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INTEGRATING NUTRITION IN THE SASAKAWA AFRICA ASSOCIATION EXTENSION SERVICES: KNOWLEDGE, ATTITUDE AND PRACTICES AMONG SMALLHOLDER FARMERS

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ABSTRACT

This survey aimed to establish nutrition-related knowledge, attitudes and practices, and to observe how gender influences household food-related decision-making processes in the Sasakawa Africa Association (SAA) intervention areas in the Oromia and Southern Nation Nationalities and People regions of Ethiopia. The findings would inform implementation of communication for nutrition social and behaviour change among small-holder farmers as part of the SAA corporate strategy on nutrition-sensitive agriculture. The study population was smallholder farmers supported by SAA from which 311 respondents were selected through multistage sampling. Data were collected via a mixed methods approach consisting of a household survey, focus group discussions (FGDs) and key informant interviews (KIIs). Quantitative data were analysed using descriptive statistics while qualitative data was analysed using a narrative and content approach. The study focused on knowledge, attitudes and practices related to production and consumption of micronutrient-rich foods. Majority (59.5%) of the respondents were male. Men were the main decision makers on staple or commercial food crop production and proportion of produced crops to be consumed at home or sold in the market. Women mainly made decisions regarding production and consumption of fruits and vegetables, intra-household food distribution, preservation and storage. There was a lack of knowledge on iron and vitamin A fortified or biofortified sources of food. Nearly three quarters (72%) of women did not meet the minimum dietary diversity for women, a proxy indicator of adequacy of micronutrient intake and diet quality. The mean dietary diversity score was 3.8 with animal source foods being the least consumed. Not having sufficient money to buy food, unavailability of different food groups and poor intra-household food distribution were among the key reasons for lack of diverse diets. Majority of the respondents were aware of the importance of production and consumption of micronutrient-rich foods. However, there was a gap in practice and awareness about biofortified and fortified foods. While most of the respondents had produced fruits and vegetables in home gardens in the three months prior to this survey, more than half (54%) of the respondents thought it was not likely that they would produce fruits and vegetables for home consumption. More targeted nutrition campaigns are required to increase the ability of small-holder farmers to adopt best practices while reducing the barriers associated with access and consumption. Promotion of fruit and vegetable production in home gardens could be considered as option for improving household dietary quality as well as empowering women to make more decisions.

Key words: Sasakawa Africa Association, Small-holder farmers, Nutrition, Knowledge, Practices

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INTRODUCTION

Malnutrition in all its forms is a global burden that leads to serious public health risks and incurs high economic costs. Improvements in nutrition contributes significantly to stimulating economic growth, reducing poverty and achieving health, education and employment goals [1].

While Ethiopia has made progress in the reduction of child stunting with prevalence decreasing from 58% in 2000 to 37% in 2019 [2], the country continues to experience a high prevalence of micronutrient deficiencies [3]. According to the 2016 National Micronutrient Survey [3], the national prevalence of anaemia among preschool children, school-aged children and non-pregnant women of reproductive age was 34%, 26% and 18%, respectively. The prevalence of tissue iron deficiency was estimated at 30%, 20% and 16%, among preschool children, school-aged children and women of reproductive age, respectively. In addition, the prevalence of subclinical vitamin A deficiency and iodine deficiency was 11% and 48%, respectively among school-aged children. Eliminating undernutrition in Ethiopia would prevent losses of up to 11% per year from the gross national product [1].

Although women are the main food producers, they are disproportionately affected by hunger and malnutrition. Evidence shows that when women make more decisions on how to feed their children and on how much time to spend on this, and when they have better access to health care, prevalence of undernutrition reduces [4]. The nutritional status of women before, during and after pregnancy is also intimately linked to the nutritional status of their children [5]. Food insecurity disproportionately affects women and people living in rural areas. Globally, moderate or severe food insecurity affected 33.3% of adults living in rural areas compared with 28.8 % in peri-urban areas and 26 % in urban areas in 2022 [6]. In Ethiopia, even when food is available, women tend to be malnourished as economic and social disparities tend to be greater [7] and they continue to shoulder the “triple roles,” including their biological role of bearing/rearing children (reproductive), their productive (farm work) and social (community) responsibilities [8]. Understanding the socio-cultural structures and gender dynamics would strengthen the impact of nutrition programs in Ethiopia.

