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# A Qualitative Assessment of Supply and Demand of Maternal Iron-Folic Acid Supplementation and Infant and Young Child Feeding Counseling in Jamshoro and Thatta Districts, Pakistan

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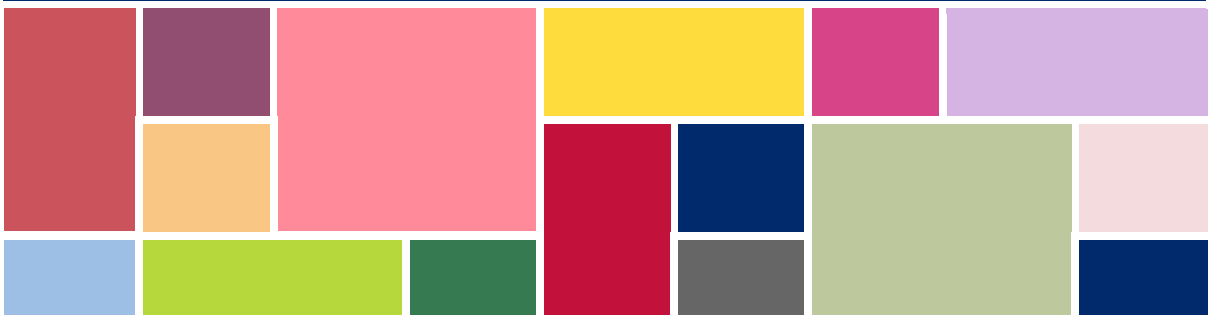
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# Table of Contents

Executive Summary.....	4
Chapter 1: Background .....	8
1.1 Introduction .....	8
1.2 Iron and folic acid supplementation to reduce maternal anemia in Sindh Province .....	10
1.3 Infant and young child feeding practices in Pakistan and Sindh Province.....	12
1.4 The Maternal and Child Health Integrated Program in Sindh Province .....	13
Chapter 2: Methodology .....	13
2.1 Study aims .....	13
2.2 Study design.....	14
2.3 Study sites .....	14
2.4 Study participants .....	14
2.5 Data analysis .....	15
2.6 Strengths and limitations .....	15
Chapter 3: Procurement, Forecasting, and Distribution of IFA Supplements .....	16
3.1 Introduction .....	16
3.2 Results and findings .....	18
3.3 Recommendations .....	19
Chapter 4: Supply Side Strengths, Weaknesses, and Barriers of IFA Supplementation.....	20
4.1 Introduction .....	20
4.2 Results and findings .....	20
4.3 Recommendations .....	21
Chapter 5: Quality of IFA Supplementation and IYCF Counseling .....	22
5.1 Introduction .....	22
5.2 Results and findings .....	22
5.3 Recommendations .....	25
Chapter 6: Barriers to Promoting Optimal Nutrition Practices .....	25
6.1 Introduction .....	25
6.2 Results and findings .....	26
6.3 Summary and recommendations.....	28
Chapter 7: Alignment of Knowledge and Practice with Health+ Program Recommendations .....	29
7.1 Introduction .....	29
7.2 Results and findings .....	30
7.3 Recommendations .....	33
Chapter 8: Program Opportunities and Recommendations .....	33
Program opportunities .....	33
Recommendations and conclusions .....	34
References .....	36

# Executive Summary

## Background

Pakistan has high and persistent rates of undernutrition and anemia. The Food and Agriculture Organization estimated that 22% of Pakistan's population was undernourished in 2015, and the World Health Organization (WHO) reports that 45% of children under 5 were stunted in 2012 (World Bank, 2017). The prevalence of anemia is estimated at 58.8% (2016) among children under 5 and 52.1% (2016) among women of reproductive age (World Bank, 2017). When compared to its regional neighbors and other lower-middle income countries, the prevalence of malnutrition in Pakistan is unusually high (see Box 1). In Sindh province, prevalence of undernutrition and anemia is higher than the national figures, with anemia affecting 62% of pregnant women and 73% of children (NNS, 2011).

Pakistan has a program for iron and folic acid (IFA) supplement distribution through antenatal care ANC services and the Lady Health Worker (LHW) Program. However, the coverage of IFA supplementation during pregnancy is low and has not improved in the last decade - only 43% of women in 2006/2007 and 45% in 2012/2013 took any iron supplements in their last pregnancy. While 78.2% of pregnant women in Sindh received at least one ANC visit, only 49% of women took iron supplements during their last pregnancy in 2012/2013 (See Figure 1). These numbers indicate that the program's coverage and adoption of behaviors could be improved.

Across Pakistan, only 14.4% of infants experienced all three WHO/UNICEF-recommended infant and young child feeding practices in 2013. Similar to most low- and middle-income countries, Pakistan has a high share of some breastfeeding (94.3% in 2007 [WHO, 2009]) with a low rate of exclusive breastfeeding (EBF) up to 6 months (37.7% in 2013 [UNICEF, 2016]). In Sindh, 29% of infants are exclusively breastfed and 21% have early initiation of breastfeeding. In children 6 to 24 months of age, only 14% meet the minimum diet diversity and 9% receive the minimum acceptable diet (Sindh Final Report, Multiple Indicator Cluster Survey – 2014).

The Maternal Child Health Integrated Program (MCHIP) was implemented in 15 districts across Sindh Province out of total of 29 districts. The program works on improving the quality of maternal iron-folic acid (IFA) supplementation. It also includes capacity building of health care providers via group-based trainings and on-the-job coaching. The group-based training includes nutrition, integrated into ANC, postnatal care (PNC), and essential newborn care (ENC); and an on-the-job training module provides information on breastfeeding.

## Methodology

The study aimed to assess and strengthen the content, quality, and effectiveness of IYCF counseling and IFA supplements programming. It used qualitative methods to collect and analyze data on maternal IFA supplementation and IYCF counseling in Sindh. Primary data were collected via in-depth interviews and focus group discussions in Jamshoro and Thatta districts. Selection of these two districts ensured representation from Thatta (where the MCHIP program was implemented) and its adjacent district, Jamshoro. Talukas (subdistricts) within the districts were identified with the assistance of MCHIP staff. Study participants included pregnant women; mothers; fathers; grandmothers; health providers working in MCHIP-supported facilities; LHWs; community leaders and province-level directors.

Using qualitative interpretive analysis, interview and group discussion manuscripts were coded and grouped according to key themes and study questions. Coded data were analyzed using thematic pattern analysis, from which findings emerged. Following identification of findings, quotations were identified to provide examples of findings. The qualitative analysis was supplemented with a document review of published and grey literature.

## Results and findings

This study found that there are both supply- and demand-side barriers to IFA supplementation and optimal IYCF practices in the communities. Results answer two key supply-side questions three demand-side questions.

## Supply side: Procurement, forecasting, and distribution of IFA supplements

### *Question: What systems and mechanism do the health facilities have for the procurement, forecasting, and distribution of IFA supplements to women?*

IFA supplements are available to pregnant women via LHW network, district clinics and private pharmacies. The Provincial Health Department is responsible for procuring IFA supplements for the health facilities. Demand forecasting is performed quarterly at the district level by the district health office (DHO) and then shared with the provincial health department. Requests from all the districts are consolidated at the provincial level at the Provincial Health Department at Sindh Secretariat. Information and confirmation from vertical program managers and supplies is dispatched to target districts. A project management and senior finance staff member and members of respective donor staff (Global Fund, World Bank, UNICEF) discuss and plan procurement of medicines for the province and districts. The procurement algorithm is based on number of targeted beneficiaries and number of health facilities and quantity in previous order. Procurement is through a bidding process. Additionally, district-based health officials can purchase from approved buyers to a certain limit.

The following facets of the supply chain were identified as challenges to efficient and reliable supply of IFA supplements:

- **Forecasting:** District health officers face a forecast horizon of 3 months with a 6-month lead time. This long lag may lead to inaccurate estimates of future demand.
- **Procurement:** Stock outs of IFA supplements held by public clinics and LHWs may occur frequently and interviewees did not indicate any definite processes to manage stock out of supplements.
- **Distribution:** Pregnant and lactating women reported feeling distrust in LHW-supplied IFA supplements because of the packaging and handling. IFA supplements provided via private pharmacies are perceived to be of higher quality due to packaging; however, they are also considered as prohibitively costly relative to income-levels of communities.

Alongside the Government programs, nonprofits work in some districts to control anemia and provide IYCF counseling and IFA supplements. There is evidence of some collaboration between government and nonprofit health care organizations. Government and nonprofits should consider expanding their collaboration to include shared supply chains. This may reduce costs and increase efficiency through joint organization, planning and implementation.

## Supply side: Strengths, weaknesses, and barriers of IFA supplementation

### *Question: What are the strengths, weaknesses, and barriers to maternal IFA supplementation in Jamshoro and Thatta districts?*

The study identifies three key facets of the IFA supplementation intervention that pose strengths, weaknesses and barriers to IFA supplementation:

- **Integration with health system (strength and weakness):** Distributing IFA supplements via the health system provides ensures beneficiaries receive guidance on the benefits of supplementation, appropriate regimen and side effects. However, there are two potential weaknesses, including that health care providers have many priorities and may not have sufficient time to comprehensively review importance of and procedure for IFA supplementation. Additionally, there is some distrust for health care providers, which may reduce the likelihood that beneficiaries will follow a provider's advice to take IFA supplement.
- **Distribution of IFA supplements through the LHW program (strength and barrier):** The LHW program has a large reach into remote communities since the network has a wide coverage and prioritizes rural areas. LHWs both distribute IFA supplements and counsel pregnant women on the benefits of IFA supplements to ensure compliance. The strength of distribution via the LHW network is somewhat dependent on the individual LHW and her relationship with the community. Additionally, as noted in other studies (see MCHIP, 2017), there is evidence that the LHW network faces a high work load with uncertainty around remuneration and as such morale may be waning.
- **Dual interventions of IFA supplementation and IYCF counseling (strength and risk):** The provision of IFA supplements from the programs in the districts and the concurrent sensitization

activities seem to have enhanced understanding of IFA supplementation during pregnancy; however, there is an important risk to combining supplementation and counseling interventions. An interview with a grandmother revealed that she does not encourage her daughter-in-law to attend group support sessions because she believes participants are forced to consume an IFA supplement, which she believes is unnecessary.

## Demand side: Quality of IFA supplementation and IYCF counseling

### *Question: How do mothers perceive the quality of counseling related to IFA supplements and IYCF?*

Based on focus group and interview transcripts, almost all pregnant and lactating women reported that they found guidance and counseling on IFA supplementation and IYCF counseling understandable. Additionally, when asked about IFA supplement regimen and optimal IYCF practices, most provided answers that match scientific best-practice. However, there are some factors that might alter the perception of quality of these services, including:

- **Low trust of health care system interventions:** There were four manifestations of this distrust in health care systems. First, some interviewees distrusted the intervention because health care interventions are often only provided for a few years rather than as an on-going service for the community. Second, some fathers and grandmothers are suspicious about the program only focusing on women and not including men and grandmothers in the intervention's activities. Third, some expressed uncertainty about why the intervention prioritizes IFA supplements and IYCF counseling over all other health-related interventions for the community. Fourth, others perceive that IFA supplements were indeed for birth control.
- **Low prioritization of formal health-related support groups:** Most pregnant and lactating women reported that they can only attend support groups if they have completed all their chores at home or were restricted from attending.
- **Squaring medical information with community traditions:** There are three key areas where evidence-based guidelines and traditional practices in IFA supplementation and optimal IYCF practices seem to conflict. First, pregnancy and lactation are traditionally seen as a natural and healthy states, therefore a healthy pregnant or lactating woman should not have to take medication or supplements. Second, the culture does not require EBF, while evidence-based best practice strongly supports EBF. Third, community traditions and medical best-practice around initiation of breastfeeding are contradictory. The community continues to provide infants with a prelacteal feed of "ghutti", which may contain honey, mint and many other ingredients
- **Indicators of perceptions of quality based on reported awareness and behavior change:** Some lactating women shared that they experience low supply of milk during breastfeeding. There could be many reasons for this including improper positioning and attachment. A misconception is that poor maternal diet results in insufficient breastmilk.
- **Suggestions for program enhancement:** Women also provided some feedback to improve the program, for example, one stated: *"there should be monitoring of whether women are consuming those tablets or not and continuous guidance and awareness should be provided during the period of pregnancy"* (Mother, Thatta). Another participant suggested: *"arrange awareness sessions on IFA's benefits, timing, positive impact, and side effects. Additionally, explain why it is necessary to have supplements during pregnancy and how it impacts the fetus"* (Mother, Thatta).

