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Sarah Hoenig Date

"Work load has increased, but it is good for society. We cannot stop this": Frontline worker perceptions and experiences delivering micronutrient powders in Bihar, India

By

Sarah Hoenig
Master of Public Health

Hubert Department of Global Health

_____ [Chair's signature]
Melissa F. Young, PhD
Committee Chair

"Work load has increased, but it is good for society. We cannot stop this": Frontline worker perceptions and experiences delivering micronutrient powders in Bihar, India

By

Sarah Hoenig

B.A.
Skidmore College
2015

Thesis Committee Chair: Melissa F. Young, PhD

An abstract of
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Abstract

"Work load has increased, but it is good for society. We cannot stop this": Frontline worker perceptions and experiences delivering micronutrient powders in Bihar, India

By Sarah Hoenig

Background

Childhood malnutrition is a critical public health issue in India. In Bihar, it is estimated that over 50% of children under three are stunted, 33% are wasted, and 87% of children 6-35 months are anemic. These high levels of malnutrition can likely be attributed in part to poor infant and young child feeding practices. Use of micronutrient powders (MNPs) have been shown to improve nutrition status in children in many settings but not yet in Bihar.

Methods

This study took place in Bihar, India. Four health sub-centers (HSCs) were selected based on program performance level. A total of 12 qualitative interviews were conducted with frontline workers (FLWs). In-depth interviews were conducted with Auxiliary Nurse Midwives (n=4) from each HSC and focus group discussions (FGDs) were conducted with Accredited Social Health Activists (n=4) and Anganwadi Workers (n=4) from each HSC. Some key questions included, perceptions on importance of MNPs, role of FLWs, MNP distribution, and perceived community acceptability and utilization. Thematic qualitative data analysis was completed utilizing MAXQDA.

Results

The main factors that influenced FLWs ability to implement MNPs were work environment, community understanding of MNPs, and supply and distribution of MNPs. The increased work burden of the MNP program and lack of compensation made it difficult for some FLWs to balance their home and work lives. Additionally, education of beneficiaries and misconceptions regarding MNPs made it challenging for FLWs to deliver MNPs in some households. Lastly, supply of MNPs was not a common issue but there were challenges related to MNP distribution. FLWs reported feeling motivated because their work was fulfilling and made a difference in their communities.

Conclusion

Key barriers and facilitators for FLW delivery of MNPs in Bihar were identified. Motivation was a central theme which was enhanced by community and personal perceptions of perceived benefits of MNPs. Inadequate compensation and challenges in delivering MNPs decreased FLW motivation. FLW delivery of MNPs in Bihar is a promising delivery platform, but future work should address the key challenges identified.

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Acronyms

ANM: Auxiliary Nurse Midwife

ASHA: Accredited Social Health Activist

AWC: Anganwadi Center

AWW: Anganwadi Worker

FGD: Focus Group Discussion

FLW: Frontline Worker

HSC: Health Sub-Center

IDI: In-depth Interview

IYCF: Infant and Young Child Feeding

MNP: Micronutrient Powder

Introduction and Background

Global burden of childhood malnutrition

Childhood malnutrition remains a critical public health problem worldwide. In 2016, approximately 155 million children under the age of five were suffering from stunting (WHO, 2018). Additionally, 45% of deaths among children under five years of age were linked to undernutrition. Since poverty further exacerbates the risk of malnutrition, the majority of these deaths occurred in low- and middle-income countries (WHO, 2018).

It is important to address concerns of malnutrition early in the life course since the first 1,000 days of a child's life are a critical time of brain and growth development (Cusick et al., 2019). Optimizing nutrition early in life ensures the best possible outcomes with long-term health benefits (WHO, 2018). Lastly, studies have shown that malnutrition increases health care costs, reduces productivity, and slows economic growth (WHO, 2018).

Childhood malnutrition in India

India is one of the largest contributors to the global prevalence of malnutrition (Meenakshi, 2016). The prevalence of stunting among children under five is 48% while the prevalence of wasting is 19.8%. Additionally, the prevalence of underweight children is 42.5%, which is the highest in the world (Bhutia, 2014). Malnutrition makes children more vulnerable to infection and can contribute to child mortality. Despite India's progress in food production, disease control, and economic and social development, malnutrition still remains a critical public health problem (Kotecha, 2008).

Childhood malnutrition in Bihar

The levels of childhood malnutrition in Bihar, a state located in East India, are especially problematic. It has been estimated that over 50% of children under three are stunted, 33% are wasted, and 87% of children 6-35 months are anemic (NFHS-4, 2016). These high levels of malnutrition can likely be attributed in part to poor infant and young child feeding (IYCF) practices. Furthermore, it has been documented that only 23% of children 6-35 months meet basic IYCF criteria (NFHS-4, 2016). It is important to address these micronutrient deficiencies because improper nutrition that occurs early in a child's life can have long-term negative health impacts (Bhandari et al., 2004).

Use of micronutrient powders (MNPs) to improve nutrition

MNPs are single-dose packets containing multiple vitamins and minerals in powder form that can be sprinkled onto food. MNPs are very versatile because they can increase the micronutrient content of a child's diet without changing their dietary habits. Additionally, studies have shown that MNPs can reduce anemia in young children by 31% and iron deficiency by 51% (De-Regil et al., 2013). Furthermore, the World Health Organization released guidelines that recommend use of MNPs for point-of-use fortification of foods consumed by infants and young children aged 6-23 months and children aged 2-12 years (WHO guideline, 2016).

Home fortification of complementary foods using MNPs to improve nutrition status has been shown to be very successful in many global settings. For example, there have been numerous studies that have assessed the efficacy of MNPs, such as a randomized, double-blind, placebo-controlled trial in children in Cambodia (Giovannini et al., 2006). Children were given daily supplements containing iron (12.5

mg), folic acid (150 ug), and zinc (5mg) in powder form for a 12-month period. Anthropometrics including, body weight and length were evaluated bimonthly. The study found that the rate of recovery from anemia was significant and higher in the treatment group (54%) compared to the placebo group (22%) (Giovannini et al., 2006). Additionally, a double-blinded cluster randomized community-based trial in Pune, India found that MNPs were just as efficacious as iron drops in increasing hemoglobin and iron stores in anemic children aged 6-24 months (Hirve et al., 2007).

