



American University of Armenia

Հայաստանի ամերիկյան համալսարան

**Center for Health Services Research and Development**

**ASSESSMENT OF POPULATION KNOWLEDGE,  
PERCEPTIONS AND ATTITUDES IN RELATION TO  
MICRONUTRIENT DEFICIENCIES AND FORTIFIED FOODS  
AND DEVELOPMENT OF AN AUDIENCE-CENTERED  
COMMUNICATION STRATEGY**

Prepared for

United Nations Children Fund in Armenia



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## TABLE OF CONTENT

<b>ACKNOWLEDGEMENT .....</b>	<b>1</b>
<b>EXECUTIVE SUMMARY .....</b>	<b>2</b>
<b>INTRODUCTION .....</b>	<b>4</b>
<i>Objectives of the Study .....</i>	<i>6</i>
<b>METHODS.....</b>	<b>6</b>
<i>Study Design.....</i>	<i>6</i>
<i>Study Participants and Sample Size .....</i>	<i>6</i>
<i>Research Instruments .....</i>	<i>6</i>
<i>Data Collection and Analysis.....</i>	<i>7</i>
<i>Categorization of Study Participants .....</i>	<i>7</i>
<i>Ethical Considerations.....</i>	<i>8</i>
<i>Strengths and Weaknesses of the Method.....</i>	<i>8</i>
<b>RESULTS AND DISCUSSION .....</b>	<b>9</b>
1. Knowledge about food fortification .....	9
2. Attitude towards food fortification and consumption of fortified food .....	10
3. Informing the population about flour fortification .....	13
4. Means of dissemination of information on flour fortification .....	13
5. Who should disseminate flour fortification information .....	16
6. Informing primary health care providers.....	17
7. Messages for dissemination of information on flour fortification .....	17
8. Proposed messages by participants for flour fortification .....	18
9. Identification of flour fortification status on food products .....	19
<b>RECOMMENDATIONS .....</b>	<b>20</b>
<b>REFERENCIES.....</b>	<b>22</b>
<b>APPENDIX 1 – QUALITATIVE STUDY INSTRUMENTS.....</b>	<b>23</b>

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## **EXECUTIVE SUMMARY**

Food contains important vitamins and minerals for human nutrition; deficiencies of these micronutrients can cause a range of health and developmental problems. Fortifying (supplementing with micronutrients) foods prevent many of the health problems related to micronutrient deficiencies. In response to these health challenges, in 2009 the Government of Armenia established a steering committee to coordinate all activities regarding a national flour fortification initiative.

Based on qualitative research findings from focus group discussions, this report analyzed the current knowledge, perceptions and attitudes among the general population, health providers and millers about micronutrient deficiencies and provided directions for the best communication channels and messages for social marketing campaigns for flour fortification. Overall, 58 persons in nine focus group discussions from Yerevan, Gegharkunik and Lori marzes participated in the study.

The study found a lack of knowledge concerning food fortification among the general population (especially in the marzes) and healthcare providers. Though the great majority of participants thought that food fortification generally had no value or was even potentially harmful, all study participants believed that iodizing salt protected the health of the population and indicated that they regularly buy iodized salt from the market.

The majority of both participants from the general population and the primary health care providers expressed distrust concerning flour fortification, with concerns that it might increase the likelihood of becoming obese, increasing the prices, having other adverse health affects and changing the taste of products using the fortified flour.

Almost all of the participants indicated that the population would be most effectively informed about the upcoming fortification of flour through TV and using healthcare specialists as spokespersons. All participants felt that the targeted social marketing messages should be the same for physicians, millers and the general population. The message *“Let’s maintain our health with our daily bread”* (*Pahpanenk mer aroghdjutyuny mer hanapazorya hatsov*) was

developed by participants and proposed as the best message among many for the social marketing campaign for flour fortification.

All participants suggested having both fortified and non-fortified flour products in the market to provide a choice, with fortified bread labeled with a list of supplements, a special logo and different package colors.

## INTRODUCTION

Since early 20<sup>th</sup> century, scientists have known that food contains important vitamins and minerals and that deficiencies in these micronutrients can cause a range of health and developmental problems<sup>1</sup>. Although only very small levels are required, micronutrients support a range of critical biological functions that includes skeletal, brain, and nervous system development, as well as growth, immune, and eye functions<sup>2</sup>. Five key micronutrients (vitamin A, iodine, iron, zinc, and folate) are ranked as the most important because of their necessity for human health and because of the number of people deficient in them<sup>3</sup>.

One of the public health interventions that is focused on preventing micronutrient deficiency is food fortification. Fortification of food with micronutrients has had a great impact on the health of millions of children and adults in the world<sup>1</sup> (Table 1).

