ADDIS ABABA UNIVERSITY

COLLEGE OF NATURAL SCIENCE

CENTER FOR FOOD SCIENCE AND NUTRITION

Determinants of Fruits and Vegetables Consumption in Women of Reproductive Age in selected kebeles of Oromia and Southern Nation Nationalities and Peoples Region

By

Kidist Gemechu

A Thesis submitted in partial fulfillment of the requirement for the degree of masters of Science in Community Nutrition

School of Graduate Studies Center for Food and Science and Nutrition Addis Ababa University

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DECLARATION

I, the undersigned, declare that this thesis entitled **"Determinants of fruits and vegetable consumption in women of reproductive age in selected kebeles of Oromia and Southern Nation Nationalities and Peoples Regions"** submitted in partial fulfillment of MSc. Degree in Community Nutrition, to the school of Graduate, studies for Community Nutrition program, Center of Food Science and Nutrition. This is original work and has never been presented in this or any other university and that all the source materials used for this thesis have been duly acknowledged;

Kidist Gemechu	_____	June 2018
Name	Signuture	Date

The thesis has been submitted for examination with any approval as university advisors.

Dr. Kaleab Baye (PhD, Associate prof)	_____	June 2018
Name of major advisor	Signature	Date

SCHOOL OF GRADUATE STUDIES

FINAL THESIS APPROVAL FORM

As a participant of the board of examiners of the final MSc. Open defense, we declare that we have read and evaluated the thesis prepared by Kidist Gemechu under the titled allowed "Determinates of fruits and vegetable consumption in women of reproductive age in selected kebeles in Oromia and Southern Nation Nationalities and Peoples Regions" and recommend for the degree of masters of science in food science and Nutrition.

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LIST OF ABREVATION

CVD	Cardiovascular Disease
DED	Dietary Energy Density
EDHS	Ethiopian Demographic Health Survey
FAO	Food and Agriculture Organization
F&V	Fruits and Vegetables
Mets	Metabolic Syndrome
MPR	Minimally Processed Refrigerated
MUFA	Mono Unsaturated Fatty Acid
NCD	Non Communicable Diseases
OFSP	Orange-Fleshed sweet potato
PA	Physical Activity
PUFA	Poly Unsaturated Fatty Acid
PW	Pregnant Women
SC	Stomach cancer
TAC	Total Antioxidant capacity
UK	United Kingdom
USA	United States of America
VA	Vitamin A
WHEL	Women Health Eating and Living
WHO	World Health Organization
WRA	Women of Reproductive Age

CSA	Central Statics Agency
ATONU	Agriculture to nutrition
PLW	Pregnant and Lactating Women
BMI	Body Mass Index

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ABSTRACT

According to World Health Organization, (WHO) consuming the recommended amount of Fruit and Vegetable (F&V) can prevent a significant proportion of non-communicable diseases. Despite consistent evidence on the importance of F&Vs, their consumption in low-and-middle income countries like Ethiopia remains very low.

The present study aimed to asses current levels of F&V consumption in selected districts of Oromia and Southern Nation Nationalities and Peoples Regions (SNNPR), and identify enablers and barriers towards F&V consumption. This cross-sectional quantitative and qualitative study was conducted in four districts of Oromia (Seeraa Waakalee, Anannoo Shishoo) and SNNPR (Doyo gena, Meskan). Data on food consumption, dietary diversity, anthropometric measures, and food preference was collected among 384 women of reproductive age. Using focused group discussions and in-depth interviews, enablers, and barriers of F&V consumption were identified.

Diets were predominantly cereal-based. However, consumption of dark green-leafy vegetable in 24h preceding the survey was relatively high (>60%). However, less than a quarter of the women of reproductive age meet the minimum women dietary diversity score (≥5 food groups). Consumption of fruit was particularly low. Most foods were minimally processed and were consumed relatively fresh (within two-hours of preparation). Although a number of F&V were stated as preferred, their consumption was hindered because of affordability, availability, and distance of marketplace.

Food systems-wide interventions that not only promote consumption of F&V but also makes them available, accessible and affordable are needed.

***Keywords*: fruits, vegetables, food systems, food preference, dietary diversity**

CHAPTER I

Introduction

1. INTRODUCTION

1.1 Background

According to World Health Organization, (WHO), the consumption of a recommended amount of Fruit and Vegetable can prevent five non-communicable diseases like cardiovascular diseases, cancers, neurodegenerative diseases, and Endocrine Diseases. It can also delay aging and decrease unwanted weight gain, partly because they contain micronutrients, fibers, and antioxidants that have health-promoting function while reducing energy intake. Consequently, the consumption of five serving (~ 400 g) of F&V per day is now proposed in the WHO's worldwide intervention strategies to promote healthy eating behavior (Jaime and Monteiro, 2005).