There have also been studies examining the effectiveness of MNPs. For example, a study examining the effect of MNPs on hemoglobin concentration of young children in Laos found that MNP supplementation led to significant improvements in hemoglobin concentration and resulted in the reduction of anemia prevalence in the two treatment groups compared with the control group (Kounnavong et al., 2011). The study enrolled 336 eligible children and randomly assigned them to three groups: a control group (n = 111), a group given twice weekly multiple micronutrient supplementation (n = 115), and a group given daily multiple micronutrient supplementation (n = 111). The mean hemoglobin concentration increased from 107.1 g/L to 120.0 g/L in the daily MNP group, and from 105.1 g/L to 118.0 g/L in the twice weekly MNP group. In the control group, the change in hemoglobin concentration was smaller, from 114.3 g/L to 117.4 g/L. Additionally, the prevalence of anemia decreased from 53.6% to 18.2% in the daily MNP group, and from 58.6% to 26.1% in the twice weekly MNP group. The control group also observed a small decrease in anemia prevalence from 34.5% to 23.6% (Kounnavong et al., 2011). This study used village

health workers to implement the program, however, there was no evaluation of the village health workers' experience or how they might have impacted the program. Another study in Kenya, found that even with relatively low and infrequent use, consumption of MNPs were associated with decreased rates of anemia and iron and vitamin A deficiency in children in resource-poor settings (Suchdev et al., 2012). This study distributed MNPs to the community through marketing techniques and sales through local vendors. Lastly, a study in Western India assessed the effectiveness of MNPs in reducing anemia levels in children aged six months to six years. (Hirve et al., 2013). The program was implemented through Integrated Child Development Services and MNPs were distributed by trained frontline workers (FLWs). The study found a significant reduction in anemia (50% to 33% in boys and 47.4% to 34.2% in girls) following MNP supplementation (Hirve et al., 2013).

These studies show the efficacy and effectiveness of using MNPs and the benefits to malnourished children. However, there are limited studies that demonstrate the effectiveness of MNP programs when implemented by FLWs or other community health workers in the context of Bihar, India.

Frontline worker role in nutrition in Bihar

FLWs play an integral role in improving child nutrition in Bihar because they are the first point of contact in local communities and villages providing basic health care services. India has three main cadres of FLWs established by India's Ministry of Health. The first cadre are Auxiliary Nurse-Midwives (ANMs). ANMs are based at health sub-centers (HSCs), which provide basic healthcare services at the village level. They

typically have the most training and serve as a supervisory role to the other FLWs (Scott et al., 2019). Additionally, they are paid a government salary. The second cadre are Anganwadi Workers (AWW). AWWs work out of Anganwadi centers (AWC), which also operate at the village level. AWWs provide food supplements to young children, adolescent girls, and lactating women. AWWs are considered honorary workers and therefore receive a monthly honorarium. This monthly payment is usually significantly less than a government salary (Scott et al., 2019). The last cadre are known as Accredited Social Health Activists (ASHA). ASHAs work in the villages and are responsible for making home visits. They focus primarily on the promotion of maternal and child health. ASHAs are not paid a salary but they receive performance-based incentives based on the amount of services they provide. Some services they provide include, immunizations, facilitating institutional-based deliveries, provision of basic medicine including contraception, and referring patients to HSCs (Scott et al., 2019).

FLWs are essential for improving child nutrition because they reside in the villages and districts they serve, which allows them to better understand community problems and concerns. Additionally, since many villages in Bihar are located long distances from major hospitals, FLWs serve as an important first contact in the health care system.

CARE India Family Health Initiative

CARE India has been working with Emory University to establish a home fortification cluster-randomized trial as part of the broader Integrated Family Health Initiative. The Integrated Family Health Initiative project was implemented by CARE

India in partnership with the Bihar government to increase health care coverage and life-saving interventions to improve the health and survival of women, newborns, and children during the first 1,000 days of life (Smith et al., 2011).

The home fortification with MNPs program was implemented in two phases. The first phase involved extensive formative research on MNPs, IYCF messaging, and study acceptability. The second phase was conducted over 12 months in 70 communities, designated as the catchments of HSCs. Each HSC had between five and 12 AWCs within its catchment area. Each AWC served a population of roughly 1,000 people. HSCs were randomized to generate a list of 35 intervention groups and 35 control groups using a random number generator-based simple randomization method. The program was implemented with the help of government FLWs including, ASHAs, AWWs, and ANMs. FLWs delivered either MNPs and IYCF counseling to 35 intervention communities or IYCF counseling alone to 35 control communities. FLWs were advised to deliver one box of MNPs to the households of children 6–18 months of age on a monthly basis during routine home visits. Each box of MNPs contained 30 sachets of powders, one sachet to be used per day per child. Lastly, FLWs were trained extensively on counseling methods, behavior-change communication, and hygiene-related practices. The aim of the overall study was to evaluate program effectiveness of home fortification of complimentary foods using MNPs in Bihar, India.

Rationale and Public Health Significance

Given the poor nutrition status of children in Bihar, it is essential to find alternate strategies to ensure children are receiving the micronutrients necessary to properly develop and grow. Use of MNPs have been proven to be successful in the past but not yet in Bihar. Additionally, since there have been few studies that demonstrate the effectiveness of MNPs when implemented by FLWs in Bihar, it is important to address any gaps in service to better understand the factors that influence FLWs ability to deliver MNPs. Qualitative research can help provide context to the quantitative data collected and give researchers a new perspective into the lives of FLWs and the work that they do. Thus, the goal of this paper is to gain a better understanding of what influences FLWs ability to implement home fortification of complimentary foods with MNPs for children in the state of Bihar. Gaining a better understanding of these influences will lead to more successful programming in the future in Bihar and around the world.

Methods

Study Setting

This study took place in West Champaran Bihar, India. West Champaran is one of the eight key focus districts for CARE's Integrated Family Health Initiative project. The goal of the Integrated Family Health Initiative is to develop, test, and scale-up innovative solutions to improve coverage, quality, and uptake of important family health services in Bihar.

Study Population, Sample Size, and Data Collection

A total of four HSCs were selected based on program performance level. Both high and low performing HSCs were purposively selected to help identify the facilitators and barriers to program success. Performance of HSCs were classified according to FLW attendance at HSC meetings and MNP distribution obtained from the monitoring data through the household and HSC checklists. A total of 12 qualitative interviews were conducted. In-depth interviews (IDIs) were held with four different ANMs from each HSC. Additionally, four focus group discussions (FGDs) were held with a group of ASHAs from each HSC and four FGDs were held with a group of AWWs from each HSC (Table1). Some key questions consisted of perceptions on importance of MNPs, role of FLWs and distribution, and perceived community utilization (Appendix 1 and 2).

Table 1. Breakdown of qualitative interviews

Number of Interviews	Type of FLW	Type of Interview
4	ASHA	FGD
4	AWW	FGD
4	ANM	IDI
12		

Ethics

This study was approved by Emory University's Institutional Review Board and the Futures Ethics Board in New Delhi, India. To ensure confidentiality, all data were kept private and confidential throughout the study. All transcripts were de-identified to ensure anonymity of participants as well. Furthermore, participants were made aware of the purpose, benefits, and risks of the interview process before providing written consent.