**Table 1.** Micronutrients: at the core of survival, development and health<sup>1\*</sup>

<b>Micronutrient Impact Through Programs</b>	
<b>Vitamin A</b>	23% reduction in under-five mortality rates 70% reduction in childhood blindness
<b>Iodine</b>	13-point increase in IQ
<b>Iron</b>	20% reduction in maternal mortality
<b>Zinc</b>	6% reduction in child mortality 27% reduction of diarrhea incidence in children
<b>Folate</b>	50% reduction in severe neural tube birth defects, such as spina bifida

Armenia experienced an economic crisis in the 1990s, and it has experienced health problems related to vitamin and mineral deficiencies just as many other countries in the world have. According to the 2005 Armenia Demographic and Health Survey (DHS), 13% of children under-five years of age show signs of chronic, long-term undernutrition or stunting). The DHS also reported 37% of children under-five years of age and 25% of women suffer from some degree of anemia (mild, moderate, or severe). Anemia is a deficiency in hemoglobin (an iron containing pigment), and it can cause weakness, increased maternal and child mortality, low birth-weight, and premature births<sup>4</sup>.

\* Maternal antenatal and postnatal supplementation with iron-folic acid combination led to 31% reduction in childhood mortality (through age seven). Source: Christian P, Stewart C, LeClerq S, Wu L, Katz J, West K, Khattry S. Antenatal and Postnatal Iron Supplementation and Childhood Mortality in Rural Nepal: A Prospective Follow-up in a Randomized Controlled Community Trial. *American Journal of Epidemiology* 2009 170(9):1127-1136.

Inadequate vitamin and mineral status can lead to a variety of health problems throughout the life cycle. For infants, micronutrient deficiencies can result in lower birth weights, higher mortality rate, impaired mental development, and an increased risk of chronic disease. For children, micronutrient deficiency can bring about stunting, reduced mental capacity, frequent infections, inadequate growth catch up, reduced productivity, and higher mortality rate. For adolescents, micronutrient deficiencies can lead to stunting, reduced mental capacity, fatigue, and increased vulnerability to infection. For pregnant women, these deficiencies can cause increased mortality, increased perinatal complications, and reduced productivity. For adults, deficiencies can result in reduced productivity, reduced socioeconomic status, and malnourishment. Finally, for the elderly, micronutrient deficiencies can bring about increased morbidity, osteoporosis, and mental impairment<sup>5, 6</sup>.

Food supplementation/fortification can help to prevent many of the health problems related to micronutrient deficiencies<sup>7</sup>. In most countries, food fortification is done through flour fortification because flour products are widely consumed. Flour fortification – with iron, folic acid and, in some cases, other micronutrients – has taken place in at least 63 countries. Currently, 57 countries have legislation requiring fortification of at least one type of flour with at least iron and/or folic acid<sup>8</sup>.

On 15 June 2009, by Decision No 485-A of the Government of Armenia, a Steering Committee – under the authority of the Prime Minister – was established to coordinate all activities regarding the flour fortification initiative in the country<sup>9</sup>. For implementing wheat flour fortification with micronutrients in Armenia, it is necessary to utilize the best international experience on flour fortification by setting and monitoring national standards and by instituting quality assurance/control systems. Provision of strong communication and public awareness campaigns to create a market demand for products are essential parts of government investment for national-scale flour fortification initiative in Armenia<sup>1, 7</sup>.

### ***Objectives of the Study***

The objectives of this study are to: 1) assess knowledge, perceptions and attitudes among the general population, health providers, and millers in relation to micronutrient deficiencies and fortified foods; 2) identify effective communication channels for delivering messages to general population; and 3) develop elements of a social marketing campaign that clearly segment target audiences and identify key messages based on audience, behavior and communication channels.

## **METHODS**

### ***Study Design***

The research team of the Center for Health Services Research and Development, American University of Armenia (CHSR/AUA), developed a qualitative study design to meet the study objectives using focus group discussions (FGDs).

### ***Study Participants and Sample Size***

The CHSR/AUA identified key-informants to provide important information for this assessment based on their expertise and living area (urban/rural, Yerevan/marzes). Three groups of participants were targeted for recruitment: the general population, health care providers (pediatricians, district therapists and family doctors), and millers.

For this comprehensive coverage, 58 people in nine focus group discussions (FGD) from Yerevan, Gegharkunik and Lori marzes participated in the study in September 2009.

### ***Research Instruments***

The CHSR/AUA research team developed three focus group discussion guides for each target group based on standardized qualitative research methods<sup>10</sup>. FGD guides were progressively adapted through pre-testing of flour fortification messages based on the cumulative information gathered from the previous focus group discussions. A demographic form was developed for completion by participants.