## Demand side: Barriers to promoting optimal nutrition practices

### *What are the barriers and opportunities for promoting optional nutrition practices related to IYCF and IFA supplementation for the program?*

The analysis found that underlying community characteristics that may impact health seeking behavior, regimen compliance and propensity to change IYCF practices, include:

- **Women's time-activity (barrier and opportunity):** Pregnant and lactating women do not have sufficient time to attend IYCF counseling and follow optimal IYCF practice or attend formal health counseling sessions. On the other hand, women routinely discuss health with other women at informal gatherings.

- **Family-based decision making (barrier and opportunity):** Health-related decisions are jointly made by multiple family members and are influenced by community leaders. In general, fathers are responsible for providing financial resources to purchase IFA supplements and mothers-in-law provide advice or make health-related decisions on behalf of the pregnant woman. Family members may prohibit pregnant and lactating women from attending child health and nutrition programs when they are not aware of the usefulness of nutrition education.
- **Side effects of IFA supplements for pregnant woman and infant (barrier):** Women experience side effects that they associate with IFA supplements, including stomach ache, loose stools, and other complications.
- **Cost of IFA supplements at private pharmacy (barrier):** The cost of purchasing IFA supplements at private pharmacies is a barrier to use.
- **Community attitudes to pregnancy (barrier):** Pregnancy is considered a healthy state and anecdotes about successful deliveries of healthy infants without supplements reinforce the notion that IFA supplements are unnecessary. To ensure awareness-raising campaigns and health care provider advice resonates with the community, materials should include the messages that pregnancy is a healthy state, but IFA supplementation makes it safer for women and infants.

## Demand Side: Alignment of knowledge and practice with Health+ Program Recommendations

### *Do IFA supplementation and IYCF knowledge and practices reflect the key recommended SBCC messages in the Health+ Program?*

MCHIP in Sindh used multiple SBCC strategies to reach pregnant women and their communities with actionable information on IFA supplementation and breastfeeding. In 2013 and 2014, MCHIP ran a mass media campaign using 45-second public service announcements about importance of early initiation of breastfeeding. Cooking demonstrations were also carried out. Additionally, MCHIP produced and distributed pamphlets using pictures and simple language to promote best-practice for IFA supplementation and iron-rich diet.

The key recommended SBCC messages in the Health+ Program are based on WHO guidelines for IFA supplementation and WHO/UNICEF guidance on IYCF practices (see Boxes 1 and 2). Most community members are aware of health recommendations pertaining to iron- and nutrient-rich diet and IFA supplementation for pregnant and lactating women; and most respondents have at least some knowledge of optimal IYCF practices. This transfer of knowledge is a success; however, there are still barriers to translating knowledge into action for some respondents.

In addition to the MCHIP findings, this study analysis identified the following program opportunities and recommendations:

Key opportunities to improve supply of IFA supplements and IYCF counseling include interventions to:

- Reduce frequency of stock-outs at district clinics and among LHWs.
- Review and update packaging of IFA supplements provided by LHWs and at district clinics to ensure they are appealing to beneficiaries.
- Explore increasing collaboration between government facilities, nonprofit facilities and potentially private-sector pharmacies.

Key opportunities to increase demand for IFA supplements and IYCF counseling include interventions to:

- Increase participation in ANC visits, including a broadly targeted SBCC campaign that validates the community's perception of pregnancy as a healthy state as well as projecting the benefits of ANC and supplements (see Chapter 7).
- Improve health care providers' and LHWs' ability to advise on maternal and infant nutrition through mentoring and refresher training on nutrition, creation of job aids, and clarification of policy to be more actionable (see Chapter 7).



There may also be benefits to engaging researchers to conduct a time-activity analysis of women's time allocation, movement in space and resource use, which would provide insight into the extent to which women are time-poor and identify time-efficient opportunities to share IYCF and IFA supplementation messaging (see Chapter 6).

# Chapter I: Background

## I.1 Introduction

Pakistan has high and persistent rates of undernutrition and anemia. The Food and Agriculture Organization estimated that 22% of Pakistan's population was undernourished in 2015, and the World Health Organization (WHO) reports that 45% of children under 5 were stunted in 2012 (World Bank, 2017). The prevalence of anemia is estimated at 58.8% among children under 5 and 52.1% among women of reproductive age (World Bank, 2017). When compared to its regional neighbors and other lower-middle income countries, the prevalence of malnutrition in Pakistan is unusually high (see Table 1).

**Table 1. Population nutrition indicators**

	Country/Region	%
Exclusive breastfeeding (% of children under 6 months)	Pakistan (2013)	37.7
	Bangladesh (2014)	55.3
Infant and young child feeding practices, all three IYCF (% children ages 6-23 months)	Pakistan (2013)	14.8
	Bangladesh (2014)	22.8
Low-birthweight babies (% of births)	Pakistan (2007)	32
	Bangladesh (2006)	22
Stunting prevalence, height for age (% of children under 5)	Pakistan (2012)	45
	World (2016)	22.9
	South Asia (2016)	35.8
	Lower middle-income (2016)	32
Prevalence of anemia among children (% of children under 5)	Pakistan (2016)	58.8
	Bangladesh (2016)	40.3
	World (2016)	41.7
	South Asia (2016)	55.1
	Lower middle-income	51.3
Prevalence of anemia among pregnant women (%)	Pakistan (2016)	51.3
	Bangladesh (2016)	45.7
	World (2016)	40.1



	Country/Region	%
Prevalence of anemia among women of reproductive age (% of women ages 15-49)	Pakistan (2016)	52.1
	Bangladesh (2016)	39.9
	World (2016)	32.8
	South Asia (2016)	49.6
	Lower middle-income (2016)	43.0
Prevalence of undernourishment (% of population)	Pakistan (2015)	22
	Bangladesh (2015)	16.4
	World (2015)	10.8
	South Asia (2015)	16.2
	Lower middle-income (2015)	14.0
Source: World Bank Database, Health Nutrition and Population Statistics, 2017		

Sindh is the southeastern province of Pakistan. It is bordered by the provinces of Balochistān on the west and north, Punjab on the northeast, the Indian states of Rajasthan and Gujarat to the east, and the Arabian Sea to the south. Sindh is essentially part of the Indus River delta and has derived its name from that river, which is known in Pakistan as the Sindhu. The province of Sindh was established in 1970. The provincial capital, Karāchi, is situated on the southwestern coast. Sindh is the second largest province of Pakistan with a population of 47,886,051, while geographically, it is the third largest province of Pakistan with an area of 54,407 square miles (140,914 square km) and has 29 districts.

The prevalence of undernutrition and anemia in Sindh is higher than the national figures, affecting 62% of pregnant women and 73% of children. Some of the factors underlying undernutrition in Sindh include (Zaidi et al., 2013):

- **Poverty and access to resources:** These have been further compounded by recession and inequitable distribution of economic growth.
- **Food insecurity and access:** Sindh has the second highest agricultural productivity in Pakistan, but 50% of households are food insecure. Households that do not own land are most vulnerable, and food insecurity can be heightened by large variations in food prices and general inflation.
- **Female caregivers' empowerment:** The literacy rate for females in Sindh is 46%, compared to 71% for males, indicating a large gender disparity, which negatively impacts nutrition outcomes. Women's and children's access to food may be further limited by gender inequalities and intrahousehold decision-making.
- **Healthy environment:** Limited access to safe water and poor sanitation exacerbate poor health and nutrition outcomes by creating a chronic cycle of illness and undernutrition. Access to improved drinking water supply is 93% in Pakistan, and sanitation has been gradually improved from 36% in 1990 to 59% in 2012. Access to improved sanitation is almost two times better in urban populations than in rural (87 and 46%, respectively).
- **Access to health and social services:** With 44% of the population living in urban settings, coverage and access to essential preventive and curative medical services is not equal between income groups and geographic regions.
- **Natural disasters:** Sindh experienced severe monsoon flooding in 2010 and 2011, and the occurrence of natural disasters is expected to rise. This causes damage to services and infrastructure, which increases food insecurity and disease outbreaks, thus increasing vulnerability to poor nutrition in the affected districts.

## 1.2 Iron and folic acid supplementation to reduce maternal anemia in Sindh Province

In order to reduce the risk of maternal iron-deficiency anemia, the WHO recommends a daily oral dose of 30-60 mg iron and 400 µg folic acid supplements throughout pregnancy, to begin as early as possible as a routine part of antenatal care (ANC). Several studies have reported that the use of any antenatal iron and folic acid (IFA) supplements during pregnancy reduces the risk of early neonatal and childhood mortality by preventing maternal anemia, low birth weight, and preterm delivery. Box 1 lists the WHO recommendations directly and indirectly related to IFA supplementation.

### **Box 1: WHO guidelines on improving maternal nutrition including IFA supplementation**

In 2016, the WHO released updated recommendations on ANC for a positive pregnancy experience. Relevant recommendations for Sindh province regarding IFA supplements, supply, and demand include:

- Daily oral IFA supplements with 30 to 60 mg of elemental iron and 400 µg (0.4 mg) of folic acid is recommended for pregnant women to prevent maternal anemia, low birth weight, and pre-term birth.
- In settings with high prevalence of anemia (At least 40% of pregnant women have a blood hemoglobin concentration < 110 g/L), a daily dose of 60 mg is preferred, and if a woman is diagnosed with anemia during pregnancy, her daily dose should be increased to 120 mg until her Hb concentration rises to normal.
- Once weekly IFA supplementation with 60 mg of elemental iron and 2800 µg of folic acid tablet for three months followed by three months of no supplementation is recommended for menstruating women in populations where the prevalence of anemia among non-pregnant women of reproductive age is 20 percent or higher.
- In undernourished populations, nutrition education on increasing daily energy and protein intake is recommended for pregnant women to reduce the risk of low-birth-weight neonates.
- In undernourished populations, balanced energy and protein dietary supplementation is recommended for pregnant women to reduce the risk of stillbirths and small-for-gestational-age neonates.
- Full blood count testing is the recommended method for diagnosing anemia during pregnancy. In settings where full blood count testing is not available, onsite hemoglobin testing with a hemoglobinometer is recommended over the use of the hemoglobin color scale as the method for diagnosing anemia in pregnancy.
- It is recommended that each pregnant woman carries her own case notes during pregnancy to improve continuity, quality of care and her pregnancy experience
- Midwife-led continuity-of-care models, in which a known midwife or small group of known midwives supports a woman throughout the antenatal, intrapartum, and postnatal continuum, are recommended for pregnant women in settings with well-functioning midwifery programs.
- Task shifting the promotion of health-related behaviors for maternal and newborn health to a broad range of cadres, including lay health workers, auxiliary nurses, nurses, midwives and doctors is recommended.
- Task shifting the distribution of recommended nutritional supplements and intermittent preventative treatment in pregnancy (IPTp) for malaria prevention to a broad range of cadres, including auxiliary nurses, nurses, midwives and doctors is recommended.

The Maternal and Child Survival Program, which succeeded MCHIP in June 2014, prioritizes the WHO's universal recommendations, including IFA supplementation, nutrition counseling, woman-carried case notes, and targeted task shifting; as well as some of WHO's context-specific recommendations.

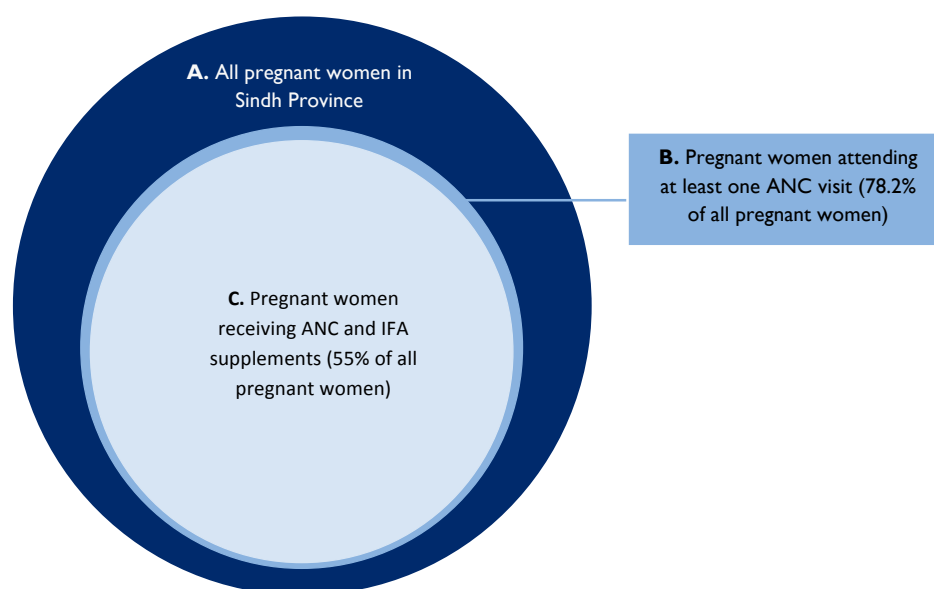
Source: WHO 2016; Hill 2017

Pakistan has a program for IFA supplement distribution through ANC and the Lady Health Worker (LHW) Program. However, the coverage of IFA supplementation during pregnancy is poor and has not improved in the last decade - only 43% of women in 2006/2007 and 45% in 2012/2013 took any iron supplements in their last pregnancy. While 78.2% of pregnant women in Sindh received at least one ANC

visit, only 49% of women took iron supplements during their last pregnancy in 2012/2013 (See Figure 1). These numbers indicate that the program's coverage and adoption of behaviors could be improved.