Data Analysis

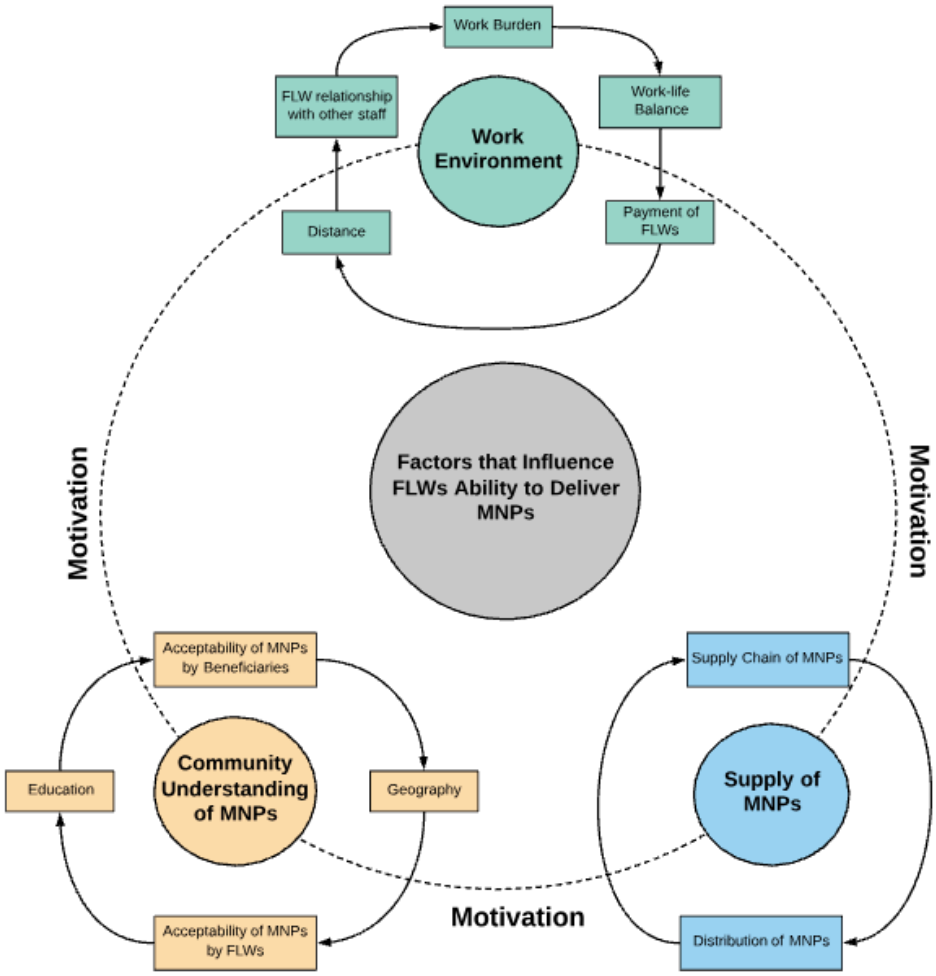
Thematic qualitative data analysis was completed utilizing MAXQDA Version 2018.2.0. In the early stages of data analysis, memos were used to "open up" the data and explore further issues. Memos were also helpful in keeping track of thought processes and linking categories and themes (Glaser, 1998). Then, a codebook of ten inductive codes were developed to further analyze the data. When coding was completed, an analysis plan was developed to outline and guide the direction of qualitative analysis (Appendix 3). The analysis plan involved searching the data by code and then describing what was found in each code and how it related to the

research question. A thematic quote matrix was developed to organize relevant supporting quotes according to theme (Appendix 4). Description and comparison of codes and sub-codes using the complex coding query feature in MAXQDA Version 2018.2.0 were used to look for patterns and develop a narrative thematic analysis of the data (Richards, 2005). The codes were then further categorized based on meaningful similarities. The categorization process helped to conceptualize the data and develop a data-driven conceptual framework (Figure 1). Finally, the concept-indicator model was used to verify key concepts and ensure themes were grounded in the data (Glaser, 1978).

Results

Conceptual Framework Overview

Figure 1. Factors that influence FLWs ability to deliver MNPs



The conceptual framework depicted in figure 1 is broken down into three main categories that influence FLWs ability to implement MNPs including, work environment, community understanding of MNPs, and supply chain of MNPs. Within each category, there are more specific sub-themes that are interconnected and influence each other to affect FLWs ability to deliver MNPs. Motivation is connecting each of the

categories because it is an underlying key theme that influences FLWs ability to deliver MNPs and is ultimately what drives them to continue their work despite numerous challenges.

Work Environment

When examining the work environment of FLWs there were a number of aspects that were discussed by FLWs including, work burden, FLW relationship with other staff, motivation, payment of FLWs, and distance from home visit sites.

The increased work burden of the MNP program proved to be one of the biggest influencers of the ability of FLWs to successfully deliver MNPs to the community. Perception of work burden varied greatly by FLW. For example, most ASHAs claimed that the majority of the work falls on them and they are frustrated because they are not properly compensated or recognized by the government. Many ASHAs made similar statements such as, "*no one listens to us, is the government blind? If we are doing work for them, they should come and solve our problems. We do work and raise awareness among the people, but the government does not recognize it. No one recognizes our work, and no one appreciate us.*" The majority of AWWs mentioned that they were very overworked and had difficulty balancing their home and work lives. For example, one AWW said "*what to do sir, we are under so much pressure and we have lot of responsibilities. We also have to take care of our children, home, etc.*" Multiple AWWs made similar comments related to the struggles of balancing their home and work lives with such minimal compensation from the government. On the other hand, ANMs did not find the MNP program to increase their work load stating, "*in fact my work has become easy*". This statement makes sense in this

context because ANMs play more of a supervisory role and can distribute their work load among the other FLWs. There was a lot of overlap within FLW relationships and work burden since positive relationships seemed to directly influence the level of work burden FLWs felt. For example, one ANM said that the quality of their work had improved after ASHAs and AWWs became involved in the program because there were more people to share the work burden stating, *"after ASHAs and AWWs joined the work has become better. Previously we were doing more work."*

The majority of FLWs claimed that they had positive relationships with other FLWs and that they all get along, which had a positive impact on their ability to deliver MNPs to the community. For example, when ASHAs were asked about their relationship with AWWs and ANMs, they said *"everyone gets along nicely"*. However, some FLWs claimed there had been some changes in their relationships which has affected the work dynamics. For example, one ANM said she observed that ASHAs do more work than AWWs, which caused some problems because the work was not being distributed evenly. Also, she said that AWWs get paid more than ASHAs, so some ASHAs might think that is unfair. Another ANM mentioned that sometimes they do not always get along, but it doesn't necessarily affect their ability to get the job done, stating *"If someone does not come to work, we will fight, but it does not mean that we stop talking to each other. We still work together."* These perspectives provide interesting context to the work environment since FLWs have different rankings and levels of authority in the workforce.

Payment of FLWs was an additional factor that affected FLWs ability to successfully implement MNPs and was brought up several times by all the participants. There were a lot of overlapping themes that emerged when looking at payment of FLWs including, motivation, and work burden. For example, ASHAs and AWWs said that increased payment would motivate them to perform their jobs better and take on more responsibilities. However, they did not want it to seem like they only cared about money stating, "*we do not have any craziness for money, but no one recognizes our work or appreciates us*". ASHAs and AWWs felt like they deserved more money but did not want to appear greedy. Additionally, many ASHAs and AWWs said that even though they did not receive enough money they think their work is fulfilling and contributing to society. For example, one ASHA stated, "*yes, work load has increased, however, it is good for society*". When ANMs were asked if they thought AWWs and ASHAs should get more money some said yes because their work would improve, however, one ANM said they should not get more money because they do not spend that much time in the field.