All guides were first developed in English and then translated by the research team into Armenian. Examples of focus group discussion guides are attached as Appendix 1.

### ***Data Collection and Analysis***

The field work took place from September 21 to 29 of 2009, which included five FGDs in Yerevan, two FGDs in Gegharkunik marz, and two FGDs in Lori marz. Five FGDs (two in Yerevan, one in Sevan, one in Ddmashen, and one in Vanadzor) were organized for the general population, three FGDs (two in Yerevan and one in Vanadzor) for health care providers, and one FGD for millers in Yerevan. The mean duration of FGDs was 42 minutes. The professional CHSR/AUA qualitative research team conducted all the FGDs. Each focus group had a professionally trained moderator and a note-taker. All focus groups were conducted in Armenian and transcribed into English.

After data collection, the CHSR/AUA team analyzed the focus group transcripts according to a pre-developed coding system<sup>11</sup>. The coding system included the following domains:

1) Knowledge about food fortification; 2) Attitude towards food fortification and consumption of fortified food; 3) Informing the population about flour fortification; 4) Means of dissemination of information on flour fortification; 5) Who should disseminate flour fortification information; 6) Informing primary health care providers; 7) Messages for dissemination of information on flour fortification; 8) Proposed messages by participants for flour fortification; and 9) Identification of flour fortification status on food products.

### ***Categorization of Study Participants***

The analysis section of this study was based on the results from the focus group discussions. The direct quotes (translated as needed) provided in the boxes in this section were abstracted from focus group discussions. Study participants were categorized into 3 groups: 1) General population, 2) Primary health care provider, and 3) Miller.

*General population* included people from the general population from Yerevan, urban and rural areas of Lori and Gegharkunik marzes. *Primary health care provider* was defined as

paediatricians, district therapists, and family doctors from polyclinics in Yerevan and Vanadzor. *Miller* was defined as specialists from some of the leading mills in Armenia.

The individual informant identifier (e.g., General population 1.1.) provided in the box is for the purpose of identifying a participant who provided more than one quote within a single box. A single informant who provided quotes in more than one box would have different identifiers for each box.

### ***Ethical Considerations***

The Institutional Review Board of the American University of Armenia approved the study for compliance with locally and internationally accepted ethical standards. All participants were informed about their rights (i.e., that their participation was voluntary, that they could stop at any time and could refuse to answer any question they chose, and that their anonymity and confidentiality were fully respected). After being informed of their rights, all those who chose to participate provided verbal informed consent. Audio-recording was possible only with permission of all participants. Transcripts and the report did not contain names, professional positions, names of employers of the respondents, or any other details that could identify the participants<sup>12</sup>.

### ***Strengths and Weaknesses of the Method***

**Strengths.** This study applied a standardized, comprehensive, and rigorous research methodology to meet the study objectives. The study instruments were specifically developed based on participant roles and responsibilities, and they were progressively improved based on the cumulative information gathered from previous focus groups. The coverage of the study included three different stakeholder groups (i.e., the general population, health care providers, and millers) from different areas; this gave comprehensiveness to the study findings for both Yerevan and the marzes.

The following findings primarily include those results where there was convergence of consistent and common agreement across participants: this approach provided valid and useful information

to understand the situation related to flour fortification in Armenia and to help plan for further cooperative efforts<sup>11</sup>. In a few instances, focus group discussions were included in the analysis if they illuminated other relevant themes, even if there was not convergence in agreement.

**Weaknesses.** The limitation of the study was the low participation rate of millers and males.

## **RESULTS AND DISCUSSION**

About 91% of the focus group participants were females and 9% males. The mean age of focus group participants from the general population was 40 ranging from 27-53. The mean age of the health care providers' focus groups was 47 (ranging from 42-50) with the mean professional years-of-experience of 20 years. The mean age of millers' professional focus group was 45 with the mean professional years-of-experience of 18.5 years.

The distribution of participants among the identified target groups (general population, health care providers, and millers) was the following: 35 representatives of the general population took part in five focus group discussions, 21 health care providers (12 paediatricians, 6 district therapists, and 3 family doctors) took part in three FGDs, and two millers in one FGD.

### **1. Knowledge about food fortification**

#### **In general**

*Maybe it [fortification] is when chlorine is added to water to destroy microbes.*

General population 1.1.

*I don't know what food fortification is [group agrees].*

General population 1.2.

*I have no information about this topic [food fortification].*

Primary health care provider 1.1.