Of 6,266 women interviewed, 2,400 (only 38.3%, 95% CI, 36.6%, 40.1%) reported taking IFA supplements during their last pregnancy (Nisar 2014).

**Figure 1: Antenatal care coverage and IFA supplementation in Sindh, Pakistan**



Of all pregnant women in Sindh Province, survey data suggest that 78.2% received at least one ANC visit and 49% take IFA supplements. In this figure we assume that those who take IFA supplements also receive at least one ANC visit. The figure visually highlights that key priorities for Sindh Province to increase uptake of IFA supplements may include interventions to (a) increase ANC coverage generally and (b) ensure that ANC visits include guidance on IFA supplementation.

## The Lady Health Worker Program:

The LHW Program was established in 1994 and was initially managed and financed at the national level as part of a national strategy to reduce poverty and improve health by bringing health services to the doorsteps of underserved communities. Today, the LHWs' role is to (a) provide basic health-related services and family planning, (b) refer clients (c) organize health committees for men and women, and (d) increase uptake of public health initiatives. After the devolution in the year 2011, provinces now have the autonomy over health including policy making, budgeting, resource allocation, monitoring, and reporting.

In 2014, 110,000 LHWs were deployed across all districts across Pakistan with services available to more than half the target population. Each LHW serves a population of 1,000 and provides 20 services around maternal, neonatal, and child health through monthly household visits and community group meetings. These services include provision of IFA supplements and counseling on breastfeeding and complementary feeding (Hafeez 2011). A study conducted in 14 districts of Pakistan shows that doctors are the most common source of IFA supplements (49.4%), followed by LHWs (40.3%) (Nisar, 2014). The LHW Program is the largest network of community health workers in the world with strengths, weaknesses, opportunities, and threats listed below (Farooq et al., 2014; Wazir et al., 2013; Zhu et al., 2014).

**Table 1: Strengths, Weaknesses, and Opportunities with the Lady Health Worker Program**

Strengths	Weaknesses
Political commitment	Poor management at lower level
Recruitment and selection procedures	Poor integration at lower levels
Wide coverage outreach – focused on rural areas	Problems with payment of salaries

Integration with healthcare system at upper levels	Job insecurity
Defined management and supervisory structures	Weak supply and equipment provision
Comprehensive healthcare provision	Weak referral systems
Management information System (MIS)	Poor integration of MIS with health system
Training of LHWs part of the system	Poor supervision and linkages with peripheral health facilities
Positive impact on health indicators	Low quality care in some parts
Cost-effective intervention	Insecure contingents
	Slow progress in meeting targets
<b>Opportunities</b>	<b>Threats</b>
Wide coverage and social acceptability	Poverty, patriarchy, and social norms
Training capacity can be used by others	Political interference
Emergency obstetric care training for some LHWs	Lack of funds
Health system research	Political and social environment
Use for empowerment of women	Non-acceptance by established medical professionals
Use for poverty alleviation strategies	Quackery implications
Source for analysis: Wazir et al., 2013	

### 1.3 Infant and young child feeding practices in Pakistan and Sindh Province

The WHO and UNICEF provide three overall recommendations for infant and young child feeding (IYCF) practices: (1) early initiation of breastfeeding; (2) exclusive breastfeeding (EBF) for 6 months; and (3) introduction of appropriate complementary foods with continued breastfeeding to 2 years of age (see Box 2). EBF is particularly beneficial in low- and middle-income countries due to its association with significant reductions in deaths from neonatal sepsis, diarrhea, and acute respiratory tract infections in the first 6 months of life; significant reductions in gastrointestinal infections; longer periods of maternal lactational amenorrhea; and a reduction in infant growth at 6 months (Jolly et al., 2012).

Across Pakistan, only 14.4% of infants experienced all three IYCF practices recommended by the WHO in 2013 (see Box 1). Similar to most low- and middle-income countries, Pakistan has a high share of some breastfeeding (94.3% in 2007 [WHO, 2009]) with a low rate of EBF up to 6 months (37.7% in 2013 [UNICEF, 2016]). In Pakistan, 18% (2013) of infants experience early initiation of breastfeeding, which is low compared to the regional average of 42%. Pakistan compares favorably for length of breastfeeding, with 56% of infants breastfed until 2 years of age, while the regional average is 46%.

In Sindh, 29% of infants are exclusively breastfed and 21% have early initiation of breastfeeding. In children 6 to 24 months of age, only 14% meet the minimum diet diversity and 9% receive the minimum acceptable diet (Sindh Final Report, Multiple Indicator Cluster Survey – 2014).

#### **Box 2: WHO guidance on IYCF practice, programming, and promotion**

The WHO and UNICEF provide recommendations on infant and young child feeding as part of the Global Strategy for Infant and Young Child Feeding (2003). Overall recommendations include:

- Early initiation of breastfeeding within 1 hour of birth;
- EBF for the first 6 months of life; and
- Introduction of nutritionally adequate and safe complementary (solid) foods at 6 months together with continued breastfeeding up to 2 years of age or beyond.

Additionally, WHO advises against prelacteal feeds, which are any substances other than breast milk given to an infant before breastfeeding is initiated. Prelacteal feeds increase the risk of illnesses such as diarrhea and other infections and allergies, particularly if they are given before the infant has had colostrum.

The MCHIP in Sindh Province included nutrition as part of its technical scope in an integrated approach.

## **1.4 The Maternal and Child Health Integrated Program in Sindh Province**

The MCHIP has been implemented in 15 of 29 districts across Sindh Province. The program works on improving the quality of maternal IFA supplementation by improving supplies of IFA supplements and compliance with taking the supplements, including developing a better tracking and forecasting system and emergency reserves for supplements. The program also strengthens capacity building of skilled birth attendants (SBAs) – female medical officers, midwives, and LHWs – working in public and private health facilities. This is carried out through group-based trainings and on-the-job coaching and mentoring by project technical staff on a regular basis. The group-based training includes nutrition as an integral component of ANC, postnatal care (PNC), and essential newborn care (ENC); and an on-the-job training module provides information on breastfeeding for those SBAs not willing to attend group-based trainings. The LHW program includes a pre-service training with a nutrition component, but it has not been updated recently.

More information is needed on how nutrition-related information conveyed in these trainings is used in ANC, delivery, PNC, and ENC counseling contacts with mothers to improve their understanding and uptake of optimal nutrition practices. Greater understanding of the barriers and challenges for giving nutrition counseling is needed to improve program implementation.

The nutrition component within MCHIP was introduced during the third year of the program and includes formative research to strengthen the LHW-based IFA supplementation program. Because of the importance of optimal IYCF practices and IFA supplementation for child survival, MCHIP conducted this research with a focus on counseling and services related to these two interventions. In addition to the assessment on counseling, this research assessed the functioning of the supply chain for IFA supplements at the health facility and community levels, including forecasting and procurement at provincial, health facility, and community levels, and how IFA supplements are distributed to women for both prevention and treatment.

# **Chapter 2: Methodology**

## **2.1 Study aims**

The study aimed to assess and strengthen the content, quality, and effectiveness of IYCF counseling and IFA supplements programming. This included:

1. Assessment of the supply side of the maternal IFA supplementation program of the Government of Sindh – in terms of supply chain and logistics, including forecasting, procurement, and distribution at the national, health facility, and community levels.
2. Identification of barriers to IFA uptake for pregnant women.
3. Assessment of the demand side for nutrition – examining the content, quality, and effectiveness of counseling on IFA supplementation (on acceptance, use, and counseling on side effects) and IYCF for women at routine health contacts (ANC, delivery, PNC, and ENC) in the health care facility and at the community level.
4. Development of recommended key messages/content for the development of tools for counseling on IFA supplementation, maternal diet, and breastfeeding through SBAs and LHWs at facility and community levels.

The study provides answers to the following key questions:

1. What systems and mechanisms do the health facilities have for the procurement, forecasting, and distribution of IFA supplements to women? (see Chapter 3)
2. What are the strengths and weaknesses of and barriers to the supply side of the maternal IFA supplementation program in Jamshoro and Thatta districts? (see Chapter 4)

3. How do mothers perceive the quality of counseling related to IFA supplementation and IYCF? What are the barriers and opportunities for promoting optimal nutrition practices related to IYCF and IFA supplementation for the MCHIP program? (see Chapters 5 and 6)
4. Do IFA supplementation and IYCF knowledge and practices reflect the key recommended social and behavior change communication (SBCC) messages in the MCHIP Program? (Chapter 7)

## 2.2 Study design

The study used qualitative methods to collect and analyze data on maternal IFA supplementation and IYCF counseling in Sindh (see Box 3). Primary data were collected via in-depth interviews and focus group discussions in Jamshoro and Thatta districts.

Key themes explored during interviews and discussion groups included:

- Parental and community understanding of IFA supplementation and IYCF practices;
- Barriers to optimal IFA supplementation and IYCF practices;
- Access to IFA supplements;
- Supply chain for IFA supplements; and
- Service provider capacity to provide IFA supplementation and IYCF counseling.

Institutional Review Board approval was obtained from the Institutional Review Board of the John Hopkins University School of Public Health and the local Review Board in Pakistan.

### Box 3: Value of qualitative research

There is growing recognition that qualitative research, mixed methods, and interdisciplinary teams are required to advance implementation science. In addition to formative research, qualitative research can be used to explore important questions during and after implementation of an intervention or quantitative study. Before an intervention, formative research helps identify recruitment procedures and tailor an intervention to the local context. Qualitative research during an intervention helps understand how participants experience the intervention, how health actors adapt the intervention based on local context, and what potential mediators are restricting or enhancing the intervention from participants' perspectives. Qualitative research after an intervention with informative sampling can provide insight into reasons for variations in outcomes and suggestions as to participants' perceptions of the intervention (Gallo, 2017).

In this study, qualitative methods were used to gain insight into community members' thought processes and experiences with IFA supplementation and IYCF practices. This may lead to useful findings for designing future interventions and appropriate opportunities to improve nutritional outcomes and boost livelihoods.

## 2.3 Study sites

Sindh province is one of four provinces in Pakistan. With a population of 55.2 million people, Sindh is Pakistan's second most populous province with 27% of the national population.

The study was conducted in two districts of Sindh province — Jamshoro and Thatta. Sindh is made up of 29 districts, and each district is subdivided into 3 to 8 talukas. The MCHIP nutrition component operated in 15 districts across Sindh, and selection of these two districts ensured representation from Thatta (where the MCHIP program was implemented) and its adjacent district, Jamshoro. Talukas within the districts were identified with the assistance of MCHIP staff, making sure to cover both accessible and less accessible areas. Villages within talukas were randomly chosen to ensure diversity across geography, livelihood strategies, and access to resources and services.

## 2.4 Study participants

Study participants included pregnant women; mothers; fathers; grandmothers; health providers working in MCHIP-supported facilities; LHWs; community leaders and province-level directors. Participants of the study were selected randomly, however the selection was influenced by their availability and



willingness to participate. Table 1 shows participant characteristics and the number of interviewees from each district.