The Ethiopian government has put in place a National Nutrition Program that allows for integrated and coordinated nutrition actions and mainstreaming with the various national development sectors [9]. A positive government policy framework has provided an enabling environment for development partners to support the fight against malnutrition. It is in this context that Sasakawa Africa Association (SAA) has recently adopted Nutrition-Sensitive Agriculture as one of its key pillars in the 2021-2025 corporate strategy [10]. Tanager, an international nonprofit

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through the Impacting Gender and Nutrition through Innovative Technical Exchange (IGNITE) in Agriculture project has established a partnership with SAA to strengthen its capacity to deliver impactful nutrition in agriculture programs (https://tanagerintl.org/portfolio/ignite/). This is envisioned to positively impact behaviour change for improved nutrition outcomes by leveraging on SAA's existing extension delivery mechanisms to small-holder farming households. The objective of this survey was to establish nutrition-related knowledge, attitudes, and practices and observe how gender influences household food-related decision-making processes in the SAA intervention areas of Oromia and Southern Nations, Nationalities and Peoples (SNNP) regions in Ethiopia.

MATERIALS AND METHODS

Study design, population and sampling

The descriptive cross-sectional study was done in Anna Sora and Negele Arsi woredas in Oromia region and Angacha woreda in SNNP region in late 2021. The study population was smallholder farmers supported by SAA. Six kebeles were chosen using a non-probability sampling approach based on SAA intervention areas. One respondent per household was randomly selected based on their household membership in the SAA project beneficiary list until the sample size of 311 was attained of which 185 were males and 126 females.

Data collection and analysis

The study applied a mixed methods approach consisting of a household survey, key informant interviews (KIIs) and focus group discussions (FGDs). A Likert scale was used to establish the respondents' attitudes towards malnutrition, micronutrient deficiencies and consumption of micronutrient-rich foods. Key informant interviews were conducted among woreda agricultural extension coordinators, agricultural development agents and health extension service providers working at the kebele level. The FGDs were conducted among 126 respondents organized into 21 groups. The enumerators were trained, and pre-testing of the questionnaire done in the Kofele woreda prior to data collection.

Descriptive statistics, such as mean and proportion for quantitative data were analysed using Statistical Package for the Social Sciences (SPSS®) version 25. Qualitative data were transcribed and analysed using a narrative and content approach. Minimum Dietary Diversity for Women (MDD-W) was calculated as described by FAO (n=126) [11].

Ethical considerations

This study was done in the context of an existing project by SAA. The participation of all research subjects was voluntary and written consent was obtained. Participants were informed before an interview or discussion took place about the

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purpose of the study and given the opportunity to refuse upon understanding the purpose. No exercise of undue inducement or any other form of constraint or coercion to participate in the study was permitted or accepted.

RESULTS AND DISCUSSION

Socio-demographic characteristics of the respondents

Among the 311 surveyed respondents, majority (59.5%) were male with an average age of 38 years and 40.5% were female. More than half of the respondents (54%) had only primary level education. The importance of the level of education in gender equality is also underscored by the World Bank which notes that low levels of education, especially among women, represent a serious constraint on development in most of the sub-Saharan countries, including Ethiopia. At the individual level, education is perceived to be the ultimate liberator, which empowers a person to make personal and social choices [12]. The World Bank argues that education is also perceived to be the ultimate equalizer, particularly in promoting greater gender equity for women. Nearly all (92%) respondents were married, and the average household size was seven, which is higher than the national average of five. The average number of years the respondents had been in the SAA program was 1.4 years (Table 1).

Decision-making process in the household

The FGD participants observed that women are engaged in more activities compared to their spouses/partners as they also participate in roles performed by men but their roles were subsidiary and feminine rather than major work. This observation is similar to the results which observe that women are rarely considered to be farmers [13]. In Ethiopia, a farmer is seen as someone who can independently plough, sow and harvest, all of which are core farming activities. Ploughing is argued to be a “man’s activity” that is too difficult for women as the very concept of a woman farmer can be transgressive of the social order [13, 14, 15].

The survey found that decisions related to food could either be made by men, women, or both. Decisions related to household food crop production were mainly made by men while decisions around food handling, food storage, household distribution and consumption were made by women (Figure 1).