*Even if a person does not get any iron from food, there will be no deficiency for 20 years because we have enough iron stored in our liver.*

Primary health care provider 1.2.

*As a pediatrician, I know that infant formulas are fortified with vitamins and microelements.*

Primary health care provider 1.3.

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**Salt iodization**

*As Armenia is far from the sea, our country has not enough iodine; as a result, we are considered an endemic zone [for goiter]. Thus, food fortification with iodine is necessary as a preventive measure.*

Primary health care provider 1.4.

*The salt is iodized for goiter prevention. It is very important because goiter is a common condition in Armenia.*

General population 1.2.

*Armenia has iodine deficiency. But iodine, which is added to salt, is not effective because it is destroyed by sunlight.*

Primary health care provider 1.5.

*I have heard that iodine does not remain in salt for a long time. It just evaporates.*

Primary health care provider 1.6.

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**Flour fortification**

*Vitamins and micronutrients decay during the process of baking bread. Why fortify it?*

Primary health care provider 1.5.

The majority of participants, especially in the marzes, had no concept of food fortification. Even the majority of primary health care providers both in Yerevan and the marzes had limited knowledge about this topic. Millers were more knowledgeable about food fortification, particularly about fortification of flour. However, after being asked about salt iodization, almost all participants indicated that it was necessary to prevent goiter because goiter was endemic in Armenia. Some primary health care providers believed that salt iodization was not effective because iodine dissipated with time or was destroyed by sunlight.

Almost all study participants, except millers, lacked information regarding flour fortification. Few primary health care providers in Yerevan indicated that flour fortification was not effective since vitamins and micronutrients were destroyed when heated during baking.

## **2. Attitude towards food fortification and consumption of fortified food**

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**In general**

*Food fortification is a positive thing. Research has shown that food fortification is important.*  
Miller 2.1.

*... I don't think that there is a need to fortify other foods [except salt] in Armenia. There is no study in Armenia suggesting a need for further food fortification.*  
Primary health care provider 2.1.

*I think that it would be better to produce ecologically pure food rather than artificially add something.*  
Primary health care provider 2.2.

*We have much more important health problems than food fortification. For example, the imported food is very dangerous; it contains heavy metals.*  
Primary health care provider 2.3.

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### **Salt iodization**

*I have a positive attitude towards salt iodization. Armenia is an endemic area for goiter.*  
Primary health care provider 2.4.

*For pickling I prefer using un-iodized salt and for preparing food I use iodized salt.*  
Primary health care provider 2.5.

*We go and buy what is available [in this case iodized salt].*  
General population 2.1.

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### **Flour fortification**

*I think it is harmful for health to eat fortified bread every day. Iron can cumulate in the body and damage it.*  
Primary health care provider 2.4.

*Overdosing with iron is a serious problem. If you eat food which [naturally] contains iron you cannot overdose from it but if the food is fortified with iron you might be able to. ... Research must be conducted to explore how iron is utilized and how effective it is.*  
Primary health care provider 2.2.

*We will fortify the flour if a law is approved [requiring flour fortification]. ... It [flour fortification] will not work without such a law. This law should include all the mills of Armenia.*  
Miller 2.1.

*We are going to include additional costs due to flour fortification in the price of flour, thus the population will suffer.*  
Miller 2.2.

*What about prices? Fortification is a process that requires money.*

General population 2.2.

*We will need internal specialists in our laboratories who control the process. An external specialist should control us. We can also send someone to be trained. ... We should have a [external] regulatory body and technical support. The equipment should also be provided by them.*

Miller 2.2.

*I think that in Armenia it cannot be sustainable. It may work only for a limited time. ... The government should regulate the process so that the flour fortification process is sustainable.*

Miller 2.1.

*Some people may think that fortified bread can cause obesity.*

General population 2.3.

*I think there should be different types of bread in the markets. So that people have the choice to buy what they want.*

Primary health care provider 2.6.

Only a few people thought that food fortification in general was positive. Among those that believed that food fortification was positive, the millers were the best informed on the topic. Some primary health care specialists indicated that there was a lack of studies in Armenia showing the need for food fortification and that more urgent public health problems needed to be addressed.

All study participants were positive about salt iodization and indicated that they regularly buy iodized salt from the market; some people recognized the importance of using iodized salt and others bought iodized salt because it was most available in the market. Several participants indicated that for some processes as pickling, the use of iodized salt was not appropriate.

The majority of participants from the general population and the primary health care providers expressed distrust concerning flour fortification. Some participants were concerned that flour fortification might cause taste changes and obesity. One of the pressing concerns of all study participants was the potential price increase of bread due to the fortification of flour. The majority of primary health care providers was concerned about accumulation and overdosing of iron in the body as a result of flour fortification and indicated that there was insufficient research on the health benefits and adverse affects of fortification.