**Table 2: Number of district-level interviews**

In-depth interviews	District Jamshoro		District Thatta	
Pregnant women*	5		10	
Mothers**	5		10	
Grandmothers	1		2	
Fathers	1		2	
Skilled Birth Attendants (SBAs)	2		3	
Female and male medical officers	1		2	
Midwives/traditional birth attendants	1		2	
Lady Health Workers (LHWs)	1		2	
District Nutritionist	1		1	
District Health Officer	1		1	
Focus Group Discussions	Discussions	Total Participants	Discussions	Total Participants
Fathers	1	8	2	17
Community leaders	1	8	2	16
Pregnant women	1***	6	1	8
Mothers	1****	9	2	17

\*includes first-time pregnant women and pregnant women who already have at least one other child

\*\*includes women with one or more children

\*\*\*includes first-time pregnant women only

\*\*\*\* includes women with one or more children who may be pregnant at time of interview

## 2.5 Data analysis

Using qualitative interpretive analysis, we identified key themes based on the study aims. Key themes were used to prepare the interview scripts and discussion group questions (key themes are listed in Section 2.2). Interview scripts and discussion group questions were pre-tested in similar communities. Based on pre-test results, the instruments were updated to improve clarity of the questions for participants and provide background information on IFA supplementation and IYCF practices to interviewers and note-takers.

Interviews and discussion groups were conducted with the communities in Sindhi language, but interviews with the health care providers were mainly in Urdu, with a few in Sindhi. After the interviews, the audio recordings were transcribed into English in Microsoft Excel. Transcriptions were coded and grouped according to key themes and study questions. Coded data were analyzed using thematic pattern analysis, from which findings emerged. Following identification of findings, quotations were identified to provide examples of findings.

We supplemented the qualitative analysis with a document review of published and grey literature. All the interviews and focus group discussions were monitored by the study consultants, who were physically present during the process. Observations were recorded and discussed among the team for quality control. Recruitment of the enumerators was done through a competitive process. Advertisements were placed in national newspapers, followed by interviews of shortlisted candidates by a panel. The selected candidates were given training in the classroom and participated in a mock exercise in the field. The selected candidates were females who were experienced in their work, spoke the same language as the communities, and were able to quickly build rapport with the communities and participants.

## 2.6 Strengths and limitations

This study provides important information about the perceptions of women and health care providers about IFA supplementation and IYCF counseling in two districts of Sindh province in Pakistan. The study was motivated by descriptive statistics that indicate that anemia is a major public health problem in Sindh and responds to international calls for formative research to ensure maternal and child health and



nutrition interventions are designed to be culturally sensitive and contextually relevant. A major strength of this study is that we captured perspectives on IFA supplementation and IYCF from most key stakeholders at the community, district, and provincial levels, including pregnant women, mothers, grandmothers, fathers, and health care providers.

There were a few limitations of the study among which are: 1) the qualitative design and methods mean that results cannot be generalized as representative of a wider population; 2) the study depended on respondents' recall, which might have led to recall bias, the study team tried to address this by probing some of the responses; and 3) the quality of IFA supplementation guidance and IYCF counseling provided by outreach workers was not observed directly by the researchers and researchers did not conduct clinic walkthroughs.

## Chapter 3: Procurement, Forecasting, and Distribution of IFA Supplements

*What systems and mechanism do the health facilities have for procurement, forecasting, and distribution of IFA supplements to women?*

### 3.1 Introduction

The ordering of supplies for a health facility can be based on a push or pull system (see Figure 3). In a push system, actors at the national, provincial, or district level use an allocation algorithm to determine the quantity of medicines and supplements sent to a facility. In a pull system, each facility requests how much product they need based on local demand and consumption information. Whether a push or pull system, ordering requires a forecast of demand. The accuracy of forecasting is dependent on the time-horizon for supply replenishment, the appropriateness of algorithm used to forecast, and the capacity of actors (Yarav, 2015).

The issue of addressing effective provision of IFA supplements is a challenge in many low-income countries. Baqui et al (2008) carried out a study to explore the NGO facilitation of a government community-based maternal and neonatal health program in rural India and found that the interventions have a significant impact on the beneficiaries but universal coverage of utilization remains a challenge. Global analysis suggests that factors that lead to health supply chain underperformance in low- and middle- income countries, especially where the public sector takes a leading role in supply, include (Yadav, 2015):

- **Diffuse accountability:** Stock-outs are often attributed to poor procurement, forecasting, and requisitioning; however, underlying poor performance may be a lack of accountability structure where there is fragmentation of responsibility and misalignment of reporting and responsibility between government agencies and other organizations. This creates a system of diffuse accountability where each actor can attribute the underperformance of the supply chain to other actors in the system.
- **Uncertainties in financing:** Procurement at the national level can be uncertain and unreliable if the funding agency (including the Ministry of Finance, the Treasury, or a donor agency) is slow to disperse funds.
- **Unnecessary levels of complexity:** Multiple tiers of warehousing and reporting often exist and may be unnecessary in low- and middle-income countries. Coupled with poor forecasting systems, this can lead to the "bullwhip effect" whereby small variations in consumer demand are amplified and out-of-sync with national procurement and manufacture.
- **Long resupply intervals:** Health facilities in LMICs often only have the opportunity to re-order every three months or less. This requires facilities to forecast demand at least three months into the future, which is a long forecast horizon that reduces forecast precision and decreases flexibility. This can lead to stock-outs and product expiration/wastage.
- **Lack of interest in funding operating costs:** Politicians are often interested in investing in capital projects; however, there is less incentive to invest in on-going maintenance. This is exacerbated in medicine supply chains by the high uncertainty and difficulty in predicting operating costs.

- **Lack of supply chain planning data:** In the absence of continuous information feedback, actors often rely on estimates or formulas based on outdated assumptions, which leads to a mismatch between predicted and actual demand.
- **Mismatch between skill and system design:** Supply chains sometimes rely on clinical staff for ordering and requisition, who may not have capacity to use managerial tools to accurately estimate quantity.
- **Lack of incentives for supply chain staff:** Publicly run health supply chains rely on staff's sense of duty to carry out their work; however, the lack of a single, clear and measurable goals for each actor along the supply chain renders evaluation difficult.

There are also challenges to private supply of medicines in low- and middle-income countries. Importers and wholesalers often face fragmented regulation, and there are additional challenges to private sector supply of medicines in rural areas, where higher transport costs, the population's lower ability-to-pay and diffuse markets disincentivize private sector actors (Yadav, 2015).

The health system in Pakistan, including Sindh, is facility-based with an outreach component. Primary health care services are provided at first level care facilities (basic health units, government dispensaries, maternal and child health centers) while in the communities, these services are provided by LHWs. The findings below indicate similar global health supply chain challenges in the Pakistan Health system. The key results highlight systems and mechanisms that are in place for procurement, forecasting and distribution at all levels. Data was obtained from the interviews from health care professionals, LHWs, mothers and family members, community leaders and government officials in the department of health.

#### **Box 4: Supply chain for IFA supplements in Sindh Province**

The Provincial Health Department is usually responsible for procuring IFA supplements for the health facilities under its jurisdiction. These include district headquarter hospitals, subdistrict (taluka) headquarter hospitals, rural health centers, maternal child health centers, and government dispensaries across the province. The Provincial Health Department is also responsible for IFA supplies for basic health units in two districts while the People's Primary Healthcare Initiative (PPHI) procures the IFA supplies for the basic health units in all other districts.

In addition, the Provincial Health Department is responsible for procuring IFA supplies for the National Programme for Family Planning and Primary Health care (NP for FP and PHC). NP distributes IFA supplies to all lady health workers for distribution in communities.

#### **Forecasting**

Forecasting is performed quarterly at the district level by the district health office (DHO) and then shared with the provincial health department. Requests from all the districts are consolidated at the Provincial Health Department at Sindh Secretariat. Information and confirmation from vertical program managers and supplies is dispatched to target districts.

#### **Procurement**

A project management and senior finance staff member and members of respective donor staff (Global Fund, World Bank, UNICEF) discuss and plan procurement of medicines for the province and districts. The procurement algorithm is based on number of targeted beneficiaries and number of health facilities and quantity in previous order. Procurement is through a bidding process.

Additionally, district-based health officials can purchase from approved buyers to a certain limit.

#### **Distribution**

IFA supplements are available to pregnant women through LHW network, district clinics and private pharmacies. A pregnant woman is likely to discuss her pregnancy and needs with her family. A family member will take her to the health facility or LHW for a check-up. If she visits the LHW, the IFA supplements are provided for free, when available. If the LHW does not have a supply, then the woman will be referred to the nearest government health facility. If she visits a government health facility, she will receive one-month supply of IFA supplements at a time. IFA supplements provided through government health facilities are free of charge. She can return to the government health facility every month throughout her pregnancy to get one-month supply free of charge. If the supplements are not available at

the facility, then the doctor will prescribe the supplements for her, and she can purchase them from a private pharmacy.

Sometimes early expiring medicines are dispatched to districts with consent of DHOs of that district and order for distribution through LHWs or deliver to district-level clinics.

## 3.2 Results and findings

### Finding 1: Forecasting

**Forecast horizon:** Interviews indicate that district health officers (DHOs) forecast demand and request supplies on a quarterly basis. Forecasts are based on historical trends. Three months is a long forecast horizon for medicine and supplement supply chains, which may lead to inaccurate estimates of future demand. This is exacerbated by lack of easily available data with which to make forecasts. Additionally, DHOs face a procurement lead-time of 6 months and as such they need to forecast how much demand they will have for 3 months in 6 months' time. Regardless of a DHO's technical capacity, it is difficult to generate precise forecasts under these parameters.

**Monitoring systems:** Interviews with the Officer in the Health Department (provincial level) revealed that a mechanism is in place to collect monitoring and evaluation indicators, registry data, and other monitoring sources that are required for forecasting of demand for IFA supplements. Another interviewee specified that key performance indicators are available and performance is tracked against those indicators. The indicators that are tracked under Health Information Systems or Registers include indicators from daily LHW reports, LHS reviews, supervisors' comments and demographic information. Prior to Maternal and Child health week, the district sends reports to the provincial level. Every quarter, information on ordering IFA supplements is received by the provincial-level Department of Health.

### Finding 2: Procurement

**Process:** Key informant interviews with a district health officer and clinic-based staff indicate that there is a mechanism to regulate receiving and distribution of supplements. As stated by a health office representative: *"Provincial third party procurement is supplied to provincial office on a quarterly basis"* (Health Office Representative). The health facilities and district government officials request supplies from the province on a quarterly basis. One of the health care providers stated: *"If there is a request that is submitted in December for the supplements from the district to the provincial level, the supplements are dispatched back to the district in June of the next year. Every quarter, procurement of supplements is made to health centers at the union level from the district, and then they are dispatched to the Basic Health Unit where they are stored by Lady Health Supervisors"* (Health Care Provider).

**Financial management:** Interviewees did not discuss budgeting or funding-related information, which may suggest that the public-sector supply chain has a top-to-bottom approach to procurement whereby the supplements are sent to the districts, which are only responsible for distribution to health facilities. Procurement lead time: According to interviews with DHOs, the procurement lead time is approximately six months. That is, when the DHO requests supply, then they will expect to receive it in six months' time. This is a long lead time that reduces the precision of forecasting and increases uncertainty in warehousing and stock management.

**Frequency of stock out:** As described in Box 4, IFA supplements should be available from LHWs, district health facilities and private pharmacies; however, at times one or all of these stores could be stocked out. Based on interviews with pregnant women and community members, stock outs may be frequent for LHWs and district health facilities, which are the two stores that offer IFA supplements free-of-charge. Respondents did not indicate any definite processes to manage stock out of supplements. As the below quote highlights, when a facility is stocked out of IFA supplements, the health care professionals ask the pregnant and lactating women to buy IFA supplements from the pharmacy stores: *"We give tablets for free. If we run out of them, we prescribe them so they can buy from the shops"* (Health care provider, Thatta). Stock outs may represent a substantial problem because high-confidence evidence indicates that when supplements become unavailable, women are less likely to engage with ANC services (Peña-Rosas, 2015).

## Finding 3: Distribution

**District-level data gaps:** The analysis suggests that health care providers do not have access to data on some of the pregnant and lactating women in their jurisdiction, which limits their ability to reach all target beneficiaries. As one of the health care providers highlighted *“the government should have a district-wide data record available for the health care providers working in that area as we have great difficulties in finding pregnant women through informal resources”* (Health care provider, Thatta).

**Packaging and handling of LHW supply:** Some interviewees reported distrust in LHW-supplied IFA supplements because of the packaging and handling. Some interviewees reported that supplements provided by LHWs were not in sealed packages or the imagery on packaging appeared like the tablets were for birth control. A mother stated *“we cannot afford to purchase medicine from the store and I do not trust the LHW-provided unpacked tablets. She handles them with open hands that carry germs”* (Mother, Thatta).

**Availability in remote areas:** According to some community interviews, access to IFA supplements may be limited in some remote villages, which causes dissatisfaction among community members. For example, an interviewee stated *“no, we don’t know of any LHWs working in our area nor is there any organization present here”* (Mother, Thatta).