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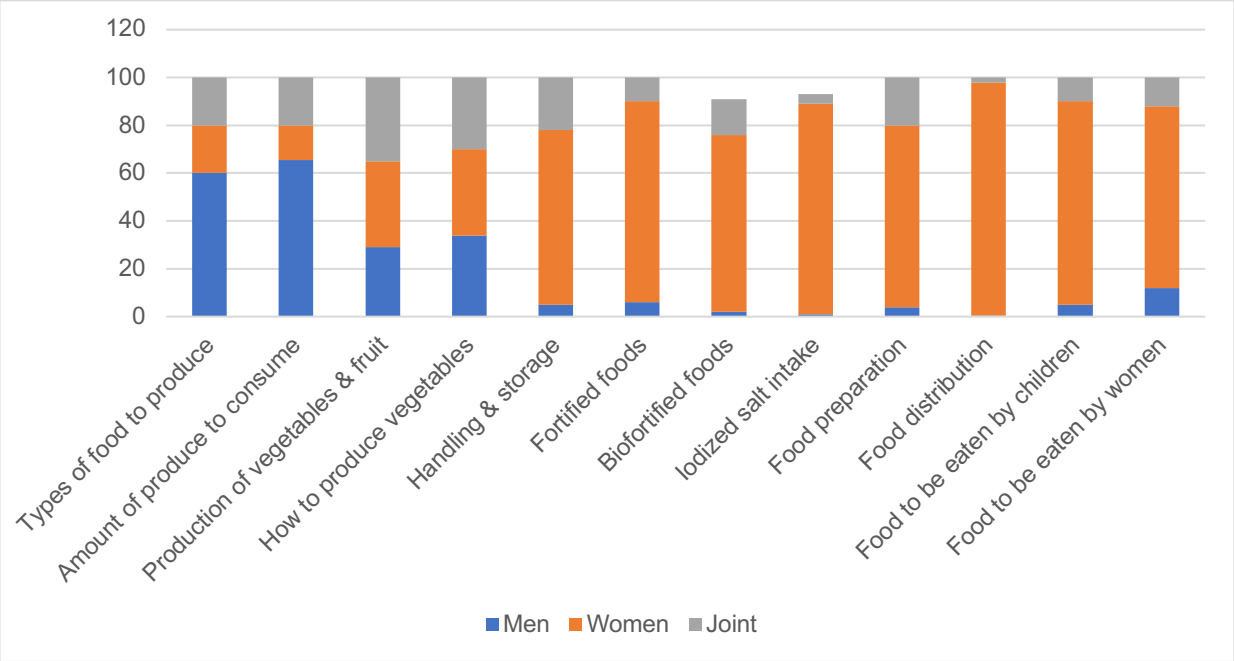

Figure 1: Household decision-making process on food production and consumption

The results also show increased status of women's independent or joint decision-making on vegetable and fruit production and allocation for home consumption in the study area compared to their status in decision-making on other food crops production. These observations are similar to another study done in regions with similar socio-cultural characteristics [16]. This study also found that women take control of agricultural produce when it moves from farm to dish and their status in decision-making processes tends to rise as food moves from production to home consumption, while men's status tends to decline. This observation is similar to those reported in other reports [17, 18].

Women's dietary diversity

Minimum dietary diversity for women (MDD-W), is an indicator of dietary quality and adequacy of micronutrient intake validated for women aged 15 to 49 years old based on ten food groups [19]. The mean dietary diversity score for the women in this survey was 3.8±1.4 (Table 2). Nearly half of the women (44%) consumed less than or equal to three food groups the day preceding the study. There was a significant variation of MDD-W across the two regions. The proportion of women who achieved their minimum dietary diversity in the Oromia region (36%) was three times more than women who achieved their minimum dietary diversity in the SNNP region (12%). Only 15% of women reported having eaten any eggs, meat/poultry, and fish the previous day. Low dietary diversity among women has been found in different regions in Ethiopia [20, 21, 22] and therefore continued

targeting of women in nutrition interventions will go a long way to improving the nutrition status not only of the women but also the children in their households.

Awareness of malnutrition, micronutrient deficiencies and consumption of micronutrient-rich foods

Majority of the respondents (>95%) could recognize if someone in their household was malnourished which is characterized by fatigue and general weakness. Malnutrition was reported to be a major problem in the area by the FGD participants. Lack of enough money to buy food (87%) and unavailability of different food groups locally (71%) were the main reasons for lack of a diverse diet in the study area. Many respondents (72%) were aware that eating foods enriched with micronutrients, such as iron and vitamin A would prevent malnutrition in their household.