The millers were most supportive for flour fortification compared to other participants. However, they indicated that flour fortification should be implemented on the national level by the Government of Armenia and supported by law. They also indicated the need of providing necessary equipment, capacity building, and external continuous technical support. A major concern of the millers was the sustainability of the flour fortification program after UNICEF ends its mission.

Almost all the participants suggested having non-fortified flour in the market to provide a choice.

### **3. Informing the population about flour fortification**

<i>Of course, people must be informed about upcoming changes. If people are informed, the implementation [of flour fortification] will work better. It should not be mandated.</i>	Primary health care provider 3.1.
<i>People should be informed [about upcoming implementation of flour fortification].</i>	Miller 3.1.
<i>...if they have decided to do something they will do it; there is no need to ask us.</i>	General population 3.1.
<i>If the specialists think that this is a good thing, they should do it. Why are you asking us? If you are asking us, it means this is a bad thing. If they ask people, it means it has some negative effects. If I know that this is a good thing I would do it without asking anybody. Afterwards they may add it and tell that we agreed to add it. In Soviet times they were adding iodine in the salt and they didn't ask the rural population for anything. There are things that should not be asked.</i>	General population 3.2.

During all focus group discussions almost all study participants (general population, health care providers, and millers) from Yerevan and marzes indicated that the population should be informed about upcoming flour fortification. Only a few participants felt that the Government should make changes (if appropriate) without prior informing the population.

### **4. Means of dissemination of information on flour fortification**

<i>I like to watch TV, especially "News" program. I also like to watch "Kitchen", which is a</i>
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*program about food, what to prepare and how to have more tasty and nutritional diet. People can be informed about food fortification through this kind of programs. For example, I can not afford to buy newspapers daily, but I watch TV everyday.*

General population 4.1.

*Newspapers are not reliable; their correspondents report whatever they want ...*

Miller 4.1.

*TV is the most popular communication channel for providing information to the population, because everybody has a TV and watches it.*

General population 4.2.

*I think this information should be delivered through TV as it has the most impact.*

General population 4.3.

*Information should be disseminated through independent TV channels.*

Miller 4.1.

*The most effective mean of dissemination of such information could be through a TV advertisement. Another possible option might be the schools.*

Primary health care provider 4.1.

*Radio and TV can be used. Also they can write about it on the product. It should be presented as an advertisement and a program with a specialist explaining the reasons and benefits of fortification. This program should be repeated a couple of times on various channels.*

General population 4.4.

*I think the information about food fortification can be most effectively presented by mean of short videos.*

General population 4.5.

*It should be done through advertisements and the advertisements should be designed to grab the attention of the general population. For instance, cartoons could be used for that purpose ... Or a special program could be prepared on the topic of food fortification. Different specialists could be invited including a physician. Everything could be clarified through questions and answers.*

General population 4.6.

*Information could be provided through advertisements that compare fortified and non-fortified foods and what impact has each one of it on the body ... one of the famous and respected actors could be used in the ads.*

General population 4.7.

*From the very beginning of the process, state and health authorities should explain to people the purpose of the [flour] fortification. Only after this introduction, short videos should be broadcasted by TV ... the internet will be also a very good source of information.*

	General population 4.8.
<i>Brochures and booklets might be used as a mean of communication for effective dissemination of information, like in the case of iodized salt ... However, the most effective means would be radio and TV.</i>	
	Primary health care provider 4.2.
<i>Physicians could do this advertisement... It could be presented on TV.</i>	
	General population 4.9.
<i>I think advertisements and health programs on TV and radio may be effective for this purpose.</i>	
	Primary health care provider 4.3.
<i>This information might be presented as an interesting ...advertisement on TV. For example, it might say that iron deficiency may result in anemia - there is a solution for that - flour fortified by iron...</i>	
	Primary health care provider 4.4.
<i>Large posters with corresponding information should be displayed in shops.</i>	
	General population 4.10.
<i>Posters and booklets in polyclinics is another option. We [primary health care providers] can disseminate these booklets to our patients and then they will learn from each other. We also have "Motherhood Schools" for pregnant women where we can disseminate the information and booklets during classes.</i>	
	Primary health care provider 4.5.
<i>Sometime we receive information on the mobile phone - mobile messages [SMS]. The message on fortification could be disseminated this way as well.</i>	
	General population 4.11.