**Nonprofit distribution:** Alongside the government programs, nonprofits are working in some districts in collaboration with Nutrition Support Program (Sindh) partners to control anemia and provide IYCF counseling and IFA supplies to pregnant women. For example, a father stated *“we receive these tablets from medical stores and sometimes we are provided by organizations like Shifa and Aga Khan Foundation”* (Father, Jamshoro). There is evidence of some collaboration between nonprofit and government supply chains and health care services, as a LHW stated *“we are invited by different organizations to receive their program orientation on IFA and they use multiple ways to convey the message such as the use of multimedia, colorful slides and charts. They present new methods and group work. We want to adopt these approaches to raise awareness, especially among pregnant and lactating women”* (LHW, Thatta).

**Private pharmacy distribution:** Interviews with community members suggest that IFA supplements provided via private pharmacies are perceived to be of higher quality due to packaging; however, they are also considered as prohibitively costly relative to income-levels of communities.

## 3.3 Recommendations

**Findings 1 and 2:** IFA supplements typically have a shelf life of two years and can be safely stored at most temperatures and humidity levels. Given the potential for imprecise forecasting and long procurement lead time, it might be beneficial to deliberately over-order IFA supplements, then carefully organize storage and distribution according to expiration dates. Over-ordering could reduce frequency of stock-outs and prevent product expiration; however, its success would depend on well-managed storage and handling procedures, and ongoing feedback loops between ordering and warehousing, which were not assessed in this study.

**Finding 3:** There is evidence of some collaboration, particularly training of LHWs, between government and nonprofit health care organizations, and there is some evidence of beneficiary satisfaction with nonprofit’s provision of health care and supply of IFA supplements. Government and nonprofits should consider expanding their collaboration to include shared supply chains. This may reduce costs and increase efficiency through joint organization, planning and implementation.

Additionally, private pharmacy provision of IFA supplements is considered too costly by beneficiaries; however, the private sector supply chains may be more efficient than government and nonprofit supply chains. Government and nonprofits should investigate whether collaboration with private pharmacies is feasible. However, prior to engagement, government should conduct an investigation into private sector’s handling, transportation, warehousing and product quality, including a review of regulatory policy and implementation.

## Chapter 4: Supply Side Strengths, Weaknesses, and Barriers of IFA Supplementation

### *What are the strengths, weaknesses, and barriers to the maternal IFA supplementation in Jamshoro and Thatta districts?*

#### 4.1 Introduction

Pakistan follows the WHO's guidelines on IFA supplementation to improve maternal and child health outcomes (see Box 2). Distribution of IFA supplements is mainly implemented through the public sector supply chain. The intervention is designed for pregnant women to receive IFA supplements through the LHW network, which serves as the final link from facility to end-user in the supply chain (see Box 4).

Use of the LHW network is an example of distribution of IFA supplements through a community delivery platform. The Maternal and Child Survival Program (MCSP) (2017) reports that the strengths of a community-based distribution approach include:

- Higher propensity to increase awareness and knowledge of anemia and IFA supplementation among women and the community.
- Encouraging attendance at ANC.
- Increasing compliance and improved assistance in reducing side effect.

There are also barriers to community-based distribution of IFA supplements, which can include conflicting advice from influential family and community members and high cost of supplements (MCSP, 2017).

The findings below present evidence on the supply side of IFA supplements and highlights its strengths, weaknesses and barriers in Sindh province.

#### 4.2 Results and findings

These findings present some features of the supply chain strengths, weaknesses and barriers to the provision of IFA supplements in Thatta and Jamshoro.

##### Finding 1: Integration within the health system (strengths and barriers)

Interviewees reported that receiving guidance on IFA supplementation from a general health care provider gave women the opportunity to understand the health benefits of IFA supplementation and the appropriate regimen. As one of the participant highlighted: *“Yes, I know that doctor advises us to use IFA tablets for my daughter's health. This is because she has blood deficiency, and doctor prescribes two tablets a day.”* (Grandmother, Thatta). Additionally, distributing IFA supplements within the health system provides an in-built referral network so that if there is a stock-out at one supply point (for example, an LHW runs out of tablets), then a client can be referred to another supply point (for example, a basic health unit).

Distribution through standard health care networks also presents two potential weaknesses. First, many health care providers reported insufficient time to comprehensively review importance of and procedure for IFA supplementation. As such, there may be a risk that the health care providers do not prioritize IFA supplementation and anemia in discussions with clients. Second, some community members reported distrust for health care providers, which may reduce the likelihood that the client will follow a provider's advice to take IFA supplement.

##### Finding 2: Distribution of IFA supplements through the LHW program (strengths and barriers)

LHWs both distribute IFA supplements and counsel pregnant women on the benefits of IFA supplements to ensure compliance. A LHW stated: *“we encourage women to take IFA supplements and counsel that it will reduce blood deficiency and baby will be born healthy. I mostly sensitize them that your skin will glow and wrinkles will also disappear”* (LHW, Jamshoro). LHWs provide one-to-one counseling and organize group



sessions for female and male members in health offices or private houses to share information on maternal and child health.

Another important strength of the LHW program is its reach into remote communities since the network has a wide coverage and prioritizes rural areas. There may still be scope to expand LHW coverage as one interviewee reported that there was no LHW in their village.

The strength of distribution via the LHW network is somewhat dependent on the individual LHW. If the LHW is from the same locality, then it is usually easier to form trust and convince the community; but they may sometimes face resistance, especially from the male members of the community. However, if the LHW is from a different locality, then she may face barriers in building trust with the community.

These barriers could be overcome: the government could form a liaison with the community leaders and involve the male members, as a LHW stated: *“government should arrange meetings with community leaders, as it helps to build trust and respect of the LHWs and it becomes easier to convince the community”* (LHW, Jamshoro).

Additionally, as noted in other studies (MCHIP, 2017), there is evidence that the LHW network faces a high workload with uncertainty around remuneration and as such morale may be waning. This high workload and remuneration uncertainty was reiterated in interviews for this study.

Another pertinent barrier is unavailability of health care providers within the vicinity. While LHWs can refer pregnant women to get supplies from a health facility, the nearest health facility may still be inaccessible due to distance. For example, a father stated: *“we do not know about IFA supplements. The health facility is far away from our village and we cannot afford the medicine and doctor’s fee”* (Father, Thatta).

Furthermore some caregivers expressed misconceptions such as supplement intake may cause abundance of iron in the body, which may cause the child’s complexion to go dark. LHWs report that pregnant and lactating women sometimes understand that the supplements are provided free of charge whilst others believe that the supplements are birth control pills, which would lead to miscarriage. A LHW states this in the following words: *“we are providing the medicines free of charge and there is a logo on the packaging called ‘Mother and Child.’ Pregnant and lactating women believe that these pills are for birth control”* (LHW, Thatta).

The providers expressed the need for refresher training on IYCF practices to enable them to effectively communicate the messages, as stated: *“we [LHWs, health care staff] need refresher trainings on nutrition, IFA supplements and IYCF practices to improve our knowledge”* (HCP, Thatta). HCPs also highlighted that they should be involved in meetings of the project to enlighten them on the overall goals and objectives and in this way would also acquire recent scientific knowledge which would help them in their careers, as stated: *“we need to be equipped with new techniques and research and be involved in meetings whenever organizations start their projects”* (HCP, Jamshoro).

### **Finding 3: Dual interventions of IFA supplementation and IYCF counseling (strengths and barriers)**

The provision of IFA supplements from the programs in the districts and the concurrent sensitization activities seem to have enhanced understanding of IFA supplementation during pregnancy.

Interviews also identified an important risk to combining supplementation and counseling interventions. An interview with a grandmother revealed that she does not encourage her daughter-in-law to attend group support sessions because she believes participants are forced to consume an IFA supplement, which she believes is unnecessary. She stated, *“Shifa [nonprofit health facility] formed a group and in meetings they force participants to take IFA supplements.”*

## **4.3 Recommendations**

Distributing IFA supplements through the health system in addition to LHW provides an in-built referral network so that if there is a stock-out at one supply point (for example, a LHW runs out of tablets), then a client can be referred to another supply point (the health system).

To strengthen the two-way referral network for nutrition services the government could form a liaison with the community leaders and involve the male members through different forums such as meetings with community leaders to build trust and respect for the services of LHWs.

LHWs and HCPs should be provided with orientation and mentoring on IYCF knowledge and skills as well as behavior change approaches to enable them effectively communicate these messages to communities and the target groups.

## **Chapter 5: Quality of IFA Supplementation and IYCF Counseling**

### *How do mothers perceive the quality of counseling related to IFA supplements and IYCF?*

#### **5.1 Introduction**

Recent reviews demonstrate that peer-to-peer and provider-to-client counseling can be effective at improving IYCF practices and health outcomes (Sinha et al., 2015; Girard and Olude, 2012; and, Jolly et al., 2012). Indeed, peer-to-peer counseling is particularly effective in low- and middle-income countries where breastfeeding support is less likely to be part of routine postnatal health care (Jolly et al., 2012). There is also evidence that nutrition education and counseling interventions are most effective when implemented alongside other strategies to improve nutrition behaviors and outcomes, especially in contexts where food insecurity and gender bias may limit women's ability to adhere to counseling advice (Girard and Olude, 2012).

Given that effectiveness of both IFA supplementation and IYCF counseling depends on context, it is important that interventions are tailored to local population and are perceived as beneficial by target beneficiaries, including pregnant women and mothers.

There is limited quantitative evidence on underlying factors that impact utilization of IFA supplements and IYCF practices in Pakistan; however, previous qualitative studies suggest that a large proportion of women are aware of the advantages of antenatal IFA supplements (Nisar, 2014a). Additionally, in addition to counseling, coverage of IFA supplementation could be improved by reducing barriers to use, including forgetting to take them, non-availability of supplements, limited financial capacity to buy them, family members not allowing, and fear or experience of side effects (Nisar 2014a). In addition to these barriers, rural women have more restricted access to information about IFA supplements compared to their urban counterparts.

#### **5.2 Results and Findings**

Based on focus group and interview transcripts, almost all pregnant and lactating women reported that they found guidance and counseling on IFA supplementation and IYCF counseling understandable. Additionally, when asked about IFA supplement regimen and optimal IYCF practices, most provided answers that match scientific best practice. However, deeper review of transcripts – especially from interviews and group discussions with pregnant and lactating women – identified factors that might alter the perception of quality of these services. Findings are organized into mediators that may influence the community's perception of quality of IFA supplementation and IYCF counseling.

##### **Finding 1: Low trust of health care systems interventions**

Some interviewees – including pregnant and lactating women, fathers and grandmothers – questioned the intent behind provision of IFA supplements and IYCF counseling. There were four manifestations of this distrust. First, some interviewees distrusted the intervention because health care interventions are often only provided for a few years rather than as an on-going service for the community. The IFA and IYCF programs fall in this category as they are more often project based. Second, some fathers and grandmothers are suspicious about the program only focusing on women and not including men and grandmothers in the intervention's activities. Third, some expressed uncertainty about why the intervention prioritizes IFA supplements and IYCF counseling over all other health-related interventions



for the community. As a pregnant woman reported, *“pregnant women need other medicines too, but the government only focuses on iron tablets, despite their side effects”* (pregnant woman, Jamshoro). Fourth, others perceive that IFA supplements were indeed for birth control. This belief may originate from the fact that both interventions require similar beneficiary behaviors (healthy women taking a daily tablet) and both are provided through the same health system whilst both interventions have opposite intentions (birth control prevents pregnancy while IFA supplements support healthy pregnancy). From a beneficiary’s perspective, these opposite intentions may seem incompatible and therefore dubious.

This lack of trust may be exacerbated by the side effects of IFA supplements. Many pregnant and lactating women report side effects such as loose stool, black stool and stomach cramps. Lack of trust towards HCPs who supplied the IFA supplement and the side effects may lead women to falsely attribute other health problems as the outcome of taking IFA supplements. A pregnant woman reports, *“women do not trust the iron tablets due to side effects. Some women experience abortion and claim it is caused by iron tablets”* (Pregnant woman, Thatta), while a health care provider reports *“during pregnancy, if a woman does not feel well, then she will attribute every complaint to iron tablets”* (Health care provider, Thatta).

LHWs highlighted that monitoring of IYCF programs is very important to maintain the quality of the programs. One of the LHWs indicated, *“messages should be clear and proper supervision of implementation can raise awareness and compel families and communities to improve their health”* (LHW, Thatta).