Red meat was reported as a major source of iron-rich foods by most of the respondents (78%) while carrots were reported to be a major source of Vitamin A (Table 3). Body weakness, paleness and headache were the most common symptoms of inadequate intake of iron-rich foods reported by the respondents. Majority of the respondents (88%) reported that they knew about iron-deficiency anaemia, vitamin A deficiency (83%) and problems related to iodine deficiency, such as goitre (69%). Majority of respondents knew about the benefits of eating iron rich foods (93%) and vitamin A-rich foods (90%). There was a lack of knowledge on iron and vitamin A fortified or biofortified sources of food. In the study, all FGD participants stated that they were unable to distinguish between the fortified and non-fortified foods in the market, and, therefore, could not make an informed choice when it came to buying products fortified with micronutrients.

Attitudes related to malnutrition, micronutrient deficiencies and consumption of micronutrient-rich foods

Nearly three-quarters (74%) of the respondents were not likely to think that their household may have undernourished members and only a tenth (11%) thought malnutrition is a very serious issue (Table 4). When asked about the likelihood of having a household member that has a micronutrient deficiency, about 4 of every 10 respondents thought that it was not likely that they had an iron (40%) or vitamin A (38%)-deficient household member. More than half of the respondents (60%) thought that it was a serious problem when their household members did not eat iron-rich foods while 42% reported that lack of iodized salt is a serious issue. Slightly more than half (52%) reported that it was a serious issue to have vitamin A deficiency. This study showed that there was a positive attitude towards the presence and/or absence of malnutrition, micronutrient deficiencies and consumption of micronutrient rich foods. Attitude is known to be a good predictor of behaviour [23]. From the findings, it is then possible that the participants would act

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towards reducing the prevalence of malnutrition specifically micronutrient deficiencies by consuming micro-nutrient rich foods.

Practice related to consumption of micronutrient-rich foods in the household

Nearly all respondents had consumed starchy staples the previous day (98%). Participants in the FGDs and KIIs also noted that community members in the study area mostly consumed starchy foods, with some opting to sell some nutritious foods in exchange for other foods, such as coffee and sugar. This finding is similar to other findings which showed almost all women consumed grains, roots and tubers in Ethiopia [24]. More than half of the respondents consumed iron-rich (53%) and vitamin A-rich (83%) foods in the last 24 hours prior to the survey (Table 5). The most consumed micronutrient-rich foods were legumes (mixed beans, baked beans, lentils, chickpeas) and dark leafy green vegetables. While all surveyed participants responded that they used salt to cook meals, only 39% reported using iodized salt. The FGD and KII participants stated that the local community usually consumes non-iodized salt, and in very rare occasions did they consume packed and iodized salt. Some of the reasons given were a lack of awareness about the existence of iodized salt and affordability. The results show that there is a knowledge and practice gap in the consumption of iodized salt in the study area.

Awareness, attitude and practices related to production and preservation of vegetables and fruits in the household

All survey respondents knew about the benefits of producing (91%) and preserving (84%) fruits and vegetables (Table 6). Some FGD participants stated that they did not know about the health benefits of eating fruits and vegetables before the start of the SAA project, but they now have increased awareness.

Slightly more than half of the respondents thought it was unlikely that they would produce (54%) fruits and vegetables for home consumption. Nearly half (47%) of the respondents thought it was a very serious problem if a household is not producing fruits and vegetables in a home garden for home consumption. More than half (60%) reported that their households were likely to preserve fresh fruits and vegetables for home consumption.

Most of the respondents had produced fruits and vegetables in home gardens within the last three months prior to this survey. Cultural rules or taboos were not strong against production and consumption of fruits and vegetables. It is possible to promote the production of fruits and vegetables and have a large uptake in the community. Over two-thirds of the respondents (69%) preserved fresh fruits and vegetables at home. Home gardens play a highly significant role in food security in both urban and rural settings. Fruit and vegetable production in the small farming

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systems have been found to mainly take place in home gardens in Ethiopia [25] and women tend to be in control of these gardens especially when used for home consumption [26, 27, 28].