All participants indicated that TV was the most effective means of disseminating flour fortification information to the public. Other CHSR studies also suggested TV as the most effective communication channel for the general population<sup>13</sup>. Among other means of communication participants suggested to include radio, banners, posters in public places, brochures and booklets in polyclinics, and consultations with health care providers. It was also suggested that information could be disseminated from teachers to students in schools, to pregnant women in Motherhood Schools and to employees in their workplaces. Use of the internet and mobile phones were also mentioned as possible means of disseminating information. Some study participants thought that newspapers were not reliable sources and not affordable for some people.

The majority of study participants suggested short, repeated TV advertisements, talk shows and programs informing the population about the micronutrients to be supplemented in the flour. There was one suggestion to share this information with people who have hearing-impairment.

## 5. Who should disseminate flour fortification information

*If physicians are used in this advertisement, the general population will trust the information more.*

General population 5.1.

*Health care workers should advise people to use fortified bread during patients counseling. It would be very effective.*

General population 5.2.

*It should be a famous doctor that everybody recognizes [that would disseminate the information].*

Primary health care provider 5.1.

*Only healthcare specialists [should disseminate flour fortification information]. Even agricultural specialists cannot discuss this issue.*

Miller 5.1.

*I think the most reliable source of information about food fortification is public health specialists. People will trust the specialist more.*

General population 5.3.

*Only professionals such as dieticians, food hygiene specialists and medical doctors should present food fortification issues to the population.*

Primary health care provider 5.2.

*It is better for information to be provided by [nutrition and food] specialists. Sometimes using a celebrity [to disseminate the information] is also good, but a specialist in the field of nutrition and food is better.*

General population 5.4.

*Besides health professionals, teachers may be involved in disseminating the information among the general population. They can share this information with students and their parents.*

Primary health care provider 5.3.

The great majority of participants indicated that health care providers and nutritionists were most trusted for dissemination of flour fortification information. Other suggested possibilities for dissemination of this information included public health specialists, teachers, and celebrities.

## 6. Informing primary health care providers

*They [flour fortification program implementers] must come and introduce to us [primary health care providers] what research was conducted [on this topic], that it is not harmful, how effective is it to reduce anemia. We [primary health care providers] had a special two day seminar on iodized salt ... We are giving the booklets [on iodized salt] to the general population.*

Primary health care provider 6.1.

*The doctors must be informed about positive and negative effects of flour fortification ... doctors by themselves must be sure that this iron is beneficial, and will not harm the health of people.*

Primary health care provider 6.2.

*A possible means of effective dissemination of the information might be TV programs, talk-shows, booklets, lectures for doctors and for people in their work place and schools.*

Primary health care provider 6.3.

Some primary health care physicians suggested that the authorities should provide educational sessions and materials on the topic, explaining the health importance and safety of flour fortification for the population of Armenia.

## 7. Messages for dissemination of information on flour fortification

*The message should be very simple, short and understandable.*

General population 7.1.

*I do not think that there is a need to develop different messages for doctors and the general public.*

Primary health care provider 7.1.

*The message should be the same [for everyone].*

Primary health care provider 7.2.

*The message should be the same for specialists [millers] and the population.*

Miller 7.1.

*I think there is no need to separate these two messages [for the general population and for physicians]. For example, the message regarding iodized salt was universal for everyone: "If*

*salt, only iodized”.*

Primary health care provider 7.3.

*I think there must be one comprehensive understandable message for everyone.*

Primary health care provider 7.4.

Health care providers and millers universally suggested that messages should be the same for the whole population without different messages for different sectors such as physicians and millers. The example of iodized salt was brought forward. They also suggested that the message be short, simple, comprehensive and understandable for everyone.

## **8. Proposed messages by participants for flour fortification**

***“Bread fortified with micronutrients” (Mikroelementnerov harust hats),***

***“Avoid anemia by our daily bread” (Khusapenk anemiayic mer hanapazorya hatsov),***

***“Armenia without anemia” (Hayastann arants anemiayi).***

Some study participants suggested avoiding the use of medical terms such as *micronutrients* and *anemia* to make the message more understandable for the general population.

***“Healthy bread” (Ogtakar hats) (Aroghdjarar hats)***

The majority of the study participants felt that if the message is related to bread then it is necessary to be careful not to change the existing perception toward bread, to avoid the perception that unfortified bread is unhealthy.

***“Full value bread - full value health” (Liarjek hats – liarjel aroghdjutyun)***

Though many participants liked this message, some felt that the message should be careful not to suggest that unfortified bread was bad to avoid negative reactions.

***“Healthy bread - healthy child” (Aroghdj hats – aroghdj erekha)***

The only contrasting comment was that fortification was not only for children.