There is also a growing concern of diminishing trust amongst clients because the quality of health care provided to the community varies while different organizations work in the area and there is no standardization in the services provided. One LHW suggested, *“regulate the IFA supplies, design new trainings and materials for IYCF promotions, include new flavors in IFA tablets and above all, LHWs’ salary should be paid on time to improve their confidence and involvement in the health service”* (LHW, Jamshoro).

Adequate management of services and timely provision of remunerations for LHWs will improve the services and hence people’s trust in health care services.

## Finding 2: Low prioritization of formal health-related support groups

There was evidence that some women and the community do not prioritize attending health-related group counseling sessions. Most pregnant and lactating women reported that they can only attend support groups if they have completed all their chores at home. Some pregnant and lactating women were restricted from attending the sessions by their husbands or mothers-in-law. For many women, these restrictions meant that they rarely, if ever, attended health-related support groups.

On the other hand, many women reported discussing health- and pregnancy-related topics with other women in informal settings, for example *“collecting water, shopping, and at parties”* (Pregnant woman, Jamshoro). Many women agreed that combining house chores with discussions was the most acceptable way to gain health-related information.

## Finding 3: Squaring medical information with community traditions

Interviews and focus group responses highlight three key areas where evidence-based guidelines and traditional practices in IFA supplementation and optimal IYCF practices seem to conflict. However, with intentional communications strategies and well-targeted training packages for clinical staff, these apparent conflicts may be overcome. The following cultural perceptions have been identified:

First, pregnancy and lactation are traditionally seen as natural and healthy states, therefore a healthy pregnant or lactating woman should not have to take medication or supplements. Indeed, a grandmother uses this logic to compare her experience to her daughter-in-law’s, *“I do not allow her to take tablets because Shifa [nonprofit health facility] is not our relative and is not responsible for her welfare. These are really birth control tablets. We have many examples of women whose pregnancies aborted taking these tablets, and you can also see that my generation could have one woman bring forth 11 children but these days women only bring forth two children”* (Grandmother, Jamshoro).

Second, while many interviewees reported on the benefits of breastfeeding and the detriments of not breastfeeding, the culture does not require EBF, while evidence-based best practice strongly supports EBF. This may present an opportunity for awareness-raising approaches that build on the good cultural

practices of breastfeeding while gently encouraging EBF. As one interviewee stated, *“we already breastfeed, but the new information improves our practice”* (Lactating mother, Thatta).

Third, community traditions and medical best practice around initiation of breastfeeding are contradictory. As similarly found in other studies (Raju and D’Souza, 2017), interviews and focus groups indicated that the community continues to provide infants with a prelactal feed of *“ghutti,”* which may contain honey, mint, and many other ingredients. *Ghutti* is believed to clear the digestive tract of meconium. If *ghutti* is administered by a respected elder, then it is believed that some of the elder’s noble personality will transfer to the infant. Based on local traditions, some interviewees believed that colostrum is unsafe; however, most acknowledged that they support early initiation of breastfeeding and consumption of colostrum even if it is contradictory to traditional guidance. HCPs reported that they used different explanations to encourage mothers to feed infants with colostrum by comparing colostrum to vaccination. These reports are complemented by at least five pregnant and lactating women reporting that they consider colostrum to be similar to a vaccine.

#### Finding 4: Indicators of perceptions of quality based on reported awareness and behavior change

In both districts it was mentioned that mothers and communities are aware of breastfeeding and practice breastfeeding culturally. Mothers also mentioned the importance of first milk to the baby and stated: *“The advice I received from the LHW is that colostrum is important for the child to protect from diseases. The child should only receive mother’s milk from birth to 6 months without water and ghutti”* (Pregnant women, Jamshoro). But generally, the awareness on EBF is low, with most of the respondents mentioning that they use water and *ghutti* and the knowledge of the weaning period ranging from 3 to 6 months.

In some focus groups, mothers shared that they experience low supply of milk during breastfeeding. There could be many reasons for this including improper positioning and attachment. A misconception is that poor maternal diet results in insufficient breastmilk. As one participant states, *“lactating women do not adequate healthy foods and therefore they cannot produce enough milk”* (Mother, Jamshoro).

Most mothers also mentioned that they feed their infants on demand and continue breastfeeding until 2 years of age. The awareness among women has raised the importance of breastfeeding; however, there are still a few cultural perceptions which were not addressed in the counseling provided, including commonly used liquids during the first 6 months like water, *ghutti*, and *sutti* (a homemade mixture consisting of a combination of dry fruits, saffron, and other related elements).

A participant from Thatta explained that the LHW provides them with awareness around breastfeeding and complementary feeding. She explained, *“LHW raises awareness by providing us with leaflets about breastfeeding and complementary feeding”* (Mother, Thatta). Another participant from Thatta identified the themes around which awareness is provided by the LHW, *“during her home visit, the LHW told me about IFA, breastfeeding, complementary feeding, and initiation of breastfeeding at the earliest”* (Mother, Thatta). Nevertheless, one of the women highlighted that although awareness is useful for her, she is unable to follow the LHW’s advice, *“we have lots of household chores and responsibilities pertaining to child care and husband care and our in-laws prohibit us from following the advice”* (Mother, Thatta).

Some of the mothers found the support group to be helpful in gaining an understanding of maternal and child health. One of them stated, *“I have benefited from the messages and information LHWs and support groups have provided to mothers about maternal and child health”* (Mother, Thatta).

Additionally, women found the support group very helpful as it provides them an avenue to discuss their problems pertinent to pregnancy. They also shared their experiences from informal discussions where women gather to carry out household chores (like clothes washing). One interviewee stated, *“we ask advice from our experienced mothers during our informal gatherings. Our meetings are held under the tree to prepare food and wash clothes at the same time”* (Mother, Jamshoro).

#### Finding 5: Suggestions for program enhancement

Women also provided some feedback to improve the program. For example, one stated, *“there should be monitoring of whether women are consuming those tablets or not and continuous guidance and awareness should be provided*

*during the period of pregnancy” (Mother, Thatta). Another participant suggested, “arrange awareness sessions on IFA’s benefits, timing, positive impact, and side effects. Additionally, explain why it is necessary to have supplements during pregnancy and how it impact on the fetus” (Mother, Thatta).*

Some of the participants also discussed improving the quality of delivery of the program such as using videos, participation of families in the programs, and provision of food and drinks after the sessions to facilitate increased attendance and participation. For example, a respondent stated, *“include our in-laws in the programs so that they realize the responsibilities of mothers and support them by changing their negative behaviors”* (Pregnant woman, Thatta).

Another suggested videos as a mode of information transfer, *“pregnant and lactating women do not like classroom training. It would be better to teach with new techniques. I attended a WHO training where a video was shown on the big screen, “Meena Ki Kabani.” As a result of the movie, women took an interest in the subject”* (Lactating women, Thatta).

## 5.3 Recommendations

**Finding 2:** Given that a prohibiting factor to attending health-related support groups is that women face a lack of time, LHWs and health facilities should consider offering their support groups in a location and at a time when women can continue with their chores. This may feel more efficient for the beneficiaries, build community shared task completion, and improve compliance with IFA supplements and IYCF practices.

**Finding 3:** Ensure clinical and community-based HCPs are equipped with behavior change materials and innovative ways to convey evidence-based optimal IYCF practices and the benefits of IFA supplementation. Where possible, evidence-based guidelines should be linked to traditional guidance and be presented as an extension or deepening of traditional knowledge.

# Chapter 6: Barriers to Promoting Optimal Nutrition Practices

*What are the barriers and opportunities for promoting optimal nutrition practices related to IYFC and IFA supplementation for the program?*

## 6.1 Introduction

Indeed, it is difficult to demonstrate a causal link from IFA supplements and IYCF counseling to improved nutrition outcomes due to confounders like behavior, environment, co-exposures and underlying morbidities. As such, it is important that supplementation and counseling interventions are tailored to be culturally resonant and sensitive to mothers’ and infants’ broader context and experience. Formative research into mothers’ and infants’ broader context can identify barriers and opportunities for promoting optimal nutrition practices, which is critical to developing culturally resonant interventions and messages. A systematic review of evidence found that women’s perceptions and beliefs about appropriate nutritional intake were influenced by family members, primarily mothers and mothers-in-law, and friends (Kavle and Landry, 2017). It reveals that family members and friends serve as trusted source of information and can both be a barrier (if trusted sources provide incorrect information) and an opportunity (if trusted sources are effectively engaged in interventions) to improve maternal nutrition practice. Women wanted to follow advice from these sources; however, multiple barriers, including economic constraints and intra-household food allocation, can inhibit translation of belief and perception into behavior and practice. In rural parts of Sindh province, the reach and impact of facility-based IFA supplementation and IYCF counseling interventions is partly determined by whether women seek and use ANC. Qualitative evidence suggests that women in Sindh province believe they only require ANC in case of complication and women underestimate severity of complications, thus women likely underutilize ANC services (Qureshi et al. 2016), and Box 5 describes more factors influencing health service use). As

such, facility-based interventions ought to be complemented by community-based interventions, including peer-to-peer IYCF support groups.

Qureshi et al. (2016) used qualitative research methods to investigate health-seeking patterns of pregnant women in rural Sindh, Pakistan based on 33 focus group discussions and 26 in-depth interviews with community stakeholders. The analysis reported among others that women mostly believe that antenatal care is only needed in case of complication and do seek care but are sometimes discouraged or delayed by lack of child care, poor access to transport, significant distance to facility, and the lack of a male chaperone while immediate co-habiting family usually includes husband and in-laws, who provide support and decision-making assistance. The broader community may provide some logistical support during pregnancy, like preparing meals and offering transportation to the health facility.

As was discussed in the previous sections, the indicators for undernutrition and IYCF practices in Pakistan are dismal. A study conducted in two rural districts of Sindh showed that IYCF practices are low and associated with maternal age, maternal illiteracy, unemployment, and poor household wealth status (Khan et al., 2017), and IYCF practices do not receive the attention so emphasis should be given to improve maternal literacy and reduction in poverty to improve IYCF practices.

#### **Box 5: Evidence on factors that influence use of health services in Sindh Province, Pakistan**

The reach and impact of facility-based IFA supplementation and IYCF counseling interventions is partly determined by whether women seek and use ANC.

Qureshi et al. (2016) used qualitative research methods to investigate health-seeking patterns of pregnant women in rural Sindh, Pakistan based on 33 focus group discussions and 26 in-depth interviews with community stakeholders. They used Andersen's Behavioral Model (see figure below) to frame their investigation.

The analysis reported on the following themes:

- **Knowledge of common pregnancy complications:** Women mostly believe that antenatal care is only needed in case of complication.
- **Perceptions of prevention of pregnancy complications:** Women underestimate the severity of complications, instead believing that poverty, stress and other factors apart from pregnancy cause symptoms of pregnancy complications.
- **Delays in seeking care:** When women do seek care, they are sometimes discouraged or delayed by lack of childcare, poor access to transport, significant distance to facility, and the lack of a male chaperone. Additionally, principle decision-maker on ANC is usually the pregnant woman's husband.
- **Cost and perceived burden of care:** Some families reported taking out loans to afford health services.
- **Role of traditional healers:** While mothers and LHWs reported that allopathic medicine is preferred treatment, male respondents stated that spiritual guidance is usually sought. Additionally, LHWs reported that home remedies are also used.
- **Community support during pregnancy:** Immediate co-habiting family usually includes husband and in-laws, who provide support and decision-making assistance. The broader community may provide some logistical support during pregnancy, like preparing meals and offering transportation to health facility.
- **Preferred HCPs:** If affordable, a family usually prefers to use private providers due to their higher quality of service.

## **6.2 Results and findings**

Analysis of focus group discussions and in-depth interviews suggests that there are a number of barriers to promoting IFA supplementation and IYCF counseling. However, with a few changes to the intervention, there is potential for some perceived barriers to be transformed into opportunities.

Findings presented in this section explore underlying community characteristics that may impact health seeking behavior, regimen compliance and propensity to change IYCF practices.

### Finding 1: Women's time-activity (barrier and opportunity)

During interviews and group discussions, women, HCPs, and other community members stated that women do not have sufficient time to attend IYCF counseling and follow optimal IYCF practice. Some mothers continue field-based agricultural work, which makes it difficult for them to feed appropriately. For example, a health care provider stated, *“mothers carry their babies with them to the fields but the babies are neglected and end up sick and malnourished”* (Health care provider, Thatta). Additionally, many women reported that they could not attend IYCF counseling because their home duties gave them insufficient time for other activities.

As mentioned in the previous chapter, many women reported discussing their health decisions and IYCF practices with other women at informal gatherings, which allowed them to combine home duties with discussions on IYCF. Combining informal discussion about health, and collaborative completion of tasks among women could provide a culturally resonate opportunity to share information about IFA supplementation and IYCF practices.