Another aspect that FLWs mentioned as having an impact on their ability to properly deliver MNPs was the travel distance to home visit sites. For example, one ASHA said *"yes, we face problems, but we give support to each other"*. While the ASHA did not explain how they give support to each other, this idea of FLWs supporting each other shows how FLW relationships plays a role in the implementation of MNPs. Additionally, when the distance to travel to a home visit was too far, one AWW said "*if the distance is too far and we are unable to go, then we call them to our center*". However, not

all FLWs agreed that distance was an issue with some ASHAs saying that distance from home visit sites was typically not a problem and there were no difficulties commuting.

While not every FLW had the same experience implementing the MNP program, there are some common themes that emerged. Most of the FLWs worked well together but ASHAs and AWWs felt like their work was not recognized and said they would work harder if they received more money from the government, stating *"we will be able to perform well and do our work more properly"*. However, despite these challenges, all FLWs were motivated to continue with their work because it was fulfilling and made a difference in their community. One ASHA said, *"we simply keep doing our work, whether we receive the payment or not because good change is being noted"*. According to FLWs, motivation to improve nutrition and health in their community was a key driver for them to continue their work despite lack of payment.

Community Understanding of MNPs

Community understanding of MNPs also played an important role in the ability of FLWs to successfully implement MNPs in the community because they need to understand the importance and benefits of MNPs if they are going to successfully educate and advocate for MNP use in the community. When asked in interviews, all of the FLWs agreed that MNPs were very valuable to childhood nutrition and should continue to be distributed to the community. One ASHA said the MNP program should continue because *"we have seen a positive impact on children. They no longer suffer from malnourishment"*. Another ASHA said, *"we will make them understand again and again so that the child and the mother remain healthy and do not suffer from malnourishment."* The FLWs

made it clear that they understood the benefits of MNPs and why it should be given to the community.

When examining the acceptability of MNPs by the beneficiaries, there were some differing opinions. The majority of FLWs reported that beneficiaries mentioned that MNPs were helping their children and they could see improvements in their health. AWWs reported beneficiaries saying, *"they are in favor of MNPs and the child must get it because child has good growth and prevents from malnutrition."* Additionally, one ASHA said, *"people have felt that after giving powder to the child, they are more physically and mentally active"*. However, there were some beneficiaries who were hesitant to give their children MNPs because they either didn't understand the importance or had misconceptions that the powder would make their children sick. For example, one FLW said, *"some people complained about child passing black stool. People also said that simply feeding powder does not fill the stomach of child"*. Another complaint was that *"using the powder changes the color of the food and they do not want to feed it to their child"*. To address some of these misconceptions FLWs spent extra time with the beneficiaries to educate them and explain proper use of MNPs. However, one ASHA said that this education process can be time consuming and adds to their work burden, stating, *"we will educate at the beneficiaries' houses and it is timely, but we have to."*

Overlapping themes were also found when looking at acceptability of MNPs by beneficiaries and education of beneficiaries. FLWs mentioned numerous times that uneducated beneficiaries had more trouble understanding what MNPs were and how to use them when compared to educated families. Additionally, if the beneficiaries were

illiterate then they could not read the informational pamphlets that FLWs provided. For example, one FLW said, "*those who are illiterate find it difficult to understand but the ladies who are educated they follow it*". There were also overlapping themes when comparing education of beneficiaries and geography. Most FLWs said it was more challenging to communicate with beneficiaries from rural populations because they were not educated. For example, when asked to explain the difference between urban and rural beneficiaries, FLWs said that "*urban people understand the information more nicely*". One ASHA said that in rural areas, "*they normally provide a demonstration and show them how to feed if beneficiaries do not understand.*" However, there were some FLWs who mentioned they did not find any differences in communication between urban and rural populations.

Overall, one of the key influencers affecting FLWs ability to successfully deliver MNPs to the community was the education level of the beneficiaries. Education and literacy levels affected their ability to understand the importance and use of MNPs. It was also found that more educated beneficiaries resided in urban areas. FLWs said they were able to overcome some of these challenges, but it added to their work load because they had to devote more time to these beneficiaries. However, their desire to make a difference in the community helped motivate them to continue working. One ASHA said they don't mind the increased work burden because they are "*mainly concerned that the children in the village are safe, and that's why we continue to do this work*".

Supply and Distribution of MNPs

When examining how supply of MNPs affected FLWs ability to implement MNPs in the community there were not any major problems reported. ASHAs described the supply chain process saying that ANMs received the MNPs at the AWC. Then, MNPs were sent to the HSC and kept there until it was distributed to AWWs and ASHAs to deliver during home visits. FLWs said that once they received the MNPs from the HSC they checked the register for children 6-18 months and then went to their homes. One ASHA said that there was a shortage once when beneficiaries came to the HSC to get more MNPs, but it was *"resolved quickly, and they got new stock immediately"*.

When asked about the distribution process of MNPs, a few FLWs reported challenges. One ASHA reported that it can be difficult to carry all the powder if they were making a lot of visits, so they used *"a carry bag called Jhola, which makes it easier"*. Also, a common challenge ASHAs reported was difficulty making all the household visits in one day to deliver the MNPs. Some said they have too much work now because they have to make more home visits stating, *"day by day we are seeing that our work load is increasing but when work comes, we try to accommodate it in our daily routine and try to finish"*. Additionally, their work load increased when beneficiaries had difficulty understanding how to use MNPs because they said, *"we still have to go repeatedly to make them understand again and again"*. However, even though FLWs experienced an increased workload to distribute MNPs to all the households, they were still motivated to make sure all powders were delivered because they know it is important. For example, one ASHA said, *"we will go to the beneficiary house in a timely manner even if we are not getting a*

single penny. We are mainly concerned that the children in our village are safe. We will continue to do this work".

Overall, supply of MNPs was not a barrier to implementing MNPs but instead a facilitator, while distribution of MNPs posed challenges for some FLWs. However, despite these challenges, motivation of FLWs was a key factor in making sure MNPs were delivered to all the households.

Discussion

Summary of Findings

The results from this study indicate that work environment of FLWs played an important role in FLWs ability to implement MNPs. More specifically, the increased work burden of the MNP program and lack of proper compensation made it difficult for some FLWs to balance their home and work lives and made them feel ignored and underappreciated. Additionally, education and literacy levels of beneficiaries and misconceptions regarding MNPs made it difficult for FLWs to implement MNPs in some households. Lastly, it was found that supply of MNPs was not an issue but there were some challenges related to distribution of MNPs to households because it increased the burden of work for FLWs. However, despite a number of these challenges, FLWs reported feeling motivated to continue their work because it was fulfilling and made a difference in their communities.