***“Vitaminized bread” (Vitaminatsvats hats),***

***“Nutritional bread” (Snndarar hats)***

Some study participants recommended staying away from using the word “vitamin” and “nourishment” because different people will interpret it differently and many people, especially women, consider consumption of vitamins as contributing to weight gains.

***“Let’s maintain our health with our daily bread” (Pahpanenk mer aroghdjutyuny mer hanapazorya hatsov)***

All the study participants approved of this message and most considered this message the best overall.

**9. Identification of flour fortification status on food products**

<i>It should be written on the bread label that it is made from fortified flour.</i>	Primary health care provider 9.1.
<i>It should be clearly written on food labels that it is fortified, who is responsible and who controls fortification process.</i>	General population 9.1.
<i>The information that will identify the fortified flour is necessary, so people could choose what they want.</i>	General population 9.2.
<i>The fortified bread should have a nice bright label so that everybody buys this kind of bread.</i>	General population 9.3.
<i>Fortified bread must have a label. After watching advertisements by TV people will start to pay attention to these labels. This bread may have a logo in the form of, for example, the sun and a message.</i>	Primary health care provider 9.2.
<i>The added micronutrients should be listed on the package of the flour.</i>	General population 9.4.
<i>It [labeling fortified bread] should be a small distinctive paper sticker on the bread</i>	General population 9.5.
<i>We can use a logo. Nothing should be written on the logo, only the supplements should be mentioned. But it will be difficult to have a logo on all the products made from fortified flour.</i>	Miller 9.1.

*Not all breads are sold in separate bags. So, it is unclear where this label should be placed... The other option is to put fortified and non-fortified bread in different shelves. ... The other option is to put breads during selling in different bags on which is written that it is fortified.*

Primary health care provider 9.3.

All the participants agreed that fortified bread should be identified in the markets and stores so people could have a choice if non-fortified products were also available. Among the ways to identify fortified products the participants suggested labeling with listing of supplements, placement of logos, distinctive bright color labels and placement of fortified and non-fortified breads on different shelves.

### **RECOMMENDATIONS FOR A COMMUNICATION STRATEGY**

The recommendations for developing an effective communication strategy [based on the study findings] are the following:

1. Increase the awareness and knowledge of the general population about safety and health benefits of food fortification (specifically flour supplementation) through information, education and communication campaigns (including brochures, posters, leaflets and videos) prior to implementation of flour fortification. The purpose of this campaign is to increase the acceptance and support of the general population for food fortification.
2. Increase the awareness, knowledge and acceptance of primary health care providers through special trainings and seminars, since they can play a substantial role in the acceptance of flour fortification by the general population.
3. Use short television spots, television programs and talk shows as the most effective means of reaching both urban and rural populations to promote awareness, knowledge and acceptance for flour fortification.
4. Have a respected and recognized health care professional as the spoke-person for the flour fortification awareness campaign.
5. Consider the messages for the awareness campaign provided by the participants of this study, especially the universally supported message ***“Let’s maintain our health with our daily bread” (Pahpanenk mer aroghdjutyuny mer hanapazorya hatsov)***. Use the same message for targeting the general population, health providers, and millers.

6. Consider labeling of fortified flour products with the list of added micronutrients and brightly colored logos.

Once a law regulating flour fortification is in place, a public awareness campaign should be implemented. This campaign should start before launching the flour fortification program and continue for a while after the program is in place. In parallel to public awareness campaign, it is necessary to organize training programs for the primary health care providers. This could be done in collaboration with medical universities and colleges (pre-service trainings) and agencies implementing in-service trainings of family physicians and nurses.

These recommendations could help to have a successful flour fortification program in Armenia similar to the experience with salt iodization.

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## APPENDIX 1 – QUALITATIVE STUDY INSTRUMENTS

### Flour Fortification Focus Group Discussion Guide General population

Place \_\_\_\_\_  
Date \_\_\_\_\_  
Time \_\_\_\_\_  
Moderator \_\_\_\_\_  
Recorder \_\_\_\_\_

#### Introduction

##### Welcome

Welcome the participants and thank them for agreeing to participate.

##### Introduction of moderator and recorder

Introduce yourself.

##### Confidentiality

This discussion will be confidential. We will not tell anyone that you participated in this focus group discussion. Your name and position will not appear in reports and presentations. All your comments will be used for research purpose only. We will take notes throughout the session. Also with your permission we will tape record the discussion to make sure that all of your ideas are correctly included in the analyses. Can we proceed with tape recording?

##### Review of the program and participation

The Center of Health Services Research and Development of American University of Armenia in collaboration with the Ministry of Health and with support from UNICEF is conducting an assessment of the populations knowledge, perceptions and attitudes in relation to food fortification. Your sincere participation with interesting and practical suggestions will help us develop useful ideas for recommendations to the government on ways of food fortification program implementation in the future.