Based on this finding, further time-activity analysis is needed to provide insight on women's time allocation, movement in space, resource use, and the extent to which women are time-poor and identify time-efficient opportunities to share IYCF and IFA supplementation messaging.

### Finding 2: Family-based decision making (barrier and opportunity)

Findings indicate that pregnant and lactating women, fathers, mothers-in-laws and/or community elders contribute to decision-making around IFA supplementation and IYCF practices. Focus group discussions with fathers revealed that men are responsible for providing financial resources to purchase IFA supplements and interviews with women indicated that mothers-in-laws provide advice or make health-related decisions on behalf of the pregnant woman. For example, a pregnant woman stated that her mother-in-law does not allow her to take the IFA supplement, *“I do not take tablets because my mother in law prohibits me to take any medicine. If I was not restricted I would have taken medicines regularly”* (Pregnant woman, Jamshoro).

Family members may prohibit pregnant and lactating women from attending child health and nutrition programs when they are not aware of the usefulness of nutrition education. For example, fathers stated, *“our community does not permit women to join meetings and support groups as we think that it is a waste of time”* (Fathers, Thatta) and *“support groups are a complete waste of time. Women have bundles of work to do at home. We don't know what kind of information is provided to our women at these groups”* (Fathers, Jamshoro). In contrast, family members with some awareness of nutritional programming showed promising commitment to learning about maternal and infant nutrition. For example, fathers stated, *“we want to learn about IFA and maternal and child health, as we want our children to grow healthy and strong. There should be a program for us where we can learn this; due to hesitation, we cannot approach our women to ask about these issues”* (Fathers, Thatta).

This suggests that awareness raising about IFA supplementation and IYCF counseling needs to target multiple community members and that family members may be receptive to messages. Even where there is resistance, engaging fathers in awareness programs might convince them of its usefulness and improve their knowledge about nutrition. The agencies could capitalize on this opportunity and organize programs for all stakeholders. The importance of targeting multiple community members in awareness-raising campaigns was also identified by LHWs in Thatta, who suggested that target audiences need to include pregnant women, mothers, grandmothers, fathers, and community leaders.

### Finding 3: Side effects of IFA supplements for pregnant woman and infant (barrier)

As stated in the WHO guidelines, systematic reviews indicate that daily iron supplementation has little or no effect on experiencing side effects, including constipation, heartburn, vomiting and nausea (WHO, 2016). Nevertheless, women perceive that supplements cause side effects, and this restrains them from taking the supplements. As one mother stated, *“the tablets have side effects that occur and then we have no*



information regarding how to overcome these problems” (Mother, Thatta). Another interviewee explained that women are afraid of taking the supplement due to their side effects, she stated, *“this medicine results in stomach burning, loose stools, and other side effects. These side effects create fear in us and make it difficult for us to consume these medicines”* (Mother, Jamshoro). Further, pregnant women may attribute every complication that they encounter during pregnancy to the IFA supplements, as a health care provider mentioned, *“during pregnancy, women who are not hundred percent fit relate every discomfort to the iron tablets”* (Health care provider, Thatta). In addition to health-related side effects, some respondents stated concerns that IFA supplements can cause the woman and infant to have a dark complexion. For example, a lactating woman stated, *“during pregnancy, if a woman takes iron tablets, she will get dark pigmentation the child will be born with a dark complexion”* (Lactating woman, Jamshoro).

To reduce fear of side effects, HCPs can advise beneficiaries about potential side effects and provide suggestions on how to manage and reduce likelihood of experiencing them. A refresher training session on IFA supplementation for HCPs could include a module on the importance of advising beneficiaries on side effects and their management.

#### Finding 4: Cost of IFA supplements at private pharmacy (barrier)

Interviews and group discussions indicate that the cost of purchasing IFA supplements at private pharmacies is a barrier to use. For example, a mother reported, *“tablets were very costly and hence not affordable. My husband did double-duty during my pregnancy to manage our expenses”* (Mother, Jamshoro).

As highlighted in Chapter 3, IFA supplements for pregnant women are available free-of-charge through LHWs and public clinics; however, frequent stock-outs may limit accessibility. This reinforces the need to avoid stock outs and ensure pregnant and lactating women and their families are aware of the free-of-charge supply.

#### Finding 5: Community attitudes to pregnancy (barrier)

A group discussion with community leaders provided insight into the community experience and interpretation of IFA supplementation during pregnancy. Pregnancy is considered a healthy state and anecdotes about successful deliveries of healthy infants without supplements reinforce the notion that IFA supplements are unnecessary. For example, a community leader stated, *“other women have given birth to children without taking these tablets, and the babies are healthy, hence we don’t believe in the importance of these tablets”* (Community Leader, Jamshoro), and an older pregnant woman stated, *“I am not the first person to give birth to a baby. It is a natural process. Tablets are good for sick people, however, pregnancy is not sickness therefore there is no need to consume tablets. I have trust in Allah”* (Mother, Jamshoro).

To ensure awareness-raising campaigns and health care provider advice resonates with the community, materials should include the messages that pregnancy is a healthy state, but IFA supplementation makes it safer for women and infants. Validating the community attitude that pregnancy is healthy may make the audience more receptive to messaging about the importance of IFA supplementation.

### 6.3 Summary and recommendations

The above analysis identifies both barriers to promoting IFA supplementation and IYCF counseling and opportunities to overcome these barriers. The following table highlights the barriers, recommended actions and key actors to implement or influence action.

**Table 3: Summary of barriers to promoting optimal nutrition practices and actions to overcome barriers**

Barrier	Action to overcome the barrier	Key actors
Pregnant and lactating women are time-poor and cannot attend nutrition counseling or follow nutrition guidelines	Conduct a time-activity analysis of women’s time allocation, movement in space and resource use, which would provide insight into the extent to which women are time-poor and identify time-efficient opportunities to share IYCF and IFA supplementation messaging	Researchers; community leaders; women in the community

Health-related decisions are jointly made by multiple family members and are influenced by community leaders	Ensure awareness raising campaigns target multiple community and family members, including pregnant women, grandmothers, fathers and community leaders	Awareness-raising campaign managers; community intervention managers
Fear of side effects of IFA supplements	Advise beneficiaries of potential side effects and provide suggestions on how to manage and reduce likelihood of experiencing them  Include IFA supplements and their management as part of a broader refresher training for HCPs	Health care providers; health care provider trainers
Cost of IFA supplements in private pharmacies	Reduce frequency of stock-outs among LHWs and in public clinics	Medical supply chain policy makers; supply chain managers; district health offices; provincial health offices; basic health units; public clinics
Community attitudes toward pregnancy	Ensure awareness-raising materials include the message that pregnancy is a healthy state to validate community attitudes	Awareness-raising campaign managers; community intervention managers

## Chapter 7: Alignment of Knowledge and Practice with Health+ Program Recommendations

*Do IFA supplementation and IYCF knowledge and practices reflect the key recommended SBCC messages in the Health+ Program?*

### 7.1 Introduction

SBCC is the systematic application of research-driven communication strategies to spur individual change and change at the environmental and structural level.

There is limited evidence on the impact of SBCC campaigns on health behaviors or health outcomes. USAID's (2014) systematic literature review on SBCC approaches to prevent anemia and stunting reported three studies with statistically significant results, providing early evidence that some approaches to SBCC are effective. These approaches include (1) education on pill count and hemoglobin level change provided to clients at a teaching hospital; (2) redesigning an iron supplements delivery system to include mass media campaign and traditional birth attendants; and (3) task shifting from community health workers (CHWs) to community volunteers recruited and vetted by CHWs.

The 2013 MCHIP Program Indicator Survey in Sindh reported on sources of health information among 4,000 women (from across the province) who had given birth in the past 2 years. The survey found low levels of exposure to any information about maternal and child health and nutrition (MCHN), with the poorest women receiving the least information. Overall, 43% of women reported that they received no MCHN information in the past 12 months. Exposure to MCHN information was lowest among women in the poorest wealth quintile, with 52.8% reporting they had received no MCHN information while 32.9% of women in the richest quintile reported that they had received no MCHN information. Additionally, a larger portion (49.3%) of women in rural areas received no MCHN information compared to 35.8% in big cities. Of women in rural areas who did receive MCHN information, the most common source of information was doctor (25%) followed by relatives/friends (17.1%), traditional birth attendants (16.4%) and mothers in law (15.7%). Of all women from rural areas, 37.8% watched television at all, and



a mere 4.2% of women in rural areas that did receive gained MCHN information from television (Agha and Williams, 2013).

## SBCC channels

Beginning in 2013, MCHIP in Sindh ran three phases of a mass media campaign to promote healthy breastfeeding practices (Kim et al., 2015). A review of MCHIP survey data found that at least 26.7% of women reported seeing the public service announcement (PSA) in 2014, and the portion of women receiving MCHN information via television increased from 8.3% in 2013 to 29.5% in 2014. Beyond reaching women directly via the PSAs, the approach may have sparked more community conversations about breastfeeding: in 2013, 18.6% of women reported receiving information about breastfeeding from their doctor, whereas by 2014, 42.3% received information from their doctor. There was also a statistically significant increase in information from mothers in law and other relatives/friends from 18.2% and 22.7% in 2013 to 32.5 and 44.3% in 2014, respectively. It is important to note that, similar to other mass media campaigns, the approach was designed to maximize reach and scale and was implemented alongside other approaches. While maximizing reach increases operational success, monitoring did not include a control group and therefore there is no basis to view these results as causal.

In addition to television, other channels through which SBCC messages were disbursed included HCPs at ANC visits, LHWs, and special events like cooking demonstrations.

## SBCC materials

As depicted in Figure 2, pamphlets are available that use large pictures and simple language to depict iron- and nutrient-rich food and how to take the IFA tablets. Pictures of iron-rich food include examples of foods that are affordable, available and acceptable to the target population. During interviews, HCPs reported distributing information, education, and communications (IEC) materials to clients for both IFA supplementation and IYCF practices. For example, a skilled birth attendant reported, “yes we used a helpful guide, pictorial charts, pamphlets, and IEC materials” (Skilled birth attendant, Thatta). Additionally, pregnant and lactating women reported receiving them. For example, a lactating woman reported, “the LHW raises awareness and also provides us with leaflets about breastfeeding and complementary feeding” (Mother, Thatta). In addition to IEC materials, other materials included television PSAs.

**Figure 2: Pamphlet on nutrient-rich foods and how to take IFA tablets**



## 7.2 Results and findings

The key recommended SBCC messages in the Health+ Program are based on WHO guidelines for IFA supplementation and WHO/UNICEF guidance on IYCF practices (see Boxes 1 and 2). In general, interviews and focus groups revealed that most community members are aware of specific health recommendations pertaining to iron- and nutrient-rich diet and IFA supplementation for pregnant and lactating women; and most respondents have at least some knowledge of optimal IYCF practices. As one of the pregnant women stated, “IFA is very important. If we take it in a timely manner, we won’t need blood at the time of delivery” (Mother, Thatta).

This transfer of knowledge is a success; however, there are still barriers to translating knowledge into action for some respondents. Some respondents acknowledged their inability to translate knowledge into behavior change, as one lactating woman stated, “*for complementary feeding I adopt traditional methods as I cannot provide nutritious foods due to poverty*” (Lactating woman, Thatta). In addition to poverty and as described in previous chapters, these barriers include lack of trust in HCPs, mismatches between health information and community leaders’ guidance, family-based decision making, lack of time, and financial affordability.

The following findings attempt to answer the question, “do IFA supplementation and IYCF knowledge and practices reflect the key recommended SBCC messages in the Health+ Program?” Results are arranged according to key messages of the program.

## Finding 1: IFA supplements

Knowledge of IFA supplement regimen was low. Many respondents reported supplements were only necessary during limited periods of pregnancy or only in case of low hemoglobin concentration. Additionally, as described in previous chapters, there were also many barriers to adherence to IFA supplement regimen. Barriers include not participating in ANC visits; uncertainty around availability or affordability of IFA supplements; conception of pregnancy as a healthy state and thus tablets are unnecessary; low trust in health care system; family-based decision making; and side effects of IFA supplements.

An important intervention to increase knowledge of IFA supplement regimen and appreciation of the benefits of IFA supplementation is to increase pregnant women’s participation in ANC. Given that health-related decisions for pregnant and lactating women are influenced by many family members, the campaign could be broadly targeted. Additionally, to be effective and prime for acceptance, the campaign could validate community belief that pregnancy is a healthy state and that ANC and allopathic medicine improves the experience.