Comparison to Existing Literature

The results from existing literature reveal a number of similarities and differences when compared to the results of the current study. When examining how work environment affected FLWs ability to implement MNPs, the results from a study in Nepal, showed that increased workload negatively affected MNP delivery in the community leaving many FLWs unhappy (Jefferds, et al., 2016). The analysis found that FLWs did not work as hard as they would have if they were compensated properly. In an effort to distribute the work more evenly, the government implemented the program in health facilities as well. These results are similar to the results of the current study because FLWs said they would work harder if they were paid more money. Another MNP study in Nigeria found that FLWs were not as knowledgeable as they should be about MNPs and were resistant to implement the program because of the increased workload (Korenromp, et al., 2015). The MNP program was added as an addition to other government health programs creating more work for FLWs. Furthermore, a review of multiple MNP interventions found that using FLWs as the primary MNP delivery channel was the most successful strategy, however, the most common issue was overburdening FLWs (Reerink, et al., 2017). These results are also similar to the current study because many FLWs found that the addition of the MNP program was burdensome and affected their workload. In contrast, there was a study in Haiti that found that FLWs did not have any issues with increased workload while implementing MNPs (Loechl et al., 2008). In the current study, there were also some FLWs who did not find issues with increased work load because of the MNP program. Additionally, qualitative interviews with FLWs in the Haiti study revealed that they felt obliged to

get involved with MNP distribution because of the health benefits to families and children (Loechl et al., 2008). These sentiments are very similar to comments made by FLWs in the current study. FLWs said that even though they were struggling with the extra work load, they were motivated to continue working because it is beneficial to the community.

When analyzing how community understanding of MNPs affected FLWs ability to implement MNPs, a study in the Philippines found that the main reason for lack of MNP use in the community was due to misconceptions about MNPs. For example, beneficiaries believed that bad taste and smell could affect the child's health (Goyena et al., 2019). Another study in Peru found that FLWs reported that beneficiaries believed MNPs should not be mixed with certain foods because it could be harmful or ineffective or that MNPs will cause vomiting and diarrhea. The study also found that peri-urban regions tended to have more misconceptions of MNPs when compared to urban regions (Creed-Kanashiro et al., 2015). The current study found that beneficiaries had similar misconceptions and feared that MNPs would not provide enough nutrients to the child or make them sick. Additionally, the current study similarly showed that there tended to be more misconceptions in rural regions when compared to urban regions due to lack of education. However, a study in Ghana found that MNPs were widely acceptable and did not interfere with MNP consumption (Adu-Afarwuah, 2007). In the current study, there were also some FLWs who reported not having any issues with MNP misconceptions when talking with beneficiaries.

When examining how supply and distribution of MNPs affected implementation of MNPs, a study in Nigeria dealt with shortages of MNPs which led to intermittent delivery and low coverage in the community (Korenromp, et al., 2015). Additionally, a study in Bolivia revealed that MNP stock-outs were common due to inaccurate forecasting, supplier delays, and limited capacity. These issues led to decreased MNP coverage in the community (Schauer et al., 2017). However, in the current study, supply chain of MNPs was not a problem but instead a facilitator to successful MNP distribution.

Other factors that influenced FLWs ability to implement MNPs included inadequate training of FLWs. A study in Nigeria found that because FLWs were not properly trained, they were less likely to actually implement the MNP program (Korenromp, et al., 2015). Another study in Kenya also found that inadequate training of FLWs led to miscommunication of health benefits and use of MNPs to beneficiaries (Kodish et al., 2011). Training was not mentioned as an issue in the current study since FLWs reported that their training was sufficient.

Strengths and Limitations

A main strength of this study is the use of qualitative research to compliment the quantitative data that was collected. The qualitative component provides a more detailed look and understanding into the main influencers of MNP delivery that quantitative data cannot provide. However, due to the nature of qualitative research, these results are not generalizable to a broader population. Another limitation of the study is that the qualitative interviews yielded thin data and did not contain as much

depth and rich detail as would have been ideal. As a result, important questions may have been left out or there may have been some missed opportunities when probing for more detail or asking follow-up questions. Lastly, there is some indication that participant answers may have been biased. Since interviews were conducted with higher level staff, participants may have been worried about being completely honest out of fear of negative consequences from their superiors.

Program gaps and Recommendations

Some program gaps identified in this study include, lack of adequate payment of FLWs, increased work burden affecting the work-life balance of FLWs, and misconceptions of MNPs by beneficiaries. Based on these findings, one of the main recommendations to improve this program would be to provide appropriate incentives or payment of FLWs in an effort to improve their performance. Since many FLWs said that lack of payment was a main barrier to properly performing their job, more money could improve the quality of their work. A study in India examining predictors of health and service delivery by FLWs found that FLWs paid more money performed significantly better compared to FLWs paid less money (Kosec et al., 2015). Additionally, since beneficiaries had a number of misconceptions about MNPs, it is recommended to create more education materials or a standardized education program utilizing the media or behavior change communication messaging. Studies in numerous countries found that MNP distribution in combination with behavior change communication messaging has been shown to be inexpensive and well accepted by beneficiaries, resulting in high coverage and compliance (Olney et al., 2011).

Furthermore, it would be helpful to provide refresher training courses for FLWs to address any issues that arise while working in the field. Programs using FLWs in Bangladesh and Vietnam found success using refresher trainings to introduce new topics, fill knowledge and skill gaps, and solve problems identified by other staff (Sanghvi et al., 2013). Lastly, since supply of MNPs served as a facilitator to MNP distribution, it is important that future programs do not change their supply chain methods.

Future studies

The recommendations from this analysis can be used to modify existing programs or establish new pilot programs in India. More specifically, it would be interesting to provide FLWs with additional incentives or payment and see if there is any improvement in MNP distribution and work performance. Another study could utilize media or behavior change communication messaging to implement a formal education program for beneficiaries to see how increased education would improve MNP misconceptions or acceptability. Lastly, since this study mainly relied on in-depth interviews and focus groups, it might be interesting to conduct another study that includes direct observation of household visits or HSC meetings to provide further insight into how FLWs implement MNPs.

Conclusion

In conclusion, a thematic analysis of 12 qualitative interviews indicate that the main influencers that affect FLWs ability to deliver MNPs are work environment, community understanding of MNPs, and supply of MNPs. More specifically, the MNP program created more work for FLWs and made it difficult for them to balance their home and work lives, especially because many FLWs reported not receiving payment for their work. As a result, many FLWs felt ignored and underappreciated. Additionally, education of beneficiaries and misconceptions regarding MNPs made it difficult for FLWs to implement MNPs in some households. Lastly, it was found that supply of MNPs was not a major problem but there were some challenges related to distribution of MNPs to households because it increased the burden of work for FLWs. However, FLWs remained motivated to continue their work because they saw the value of MNPs and wanted to make a difference in their communities. While FLW delivery of MNPs in Bihar is a promising delivery platform, it is recommended that future studies properly compensate FLWs for their work, provide more education on MNPs for beneficiaries, and provide refresher trainings for FLWs.

Appendices

Appendix 1. Qualitative in-depth interview guide with ANMs

This session should take about 1-1.5 hours. Any questions before we begin?
इस सत्र को लगभग 1-1.5 घंटे लगेंगे. शुरु करने से पहले कोइ सवाल है?