##### Icebreaker

You are involved in this study as a key informant. We would like to ask questions regarding food fortification in Armenia. Please introduce yourself and briefly tell us about yourself.

##### Introduction of topic

1. What do you know about food fortification in general? What is the purpose of food fortification? What kind of food do you know is fortified in Armenia? Is there any other food that could be fortified, if yes please specify?

2. What is your attitude toward food fortification, for example such as your attitude towards iodized salt? In your opinion is it a positive or a negative thing? Please explain why. What do you think about other food fortification? What other food could be fortified?
3. What kind of salt do you prefer to use, iodized or not iodized? Would you use other fortified foods? For what reason would you use fortified foods and for what reason would you not use fortified foods?
4. In your opinion, should people be informed about food fortification? Why? What means of communications for effective dissemination of such information could be used in Armenia (TV, radio, newspapers, printed materials, etc.)? Why do you think these means of communications would be effective?
5. In what format (oral, written, cartoon, posters, etc.) should this information be presented to the general population? Which persons would most effectively disseminate the information? (Specialists, famous persons, government representatives, community leaders, etc).
6. Do you know anything about flour fortification? What do you think about flour fortification?

*In its natural state, wheat is a good source of vitamin B1 (thiamin), vitamin B2 (riboflavin), niacin, vitamin B6 (pyridoxine), vitamin E, as well as iron and zinc. However, since most of these nutrients are concentrated in the outer layers of the wheat grain, a significant proportion is lost during the milling process. Fortification is where the amount added is set to replace the losses and provide deficient populations with significant amounts of these nutrients.*

7. What would be an effective short message that would grab the attention of the general population to stress the importance and benefits of flour fortification?
8. Do you think that fortified food should be identified in the markets? If yes, how should it be identified in your opinion?
9. What other ideas or suggestions do you have?

*Thank you for participating in our study – your answers were very useful, interesting and helpful!*

**Flour Fortification  
Focus Group Discussion Guide  
Health Care Providers**

**Place** \_\_\_\_\_  
**Date** \_\_\_\_\_  
**Time** \_\_\_\_\_  
**Moderator** \_\_\_\_\_  
**Recorder** \_\_\_\_\_

**Introduction**

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Icebreaker

You are involved in this study as an expert and a key informant. We would like to ask questions regarding food fortification in Armenia. Please introduce yourself and briefly tell us about yourself.

Introduction of topic

1. What is your opinion about food fortification in general? What is the purpose of food fortification? What kind of food is fortified in Armenia?

2. What is your attitude toward food fortification, for example such as your attitude towards iodized salt? In your opinion is it a positive or a negative thing? Please explain why. What do you think about other food fortification? What other food could be fortified?
3. What kind of salt do you prefer to use, iodized or not iodized? Would you use other fortified foods? For what reason would you use fortified foods and for what reason would you not use fortified foods?
4. What do you think about the anaemia? Is it a problem for the population of Armenia and what groups of the general population are more vulnerable? In your opinion, would the fortification of flour with iron become a preventive action for anaemia?
5. In your opinion, should people be informed about food fortification? Why? What means of communications for effective dissemination of such information could be used in Armenia (TV, radio, newspapers, printed materials, etc.)? Why do you think these means of communications would be effective?
6. In what format (oral, written, cartoon, posters, etc.) should this information be presented to the general population? Which persons would most effectively disseminate the information? (Specialists, famous persons, government representatives, community leaders, etc).
7. What would be an effective short message that would grab the attention of family physicians to stress the importance and benefits of flour fortification? What would be an effective short message that would grab the attention of the general population?
8. Do you think that fortified food should be identified in the markets? If yes, how should it be identified in your opinion?
9. What other ideas or suggestions do you have?

*Thank you for participating in our study – your answers were very useful, interesting and helpful!*

**Flour Fortification  
Focus Group Discussion Guide  
Health Care Providers**

**Place** \_\_\_\_\_

**Date** \_\_\_\_\_

**Time** \_\_\_\_\_

**Moderator** \_\_\_\_\_

**Recorder** \_\_\_\_\_

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7. If the country government would decide to fortify flower what would be your position? Why positive and why negative?
8. What would be an effective short message that would grab the attention of millers to stress the importance and benefits of flour fortification? What would be an effective short message that would grab the attention of the general population?
9. Do you think that fortified food should be identified in the markets? If yes, how should it be identified in your opinion?
10. What other ideas or suggestions do you have?

*Thank you for participating in our study – your answers were very useful, interesting and helpful!*