Additionally, there is high-certainty evidence that unreliable availability of IFA supplements reduces attendance at ANC and substantially reduces adherence to IFA supplement regimen (Peña-Rosas, 2015); therefore, reducing frequency of stock outs is an important activity to run alongside any future SBCC campaign to increase uptake of IFA supplements.

There may also be value in providing a refresher training course on nutrition to health care professionals and LHWs, including a section on side effects and their management. The training should be interactive, include multimedia presentations as well as sessions for peer-to-peer learning. During the training, tea, coffee and refreshments should be provided.

## Finding 2: Early initiation of breastfeeding within 1 hour of birth

Most women reported initiating or planning to initiate breastfeeding within one hour of birth. While there is a traditional belief that colostrum is dangerous for the infant, respondents mostly reported understanding the value of ‘first milk.’ This suggests the community’s attitude to colostrum is evolving to align with health guidelines. Interviews with HCPs and pregnant and lactating women provide evidence that equating colostrum to vaccination seems to be effective (see Chapter 5). The ‘colostrum/first milk is like a vaccine’ message is currently very targeted from HCPs to pregnant and lactating women. Future SBCC interventions could consider amplifying this message to a broader audience via mass media channels.

On the other hand, the practice of providing a prelacteal meal of *ghutti* persists. While providing a very small prelacteal taste may be acceptable for cultural reasons (McKenna and Shankar, 2009), a large prelacteal meal displaces colostrum, which may be particularly detrimental during this critical development stage. As other research has found (Raju and D’Souza, 2017), evidence from interviews and focus groups highlights that administering a prelacteal meal of *ghutti* is highly prevalent and a deeply entrenched practice given its cultural significance. To change this practice, future SBCC campaigns may need to collaborate with community and religious leaders to find culturally acceptable alternatives.

### Finding 3: EBF for the first 6 months of life

Most respondents stated that infants should be exclusively breastfed for 4 to 6 months. Some respondents used infant developmental markers - like ability to sit up or appearance of first teeth - as indicators of when to introduce foods into an infant's diet.

Respondents overwhelmingly agreed that breastfeeding was the norm in the community; however, they believed EBF may not be possible for many women in their community. Reasons cited for non-EBF included inability to produce sufficient milk due to poor maternal diet and high workloads rendering breastfeeding on demand difficult.

Most women, including poorly nourished women, are physically able to produce sufficient milk for an infant after delivery if they are provided with sufficient support and training on steps to successful breastfeeding. However, among poorly nourished women, it is important to encourage and support EBF, SBCC campaigns need to inform and encourage women that they can produce sufficient breastmilk, as well as ensure lactating women have access to foods for a nutritionally-adequate diet to support maternal nutrition during lactation.

### Finding 4: Introduction of nutritionally adequate and safe complementary (solid) foods at 6 months together with continued breastfeeding up to 2 years of age or beyond

As supported by descriptive statistics, most respondents reported that most mothers of young children usually breastfeed their infants for up to 24 months; however, optimal practice for complementary feeding is less clearly understood by the community. As described above in Finding 3, most respondents stated they introduced solids around 4 to 6 months of age. Pregnant and lactating women and community members mostly focused on the importance of introducing soft foods, with some respondents acknowledging the need for variety in an infant's diet. One health care provider acknowledged the importance of "safe foods," but safe handling and hygienic preparation were not a strong theme. Respondents identified foods as rice, *khichri* (lentils and rice), *kebeer* (rice pudding), fruits, potato, *daylia* (whole wheat grits), and *sago dana* (starchy carbohydrate). *Raab*, a traditional mixture of rice and sugar, was also mentioned. Indeed these do not follow the WHO recommendations for optimal complementary feeding from all the food groups.

In addition to educating the community about nutritionally adequate and safe complementary feeding, poverty and food availability may be barriers to providing a nutritionally adequate diet, as a lactating mother stated, "*for complementary feeding I adopt traditional methods but cannot provide nutritious foods due to poverty*" (Lactating woman, Jamshoro).

Community leaders acknowledged changes in diet overtime and highlighted the ever-present issue of encouraging feeding children from a variety of foods. During a focus group discussion, they stated, "*our parents gave us ghee and butter when we were young, but that isn't readily available now. Instead, we give our children fruits, vegetables, rice with sugar, bananas. We make food at home for our children as well as provide bread to introduce the taste of wheat*" (Community leaders, Jamshoro).

Any future SBCC campaign that targets pregnant and lactating women and/or the community broadly needs to be sensitive to these economic barriers to optimal complementary feeding while providing practical, affordable, nutritious food sources backed with effective behavior change approaches such as trials of improved practices (MCSP nutrition briefs, 2016). Campaign messages could validate and commend lactating women for breastfeeding until infant is at least 2 years of age, which would prime the audience to be more receptive to guidance on improving complementary feeding. Additionally, messaging should be sensitive to caregivers' experience of an infant's picky eating when they are presented with a variety of foods.

At least three HCPs reported that they only provide basic IYCF guidance with limited detail on complementary feeding. According to HCPs this is because they face time limitations. As one female medical officer stated, "*we have a long line of clients for check-ups, so we just give basic information about breastfeeding, then our peri medic staff give briefing during regular check-ups*" (Health care provider, Jamshoro). Additionally, a recent document review found that Sindh's IYCF-related policy and guidelines lack implementable detail,

especially for advising pregnant and lactating women (Mahmood, 2017), suggesting HCPs and clinicians may have insufficient support to provide efficient and effective advice and materials with beneficiaries. As such, future SBCC interventions around IYCF could include efforts to operationalize national-level policy into actionable provincial level guidelines and job aids.

## 7.3 Recommendations

The above analysis suggests that the following SBCC interventions may improve maternal and child nutrition outcomes in the communities:

- Provision of refresher training course on nutrition to health care professionals and LHWs, including sections on:
  - Side effects of IFA supplements and their management;
  - Safe and hygienic handling of IFA supplements;
  - Importance of colostrum, including that “colostrum is protective like a vaccine” seems to be effective messaging;
  - Importance of EBF for the first 6 months of infant’s life;
  - Multimedia presentations to inspire health care workers;
  - Interactive sessions that allow for peer-to-peer learning; and
  - Break where tea, coffee, and other refreshments are provided.
- Rollout of public awareness raising campaign that validates that pregnancy is a healthy state, then highlight on the benefits to attending ANC and taking supplements for pregnant women.
- Creation of province-level policy documents that implement national action plans and specify actionable guidelines for IYCF, especially complementary feeding.
- Creation of job aids that provide detailed guidance on IYCF practices, especially complementary feeding.

# Chapter 8: Program Opportunities and Recommendations

## Program opportunities

This study finds that there are both supply- and demand-side opportunities that address key barriers to IFA supplementation and optimal IYCF practices in the communities.

Key opportunities to improve supply of IFA supplements and IYCF counseling include interventions to:

- Reduce frequency of stock-outs at district clinics and among LHWs.
- Review and update packaging of IFA supplements provided by LHWs and at district clinics to ensure they are appealing to beneficiaries.
- Explore increasing collaboration between government facilities, nonprofit facilities and potentially private-sector pharmacies.

Key opportunities to increase demand for IFA supplements and IYCF counseling include interventions to:

- Increase participation in ANC visits, including broadly targeted SBCC campaigns that validate perceptions of pregnancy as a healthy state and highlighting the benefits of ANC and supplements (see Chapter 7).
- Improve HCPs’ and LHWs’ ability to advise on maternal and infant nutrition through refresher training courses on nutrition, creation of job aids and clarification of policies to be more actionable (see Chapter 7).

There may also be a need to engage researchers to conduct a time-activity analysis of women's time allocation, movement in space, and resource use, which would provide insight into the extent to which women are time-poor and identify time-efficient opportunities to share IYCF and IFA supplementation messaging (see Chapter 6).

## **Recommendations and conclusions**

### **Chapter 3**

IFA supplements typically have a shelf life of two years and can be safely stored at most temperatures and humidity levels. Given the potential for imprecise forecasting and long procurement lead time, it might be beneficial to deliberately over-order IFA supplements, then carefully organize storage and distribution according to expiration dates. Over-ordering could reduce frequency of stock-outs and prevent product expiration; however, its success would depend on well-managed storage and handling procedures, and ongoing feedback loops between ordering and warehousing, which were not assessed in this study.

There is evidence of some collaboration, particularly training of LHWs, between government and nonprofit health care organizations, and there is some evidence of beneficiary satisfaction with nonprofit's provision of health care and supply of IFA supplements. Government and nonprofits should consider expanding their collaboration to include shared supply chains. This may reduce costs and increase efficiency through joint organization, planning and implementation.

Additionally, private pharmacy provision of IFA supplements is considered too costly by beneficiaries; however, the private sector supply chains may be more efficient than government and nonprofit supply chains. Government and nonprofits should investigate whether collaboration with private pharmacies is feasible. However, prior to engagement, government should conduct an investigation into private sector's handling, transportation, warehousing and product quality, including a review of regulatory policy and implementation.

### **Chapter 4**

Distributing IFA supplements through the health system in addition to LHW provides an in-built referral network so that if there is a stock-out at one supply point (for example, a LHW runs out of tablets), then a client can be referred to another supply point (the health system).

To strengthen the two-way referral network for nutrition services the government could form a liaison with the community leaders and involve the male members through different forums such as meetings with community leaders to build trust and respect for the services of LHWs.

LHWs and HCPs should be provided with orientation and mentoring on IYCF knowledge and skills as well as behavior change approaches to enable them effectively communicate these messages to communities and the target groups.

### **Chapter 5**

Given that a prohibiting factor to attending health-related support groups is that women face a lack of time, LHWs and health facilities should consider offering their support groups in a location and at a time when women can continue with their chores. This may feel more efficient for the beneficiaries, build community shared task completion, and improve compliance with IFA supplements and IYCF practices.

Ensure clinical and community-based HCPs are equipped with behavior change materials and innovative ways to convey evidence-based optimal IYCF practices and the benefits of IFA supplementation. Where possible, evidence-based guidelines should be linked to traditional guidance and be presented as an extension or deepening of traditional knowledge.

### **Chapter 6**

This study identifies both barriers to promoting IFA supplementation and IYCF counseling and opportunities to overcome these barriers. The following table highlights the barriers, recommended actions and key actors to implement or influence action.



**Table 3: Summary of barriers to promoting optimal nutrition practices and actions to overcome barriers**

Barrier	Action to overcome the barrier	Key actors
Pregnant and lactating women are time-poor and cannot attend nutrition counseling or follow nutrition guidelines	Conduct a time-activity analysis of women's time allocation, movement in space and resource use, which would provide insight into the extent to which women are time-poor and identify time-efficient opportunities to share IYCF and IFA supplementation messaging	Researchers; community leaders; women in the community
Health-related decisions are jointly made by multiple family members and are influenced by community leaders	Ensure awareness raising campaigns target multiple community and family members, including pregnant women, grandmothers, fathers and community leaders	Awareness-raising campaign managers; community intervention managers
Fear of side effects of IFA supplements	Advise beneficiaries of potential side effects and provide suggestions on how to manage and reduce likelihood of experiencing them  Include IFA supplements and their management as part of a broader refresher training for HCPs	Health care providers; health care provider trainers
Cost of IFA supplements in private pharmacies	Reduce frequency of stock-outs among LHWs and in public clinics	Medical supply chain policy makers; supply chain managers; district health offices; provincial health offices; basic health units; public clinics
Community attitudes toward pregnancy	Ensure awareness-raising materials include the message that pregnancy is a healthy state to validate community attitudes	Awareness-raising campaign managers; community intervention managers

## Chapter 7

Study data suggest that the following SBCC interventions may improve maternal and child nutrition outcomes in the communities:

- Provision of refresher training course on nutrition to health care professionals and LHWs, including sections on:
  - Side effects of IFA supplements and their management;
  - Safe and hygienic handling of IFA supplements;
  - Importance of colostrum, including that “colostrum is protective like a vaccine” seems to be effective messaging;
  - Importance of EBF for the first 6 months of infant's life;
  - Multimedia presentations to inspire health care workers;
  - Interactive sessions that allow for peer-to-peer learning; and
  - Break where tea, coffee, and other refreshments are provided.
- Rollout of public awareness raising campaign that validates that pregnancy is a healthy state, then highlight on the benefits to attending ANC and taking supplements for pregnant women.
- Creation of province-level policy documents that implement national action plans and specify actionable guidelines for IYCF, especially complementary feeding.
- Creation of job aids that provide detailed guidance on IYCF practices, especially complementary feeding.

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