Let's start by talking about the training you have been receiving at the HSC.
हम आप के एच एस सी बैठक मे दिये गए प्रशिक्षण के बारे मे बात करते है:

1. Can you describe your experience with the HSC trainings over the last few months at your HSC so far?
   क्या आप मुझे आप के उप्पर स्वस्थ्य केंद्रे मे होने वाले पिछ्ले 2-3 बैठक के अनुभव के बारे मे बता सक्ती है?
   - Overall experiences- attendance, agenda, content of topics?
     मूता मूति अनुभव - उपस्थिति, अजेंदा, एव विषय संबंधित जानकारी?
   - Probe on MNP-related meetings (content, distribution of MNP etc.)
     पूछे: एम एम पी संबंधित बैठक (कार्यक्रम, एम एम पी का वितरण आदि
   - Probe on ANM role in meetings
     पूछे: ए एन एम की भागेदारी
     Probe on transition from HSC mentors leading to ANMs leading
     पूछे: एच एस सी मेंटोर से ए एन एम का प्रमुख बन के बैठक लेना

2. What can be done to improve the trainings for the MNP sessions?
   एम एम पी सत्र के लिए प्रशिक्षण मे क्या क्या सुधार किया जा सकता है?
   - Support for the ANM?
     ए एन एम की सहायता के लिए
   - Distribution and storage of MNP?
     एम एम पी के संग्रहण एव वितरण के लिए
   - Attendance issues?
     उपस्थिति मुद्दा

3. Can you describe how the products are being supplied in your HSC?
   आप के एच एस सी मे उत्पादो की आपूर्ति (uplabta) कैसे के जा रही है?
   - Probe on step-by step supply: Patna → Block → AWC → HH Who is distributing and how? (probe on ASHA/AWW roles)

आपूर्ति के बारे मे बिन्दुवार पूछे - पटना → प्रखण्ड → आंगानवाडी केंन्द्र → घर घर -> वितरण कौन एव कैसे कर रहा है? (पूछे - आशा एव आंगनवाडी कार्यकर्ता की भूमिका)

- What have been the biggest challenges in supply and distribution- why do you think this is? How can this be improved?
  आपूर्ति एव वितरण संबंधित सबसे बडी चुनौतिया क्या है?

4. How do you think the ASHAs and AWWs have felt about working with the MNP distribution?
   आप के ख्याल मे, आशा और आंगनवाडी कार्यकर्ता को एम एम पी के वितरण पे काम करने मे कैसे लगा है?
   - Positive feedback? Negative feedback?
     सकारात्मक राय/ नाकारात्म्क राय
   - Impact on work burden?
     कार्य के बूझ पर प्रभाव
   - Probe separately for ASHAs and AWWs.
     पूछे: आशा और आंगानवाडी कार्यकर्ता ke bare me

5. Going forward, how do you think the MNP should continue to be given to the eligible children?
   आगे जाते आप के ख्याल मे, एम एम पी को लाभार्थी बच्चो को किस तरह से देना चाहिए?
   - Probe on if the current method (FLW- driven) is feasible in future? What needs to change?
     इस तरह FLW द्वारा देना सम्भव है भविश्य मे? क्या बदल्ने की जरूरत है ?
   - How should eligible children receive the products on an ongoing basis- through FLW home visits/counseling initially and pick-up later?
     कैसे योग्य बच्चो को लगातार उत्पाद मिलते रेहना चहिए ? – FLW ke dwaara grih bhet pehle (grih bhet ke dwaara paramarrsh aur phir baad me vitran kiya/diya jaaye?
   - Probe on Platform for distribution- Which one and why?
     वितरण मंच के बारे मे पूछे - कौंन सा एव क्यो?
     - Government programs- free distribution?
       सरकारी कार्यक्रम द्वारा निशुलक वितरण
     - Private Programs- through markets/shops/pharmacies?
       प्राईवेट कार्यक्रम - बाज़ार/ दुकान/ फार्मेसी / dawaa ki dukaan
     - How much would communities be willing to pay?

आप के समुदाय वाले जीवन ज्योति के लिए कितना भुगतान करने के लिए तैयार होंगे?

Thanks for sharing that information. Now, let's discuss how the community has been reacting to this product.

इस जानकारी के लिए धन्यवाद. अब हम समुदाय मे जीवन ज्योति के तरफ भावनाओ के बारे मे चर्चा करते है।

COMMUNITY PERCEPTIONS AND UPTAKE – समुदाय के विचार एव समझ/ इस्तमाल

6. How do you think the community has received this product?

आप की सूच मे समुदाय ने इस उत्पाद को कैसे प्राप्त किया है? Sehejta se, sooch vichaar ke baad,

- Utilization/Compliance?
  उपयोग/ अनुपालन
- Acceptability?
  स्वीकार्यता
- Perceived value?
  कथित मूल्य/ iska mehetve kya hai

7. Can you describe any community feedback you have heard regarding this product?

क्या आप समुदाय द्वारा इस उत्पाद के बारे मे कोई राय जो सुनी हो, वो बता सक्ते है?

- Positive feedback?
  सकारात्मक राय
- Negative feedback/ challenges?
  नकारात्मक राय

CONCLUDING QUESTIONS

8. Do you think distribution of MNP should be continued in these communities of Bihar?

आप की राय मे, बिहार मे इस एम एम पी का पितरण लागू रेहना चाहिए?

- Why/why not?
  क्यो/ क्यो नही?
- How can it be improved?
  इस को किस प्रकार से बेहतर बनाया जा सकता है?

9. What role would you like to play with regards to the MNP, as this work continues in the future?

आने वाले कल मे, जैसे येह एम एम पी का काम आगे चल्ता है,आप किस रूप मे इस कार्यक्रम मे भागीदारी लेना चाहेंगे?

- Trainer at HSC meetings?
  एच एस सी बैठक मे प्रशिक्षक
- Supervision of FLW visits and MNP distribution/problem-solving?
  FLWs की देख रेख करना और एम एम पी के वितरण को देखना/ कार्यक्रम मे आने वाली समस्याओ का हल करना
- Probe on how this would impact current role→ perceived burden?
  पूछे - इस का आप की वर्तमान भुमिका पर क्या असर पदेगा → काम के बूझ पर क्या असर पदेगा

Those were all the questions I had for you today. Is there anything else you would like to discuss?
आज के लिए इतना ही पूछ्ना था. आप किसि और विश्य पर चर्चा करना चहेंगे?

Thank you for your time!
आप के कीम्ति समय के लिए धन्यवाद!

Appendix 2. Qualitative focus group discussion guide with FLWs

This session should take about 1-1.5 hours. Any questions before we begin?
इस सत्र को लगभग 1-1.5 घंटे लगेंगे. शुरु करने से पहले कोइ सवाल है?

Let's start by talking about the training you have been receiving at the HSC.
हम आप के एच एस सी बैठक मे दिये गए प्रशिक्षण के बारे मे बात करते है:

1. Can you explain how the HSC meeting platform works in your community?
   आप हमे समझये के आप के समुदाय मे एच एस सी बैठक मंच कैसे चलता है
   - Frequency of meetings/content/who leads/etc.
     कितने अन्तराल पर बैठक होते है - बैठक मे किन किन विश्योन पर बात की थी/ किस ने बैठक लिया था?
   - What are your thoughts on the value of these meetings?
     इन बैठको के मूल्य पर आपका क्या विचार है?