Self-efficacy to produce and prepare micronutrient rich foods

About a third (34%) of the respondents said it was very difficult for their households to prepare meals with iron-rich foods (Table 7). Almost three-quarters (73%) of the respondents were not confident in preparing meals with iron-rich foods, indicating the perceived inability to prepare iron-rich foods as a major barrier to consumption. Most respondents (71%) were confident that they could prepare meals with vitamin A-rich foods and majority of the respondents (95%) liked the taste of vitamin A-rich foods. These results indicate that while respondents had a positive attitude towards eating micronutrient-rich foods, feeling of inadequacy to prepare the right foods might have hindered consumption of micronutrient-rich foods. A slight majority (57%) of the respondents stated that it was easy for their household to buy and use iodized salt. This finding on perceived ability to buy and use iodized foods could be leveraged to increase awareness on fortified foods and their potential of being micronutrient-rich without necessarily being more expensive than non-fortified foods. Fortification of staple foods has been shown to be an effective way to ensure that many consumers, including women and children who are at risk of vitamin and mineral deficiencies, receive the micronutrients they require [29].

CONCLUSION, AND RECOMMENDATIONS FOR DEVELOPMENT

This study showed both men and women participate in agricultural production activities but due to existing gender norms, there is variation in the patterns of men's and women's engagement and decision making along the food chain. The study also showed the existence of low dietary diversity among women of reproductive age. Benefits of biofortified and fortified foods are still largely unknown among community members in the study area which then hinders their use. While majority of the respondents were aware of and had a positive attitude towards the importance of consuming vitamin A and iron-rich foods including fruits and vegetables, and using iodized salt there is still a gap between knowledge and practice in the consumption of these micronutrient rich foods. Activities that would positively change nutritional behaviours such as consumption of fortified foods, biofortified foods, eggs, milk and milk products would be encouraged to improve women's dietary quality.

Intentional design of a context- and gender-specific implementation plan to empower women in household decision-making processes and strengthen the link between gender and nutrition from production to consumption is recommended. In addition, since women were shown to be more involved in decision-making around

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the production and consumption of fruits and vegetables, it may therefore be "low-hanging fruit" for SAA to support fruit and vegetable production in home gardens to improve both household diet quality and ability of women to make more decisions.

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Authors' Contributions

CM-M was responsible for the overall study including design, tools development, data collection, data analysis, report development and client management process. GGG, HT and AT led all the field-related activities in Ethiopia including tool development, sampling, data collection, data analysis and drafting of the report. AO and GM provided the technical background of the project and were involved in study design and reporting.

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Table 1: Respondents' sociodemographic characteristics

Characteristics of the respondents	Male (n=185, %)	Female (n=126, %)	Total (n=311, %)
Average age of the respondent in years	39	35	38
With no education	8	22	13
With primary education	50	59	54
With secondary education	35	19	29
With higher education	7	0	4
Proportion of married respondents	96	88	92
Average number of household members	7	7	7
Number of years respondent has been farming	23	19	21
Number of years respondent has worked with SAA	1.5	1.4	1.4

Table 2: Women's dietary diversity and consumption patterns

Characteristic	Oromia (%)	SNNP (%)	Total (%)
Average dietary diversity score*	4.3±1.3	3±1.3	3.8±1.4
Low dietary diversity (≤3 groups)	29	74	44
Medium dietary diversity (4–5 groups)	57	23	46
High dietary diversity (≥6 groups)	14	3	10
Women meeting minimum dietary diversity	36	12	27
Consumed staples	98	97	98
Consumed pulses	76	72	75
Consumed nuts or seeds	65	50	60
Consumed milk or milk products	83	23	62
Consumed meat, poultry, or fish	15	3	7
Consumed eggs	12	3	9
Consumed dark green leafy vegetables	50	90	85
Consumed other vitamin A-rich fruits or vegetables	88	34	69
Consumed other vegetables	54	80	63
Consumed other fruits	16	4	12

*Characteristic is a mean ± SD not proportion. ≤3 represents women ate less than or equal to three food groups, 4-5 represents women ate four to five food groups, & ≥ 6 represent women ate equal to or greater than six food groups in the last 24 hours prior to the survey

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Table 3: Knowledge about micronutrient deficiencies and consumption of micronutrient-rich foods

Knowledge of the respondent	Male (%)	Female (%)	Total
Aware of iron-deficiency anaemia	87	88	87
Know benefits of eating iron-rich foods	93	92	93
Aware of vitamin A deficiency-related symptoms	89	88	89
Aware of vitamin A deficiency	86	78	83
Aware of benefits of vitamin A-rich foods consumption	93	86	90
Aware of benefits of OFSP consumption	39	41	40
Aware of iodine deficiency	72	66	69
Aware of how iodine deficiency can be prevented	57	59	58