Despite the consistent evidence of the importance of F&V, its consumption is low in many low and middle-income countries. In a recent study that evaluated F&V consumption in 10 sub-Saharan Africa countries reported very low consumption of F&Vs in Kenya (64g), Tanzania (55 g), Uganda (34 g), Malawi (30 g), and Mozambique (25 g) (Keding *et al.*, 2017). Consequently, the WHO and Food Agriculture Organization (FAO) estimated that 27% of all deaths that occur in the East African region is attributed to low F&V consumption (Cook and S.,2013)

In 2014, the global supply of F&V was reported to fall short to provide the nutritional recommendations of 400g or >5 serving/person/day by 22%. The shortfall in the supply of F&V was even more pronounced (58%) in lower-income countries (Keding*et al.*, 2017). Demissie et al., (2009) reported the household F&V production In nine regions of Ethiopia, household level F&V production was the lowest in Adiss Ababa (<1%), followed by Dira Dawa (<10%), Afar (<10%) and, Tigray (10-15%). The highest proportion of household in Oromia (50%), Amahara (70%), and SNNP (>85%) produced vegetables. However, household fruit productions in these regions ranged between 20-50%.

1.2.Statement Of The Problem

Approximately 16.0 million (1.0%) disability-adjusted life years (DALYs, a measure of potential life lost due to premature mortality and the years of productive life lost due to disability) and 1.7 million (2.8%) of death worldwide are attributed to low fruits and vegetable consumptions (World Health Report, 2003).

Adequate consumption of fruits and vegetables reduces the risk of cardiovascular diseases, stomach cancer, and colorectal cancer. There is convincing evidence that the consumption of high levels of high-energy foods, such as processed foods that are high in fats and sugars, promotes obesity compared to low-energy foods such as fruits and vegetables (World Health Report, 2003). According to evidence presented in world health report, low fruits and vegetable intake is among the top 10 risk factors contributing to attribute mortalities, (World Health Report, 2003). Moreover, eating a variety of vegetables and fruits clearly ensures an adequate intake of most micronutrients, dietary fibers and a host of essential non-nutrients substance (WHO, 2011).

A recent WHO/FAO expert's consultation report on diet, nutrition, and prevention of chronic diseases sets of population nutritional goals and recommended intake of a minimum of 400g of fruits and vegetables per day for the prevention of chronic diseases (Lim *et al*., 2010). However, in Ethiopia, dietary diversity among vulnerable groups like women of reproductive age (WRA) is very low. Despite continued nutrition education interventions, consumption of fruits and vegetables remains extremely low (4%; EDHS, 2016). This suggests that there are barriers to fruits and vegetable consumption that are not identified yet. This is unfortunate because a nutrition education that considers potential barriers and enablers is likely to be more effective in promoting sustainable consumption of fruits and vegetables.

1.3.The significance of The Study

The present study could help understand drivers for current levels of F&V consumption and inform the design of more effective interventions that improve F&V consumption among women of reproductive age. The study can also serve as a baseline to which future studies in the area could compare to evaluate changes with time.

1.4.Research questions

1) What are the determinants of F&V consumption?
2) What types of fruits and vegetables are consumed in the area?
3) What is the perception of a healthy food in the study area?
4) What are the perceived barriers and enablers towards fruits and vegetable consumption?

1.5. Objectives

1.5.1. General Objective

The main objective of the study is to assess the determinants of fruits and vegetable consumption in women of reproductive age in the selected district of Oromia and SNNPR.

1.5.2. Specific Objectives

- To characterize the dietary diversity score of women of reproductive age using the 24hr recall
- To assess the knowledge of women of reproductive age toward healthy and unhealthy eating
- To identify barriers and enablers towards fruits and vegetable consumption

CHAPTER II

Literature review

2. LITERATURE REVIEW

2.1. Classifications of fruits and vegetables

In a study published in 2009 about the classification of fruits and vegetables they were categorized as the botanic families rose, rue (citrus), amaryllis, goosefoot, and legume; color groupings blue/black, dark green/green, orange/peach, and red/purple; and plant parts fruit-berry, seeds or pods, and leaves. Groupings based on Total Antioxidant Capacity (TAC) levels did not match well with the identified clusters. Clusters can be mentioned as combined or classified by color and part of the plant. Using the classification method such as color and part of plant clusters were best described like the groupings of dark green leafy vegetables; cabbage family vegetables; lettuces; alliums family bulbs; legumes; deep orange/yellow fruits, roots, and tubers; citrus family fruits; tomatoes and other red vegetables and fruits; and red/ purple/blueberries are predictive for food components provided by fruits and vegetables (Pennington et al., 2009).