2. How did you find the training that you are receiving at the HSC regarding the MNP?
   एम एम पी के बारे मे जो एच एस सी पे आपको प्रशिश्रण मिला, उस के बारे मे आप का क्या ख्याल है?
   - Likes/ dislikes?
     पसंद/ नापसंद
   - Feedback on Facilitator?
     बैठक लेने वाले पे राय
   - Recommendations for improvements?
     सुधार लने के सुझाव

Thank you for your thoughts on that. Now, let's talk about your experiences working with the MNP distribution.
आप के विचार देने के लिए बहुत धन्यवाद. अब हम एम एम पी के वितरण से जुदे आप के अनुभवो के बारे मे बात करेंगे।

3. Can you all describe to me how families receive MNP? Let's go through this step by step and I would like to remind you, that it is okay if there are differences in how this is done by all of you- all information is important to us and there is no right or wrong answer.
   क्या आप बता सकते है के एम एम पी परिवारो तक कैसे पोहुचता है ? हम एक एक कर के हर कदम के बारे मे बात करते है. मै याद दिलाना चाहुंगा की अगर

आप के तरीकोन मे फरक है, तो वो बिल्कुल थीक है -यहा कोइ सही या गलत उत्तर नही है

- Can you describe to me what happens once the MNP is handed out to you at the AWC?
  क्या आप बता सक्ते है, के एम एम पी आप को जब मिलता है आंगनवाडी पर उसके बाद क्या होता है?
- Storage- AWC, ASHA/AWW house, other?
  आप ने एम एम पी का भंडारण कैसे किया - आंगनवाडी, FLW के घर पे, अन्य
- Distribution to HHs- ASHA or AWW? Both?
  घर घर नक का वितरण - क्या ASHA या AWW करती है? या दोनो?
- How is distribution done to beneficiaries/mothers: Home visits or at the AWC or through any other means?
  आप लाभार्थियो/ मॉ तक वितरण कैसे करते है? ग्रेह भेत के दौरान, आंगनवाडी से या किसि और तरीके से
  - Ask them to walk through a typical visit with families
    आप बता सकते है के आप आपने शेत्र मे किसि एक घर मे ग्रिह भेत कैसे करते है
  - Probe on content delivered at home visits/use of counseling materials?
    पूछे - आप ग्रिह भेट के दौरान किन विषयो पर चर्चा करते है/ किस प्रकार के परामर्श की सामग्री इस्तमाल करते है?
- Frequency of visits?
  भ्रमन का अन्तराल
- Follow-up visits to monitor use?
  उप्योग पर नज़र रखने के लिए निरन्तर भ्रमन
- Issues with MNP supply? What do you do when you have low supply?
  एम एम पी की आपूर्ति समंबंधित कोइ विवाद? जब आप की आपोर्ति कम कम होती है, आप क्या करते है?

4. What have been the biggest challenges for you in terms of **distributing t**he MNP? (added Home visits/ community complaints/ storing and transportation, etc.)

एम एम पी का वितरण करने मे आप को क्या क्या चुनौतियो का सामना करना पदा है? (जैसे की अतिरिक्त ग्रिह भ्रमन/ सनुदाय द्वारा शिकायत/ भंडारण एव परिवहन आदि)

- Probe on work burden and impact on other activities
  पूछे: काम का बूझ बधना और दूसरे काम पर प्रभाव

- What can be done to address these challenges?
  इन चुनौतियो का सामना करने के लिए क्या कर सकते है?

5. What have been the biggest challenges for you in terms of **counseling** on MNP? (added Home visits/ community complaints/ storing and transportation, etc.)

एम एम पी के बारे मे परामर्श देने मे आप को क्या क्या चुनौतियो का सामना करना पदा है? (जैसे की अतिरिक्त ग्रिह भ्रमन/ सनुदाय द्वारा शिकायत/ भंडारण एव परिवहन आदि)

- Probe on work burden and impact on other activities
  पूछे: काम का बूझ बधना और दूसरे काम पर प्रभाव
- What can be done to address these challenges?
  इन चुनौतियो का सामना करने के लिए क्या कर सकते है?

6. What, if any significant changes have occurred since you began providing this product to families in your community?

आपने अपने समुदाय मे किस तरह का परिवर्तन देखा है, जब से इस उत्पाद को आप परिवारो मे बातने लगे है?

- Child and family health related?
  बच्चे और पारिवारिक स्वस्थ्य समंबंधित
- Relationship between families /community and AWW ie. on AWW personally and your role in the community?
  परिवारो और समुदाय का AWW से रिश्तो मे प्रभाव (AWW के साथ झाति तौर पर और समुदाय मे उनकी भुमिका
- On AWW quality of work including ability to counsel families on complementary feeding?
  AWW की ऊपरी आहर पर परामर्श देने की गुणवत्ता
  i. Probe has MNP made it easier/harder to counsel at HH level?
     पूछे - क्या एम एम पी ने ग्रिह भेत के दौरान परामर्श देने आसान बनाया है या कठिन बनाया है?
- On AWW work burden including managing other tasks that need to be done during home visits? Frequency of visits to households; time away from AWC?

  AWW के काम पर बूझ – दूसरे ग्रिह भेत के दौरान आने वाले काम को सम्भाल्ना? ग्रिह भेत की आवृत्ति; AWC से बाहर गुज़रा समय
- Relationship with other FLW – ASHA, ANM, lady supervisor?

दूसरे FLWs (ASHA, ANM, LSs) के साथ रिश्ता

Finally, we wanted to talk about how you think the community has felt about the MNPs.
आखिर मे हम आप से समुदाय की एम एम पी के बारे मे सूच कि चर्चा करना चाहेंगे.

7. In your opinion, how do the community members feel about this product?
   आप की राय मे समुदाय की इस उत्पाद के बारे मे क्या राय है?

- Likes/dislikes
  पसंद/ नापसंद
- Acceptability?
  स्वीकर्यता
- Compliance?
  अनुपालन
- Use?
  उप्योग

8. Through your experience, what are the most commonly reported challenges or problems by mothers/caregivers when it comes to using this product?
   आप के आपने अनुभव के आधर पे, मॉ/ देख भाल करने वाले ईस उत्पाद से सम्बंधि सबसे ज्यादा क्या क्या चुनौतियो का सामना करते है?
   Probe on any complaints about child's health- side effects, etc.
   पूछे - क्या कोइ बच्चे के स्वास्थ्य संबंधित शिकायत है - जैसे की कोइ दुष्प्रभाव

- What feedback do you give when you hear about these challenges?
  आप क्या सलाह देति है जब आप ऐसी चुनौतियो के बारे मे सुंती है?

