Ministry of Health and Population (MoHP). 2009. *Nepal Maternal Mortality and Morbidity Study*. Family Health Division. Kathmandu.
- Ministry of Health and Population (MoHP). 2007. *Nepal Demographic and Health Survey 2006 (NDHS)*. New ERA and Macro International Inc.
- Ministry of Health (MOH). 1993. *National Health Policy 1991*. HMG, Policy, Planning, Monitoring and Supervision Division, Kathmandu. July, Revised Edition.
- MOH. 1999. *Second Long Term Health Plan 1997-2017*. Kathmandu: Ministry of Health, His Majesty's Government, Nepal.
- MOH. 2004. *Nepal Health Sector Programme - Implementation Plan (NHSP-IP). 2004-2009*. HMG/Nepal, October.
- National Planning Commission (NPC). 2003. *The Tenth Plan 2002-2007*. HMG, NPC Secretariat, Singha Durbar, Kathmandu.
- NPC. 2007. *Three Year Interim Development Plan (2007-2010)*. NPC Secretariat, Singha Durbar, Kathmandu.