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Table 4: Attitudes related to malnutrition, micronutrient deficiencies and consumption of micronutrient-rich foods

Attitude		Male (%)	Female (%)	Total (%)
Perceived likelihood that a household may have undernourished members	Not likely	75	73	74
	Not sure	4	3	3
	Likely	21	24	21.6
How serious is malnutrition for your household members' health?	Not serious	57	57	57
	Serious	25	24	24
	Very Serious	11	10	11
Likelihood of a household member being iron-deficient	Not likely	44	35	40
	Likely	40	44	41
	More likely	9	9	9
The seriousness of not consuming foods rich in iron	Not serious	12	13	12
	Serious	56	64	59
	Very serious	28	17	23
How likely do you think it is that any of your household members lack vitamin A in their body?	Not likely	37	40	38
	Not sure	9	15	12
	Likely	51	40	46
	More likely	3	6	4
Perceived seriousness for lack of vitamin A.	Not serious	22	24	23
	Not sure	6	8	7
	Serious	51	52	52
	Very serious	21	16	19
Perceived likelihood that household lacks iodized salt	Not likely	30	33	31
	Not sure	17	14	16
	Likely	30	35	32
	More likely	23	18	21
How serious do you think not using iodized salt in the body is?	Not serious	16	19	17
	Not sure	33	33	33
	Serious	42	43	42
	Very serious	9	6	8

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Table 5: Practice related to consumption of micronutrient-rich foods

Practice		Male (%)	Female (%)	Total (%)
Consumed iron-rich foods yesterday		49	60	53
Iron-rich foods consumed yesterday by the household	Legumes	68	66	67
	Dark leafy vegetables	58	63	60
Buy fortified edible oil or wheat flour		79	77	78
Type of salt used	Iodized	38	41	39
	Not iodized	47	40	45
	Don't know	15	18	16

Table 6: Knowledge, attitudes and practices related to the production and preservation of vegetables and fruits

Characteristic		Male (%)	Female (%)	Total (%)
Knowledge on vegetables and fruits preservation				
Household know how preserve fresh fruits and vegetables	Yes	82	86	84
Attitudes towards producing and preservation of vegetables and fruits				
Likelihood of household producing fruits and vegetables in a home garden	Not likely	57	50	54
	Not sure	1	2	2
	Likely	38	44	40
	More likely	4	4	4
How serious do you think it is to not produce fruits and vegetables in a home garden?	Not serious	15	10	9
	Not sure	0	0.8	0.3
	Serious	38	52	44
	Very serious	54	37	47
Likelihood of household not preserving fresh fruits and vegetables for consumption	Not likely	63	56	60
	Not sure	1	2	1
	Likely	35	40	37
	More likely	2	3	2
Practices on household vegetable and fruit production and preservation				
Produce fruits and vegetables in a home garden within the last three months	Yes	92	87	90
Preserve fresh fruits and vegetables at home	Yes	66	70	69

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Table 7: Self-efficacy towards preparation and consumption of micronutrient-rich foods and production of fruits and vegetables

Action		Male (%)	Female (%)	Total (%)
Perceived difficulty for the household to prepare iron-rich foods	Not difficult	16	22	18
	Somewhat difficult	52	42	48
	Very difficult	32	36	34
Perceived confidence in preparing iron-rich foods	Not confident	15	17	16
	Less confident	61	52	57
	Confident	22	28	24
	More confident	3	3	3
Perceived difficulty for household to prepare vitamin A-rich foods?	Not difficult	17	28	22
	Somewhat difficult	56	40	50
	Very difficult	27	32	29
Perceived confidence in preparing vitamin A-rich foods?	Not confident	12	17	14
	Less confident	52	50	54
	Confident	28	31	29
	More confident	3	2	2
Perceived difficulty for household to buy and use iodized salt	Not difficult	55	60	57
	Somewhat difficult	29	29	29
	Very difficult	16	10	14
Perceived difficulty for household to produce fruits and vegetables in a home garden	Not difficult	66	66	66
	Somewhat difficult	25	26	26
	Very difficult	9	8	8
Perceived confidence to produce fruits and vegetables in a home garden	Not confident	6	7	6
	Less confident	24	29	26
	Confident	57	54	56
	More confident	12	10	11

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