9. Can you describe any positive feedback or experiences with the MNP that you have heard from the mothers/caregivers?
   क्या आप ने किसि मॉ या देख भाल करने वालो से एम एम पी के बारे मे कोइ सकारात्मक राय या अनुभव सुने है - आप उनके बारे मे हमे कुछ बता पायेंगे

   - Probe on what they think the community is liking about the products. Why?
     पूछे - समुदाय को इस उत्पाद के बारे मे क्या पसंद है? क्यो?

10. Do you think there is a need to continue this product in your community? Why or why not?

आप की राय मे इस उत्पाद का वरनण समुदाय मे लागू रखना चाहिए? क्यो या क्यो नही?

11. Going forward, how do you think the MNP should be provided to communities?
आगे जाते आप के ख्याल मे, एम एम पी को समुदाय मे किस तरह से देना चाहिए?

i. Probe on if the current method is feasible in future?
पूछे - आभी आपनाया गया तरीका भविष्य मे आपना सकते है ?

- What needs to change?
क्या बदलने की ज़रूरत है?
- Sustainability of FLW driven approach?
FLW से चलाये गये कार्यक्रम की धारणीयता
- How should eligible children receive the products on an ongoing basis- through FLW home visits/counseling initially and pick-up later?
योग्य बच्चो को इस उत्पाद की प्राप्ति कैसे करनी चहिए? - FLW के ग्रिह भ्रमन के दौरान / पेहले परामर्श मिलना और बाद मे उत्पाद को उठाना

ii. Platform for distribution- Which one and why?
वितरण का मंच - कौन सा और क्यो
- Government programs- free distribution?
सरकार द्वारा मुफ्त पितरण
- Private Programs- through markets/shops/pharmacies?

प्राइवेट कार्यक्रम द्वारा - दुकान / बाज़ार एव केमिस्त की दुकान मे
- How much would communities be willing to pay?
समुदाय के लोग कितना भुगतान करने के लिए राज़ी होंगे ?

12. Is there anything else you want to discuss that hasn't been covered today regarding these products?
आप इस उत्पाद के बारे मे और कोइ बात करना चाहेंगे जोह आज हम ने नही कि है?

Thank you for your valuable time and feedback!
आप के कीमती समय और राय के लिए बहुत धन्यवाद!

Appendix 3. Analysis plan

Analysis Plan

Research Question: What influences frontline workers' (FLW) ability to implement home fortification of complimentary foods with multiple micronutrient powders (MNPs) for children in Bihar, India

Topic 1: Work environment

Description on codes to answer: How does the work environment of FLWs affect their ability to implement MNPs?

Codes to describe:

- FLW relationship with other staff
- Work burden
- Motivation
- Payment of FLW
- Distance

Variables and subgroups to compare by:

- Type of FLW

Topic 2: Community understanding of MNPs

Description on codes to answer: How does community understanding of MNPs in Bihar affect FLWs ability to implement MNPs?

Codes to describe

- Acceptability of MNPs
- Education
- Geography

Variables and subgroups to compare by:

- Type of FLW

Topic 3: Supply of MNPs

Description on codes to answer: How does the supply of MNPs affect FLWs ability to implement MNPs

Codes to describe

- Supply chain on MNPs

- Distribution of MNPs

Variables and subgroups to compare by:

- Type of FLW

Appendix 4. Thematic quote matrix

Topic	Codes to Describe	Supporting Quotes
Work Environment		
	FLW relationship with other staff	• ANM: "If someone does not come, we will fight…but it does not mean that we stop talking to each other. We still work together." • ANM: "Sometimes ASHA does more work than AWW." • ASHA: "My relationship with AWW and ASHA is good."
	Work burden	• AWW: We are under so much pressure. We have lot of responsibilities. We have to take care of our children, home, etc." • AWW: day by day we are seeing that work load is increasing but when work comes, we try to accommodate that also in our daily routine and try to finish that." • ASHA: If we get money on time, we will do work. Are they blind? They are unable to see that this much work they have given to ASHA but no money." • ASHA: "If we sit at home where will the money will come from? We are not crazy for money but when we do work for the government, we earn some money and I think that some solutions will be there for these problems. No one listens to us, is the government blind? They do not recognize our work." • ANM: "My work has not increased."
	Motivation	• AWW: If money is increased, we will do our work more properly." • ASHA: "Sir, if we get money on time than we will work with interest." • ASHA: Yes, work load has increased, but it is good for society. We do not

		get payment, but we need to keep the work ongoing. We cannot stop this." • ASHA: "We simply keep doing our work, whether we receive the payment, or receive less payment. We keep doing our work." • ASHA: "we will go to the beneficiary's house in a timely manner even if we are not getting a single penny. We are mainly concerned that the children in our village are safe. We will continue to do this work".
	Payment of FLW	• AWW: "If money is increased, we will do our work more properly." • ANM: "No…whatever I am getting is sufficient for me. In my place they should give it to ASHA and AWW." • ASHA: "Sir, if we get money on time than we will work with interest." • ASHA: "No one recognizes our work, no one appreciate us. We do not have any craziness for money." • ANM: "If AWW gets a salary, they will do their work better".
	Distance	• "Yes, distance affects us. If we are unable to go during the day then we have to go in the evening. If the distance is too far then we are unable to go. In some cases, we call them to our center only." • "We do not find difficulties in commuting." • "Our villages are far sometimes, and we find difficulty in commuting."
Community Understanding of MNPs		
	Acceptability of MNPs	• Beneficiaries: "In the beginning when we gave the powder, the beneficiaries were afraid to feed the powder but after telling several times they started feeding".

		• Beneficiaries: "Some of them say the child has become active. One child was also there who was malnourished but now the child is very good." • Beneficiaries: "Many beneficiaries find the powder good." • Beneficiaries: "They say that child passes black stool, so we need to explain that is okay." • Beneficiaries: "People also said that simply feeding powder does not fill the stomach of child." • FLWs: "Benefit from MNP is seen that child become strong and healthy." • FLWs: MNPs are good because wherever there is malnutrition they help."
	Education	• "The ladies who are educated follow the instructions but those who are illiterate have difficulty understanding." • "Many of them are not educated so they think that by feeding, the tummy will come out. So, we make them understand that if you feed the tummy will not come out. In fact, the child will be healthy and active." • "Little educated people understand quickly. If they are less educated more efforts we put to make them understand."
	Geography	• "The urban population understand quickly but in the case of the rural population they do not understand quickly." • "In the rural areas the people are not educated and in the urban areas educated people are there. There is so much difference." • "Service between urban and rural beneficiaries is almost all equal."

Supply of MNPs		
	Supply chain of MNPs	• "Once it happened that we didn't have enough, but we received new stock immediately." • "We have never faced a problem with powder stock."
	Distribution of MNPs	• "Once we receive the powder, we keep it at the center. Then we refer to the register and check for children of 6 months to 18 months and distribute powder at their home." • "Sometimes it is hard to carry all the powder at once so we use a carry bag called Jhola, which makes it easier". • "We distribute by going to each home. We visit that house, give powder, and train them how to feed the powder to child, how much to feed, when to feed etc. We tell them to wash hands, mix powder with food, and feed." • "The rural population sometimes don't understand so we go repeatedly to make them understand. We tell them that if the child will eat the child will have strength in their body."

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