2.2. Antioxidants in fruits and vegetables

Many researchers have been on the discovery of groups of nutrients which has protective effects against cell oxidation in the last decade. Antioxidants are found in fruits and vegetables with bright colors acts by scavenging harmful free radicals, which are implicated in most degenerative diseases they also have a role in the preservation of food by retarding deterioration, and discoloration caused by oxidation. The positive correlation between intake of fruits and vegetables and prevention of aging, chronic diseases like atherosclerosis, diabetes, arthritis has been confirmed by many epidemiological studies. Antioxidants have pronounced effect on aging that they were given the name 'the fountain of youth'. Fruits and vegetables had been confirmed that they are capable of promoting good health and preventing alleviating diseases. Phenolic (are the largest number of phytochemical that account for most of the antioxidant activity in plants) flavonoids (are the larges group of naturally occurring phenolic compound), lycopene (bright red color carotenoid pigment and phytochemical found in tomatoes and other red fruits and vegetables), carotenoids are types of vitamin A's found from plant origin, and glucosinolates are among the most thoroughly studied antioxidants. (Kaur et al., 2001)

In a recent study, Ozone (or **trioxygen**, is an inorganic molecule with the chemical formula **O_3**) has successfully proven to be one possible candidate for fruits and vegetable preservation,

providing antimicrobial and antioxidant activities. However, discrepancies in results are often found in the literature due to the great number of variables that may influence ozone efficacy for the preservation of fruits and vegetables. Greater frequency of foodborne illnesses associated with fresh produce. Current sanitation disinfectants fail to adequately control common spoilage microorganisms as well as potentially harmful human pathogens. Ozone is considered as an optional disinfectant because it has proven to be very effective (Tzortzakis et al., 2017).

2.3. Factors that can promote fruit and vegetable consumption

This study suggests that early life experience and family socioeconomic status can influence later life fruit and vegetable consumption, Children's consumption of vegetables is also influenced by maternal and familial socioeconomic factors. Maternal education and nutrition knowledge are consistent predictors of maternal vegetable intake as well as her preschool-aged child's intake In lower socioeconomic status families, availability and accessibility of vegetables in the home are consistently associated with cost, both in terms of monetary expense and preparation time and with maternal self-efficacy to offer fruit and vegetables to her preschool-aged child . Financial support to low-income women and children, via WIC (Women, Infant and Children), appears to improve infant vegetable intake and variety, underscoring the effectiveness of simultaneously providing education and financial support to families to provide vegetables to their young children (Johnson & S. L., 2016)

A study conducted in Ghana on fruit and vegetable consumption, fruit and vegetable preference list and the difference in male and female dietary behavior resulted in Majority of respondents admitted that they did not consume fruits 1 – 3 times a day however consumed vegetables 1 – 3 times a day. Frequently consumed fruits were banana, orange, and watermelon. Most respondents consume fruits because they had a craving or want to eat fruit. Frequently consumed vegetables were tomatoes and onions. Most respondents used vegetables in stews. Male students want or prefer for orange, banana, and pineapple whereas female students indicated statistically significant likeness for blackberries and grapes while Female students want of prefer for okra, green pepper, and lettuce than their male counterparts. The study suggests to help make a change in eating habit and increase the consumption rate of fruits and vegetables among Ghanaian students, social marketing strategies should be directed at making highly preferred and

frequently consumed fruits and vegetables readily available and easily accessible to students (Mensah et al., 2015).

So many researchers attribute that women are more likely than men to meet the recommended intake of F&V. however this might not be their preference it could be because of their gender roles in the society In most culturally driven middle and low-income families women to eat the leftover of the other family which means low amount of meat or fish is left for them so they are forced to eat the F&V as in most population-based studies, wealth and education has a significant effect on Fruit and vegetable consumption in this study among other factors like wealth quartiles, household income and expenditure and socioeconomic status (Karim *et al*., 2017).

In this study, it suggests that to reach Koreans that live in the USA about increasing their F&V consumption into the recommended intake level should be through faith-based interventions because they can be reached through church easily after the intervention the intervention group fruit and vegetable consumptions increased from 3.8 cups below to 0.5 cups above the recommended daily intake. The control group increased slightly too from 3.1 cups below to 2.9 cups below the RDI this suggests that the intervention assessment of church activities, coaching sessions, education materials and perceived effectiveness helps in achieving goals (Hughes et al., 2017).

2.4. Determinants of fruits and vegetable consumption in the developed country

A study conducted in the United States of America has found out the different Barriers and Facilitators to F&V consumption in diverse multi-ethnic population. Even though all the ethnic groups know the positive health benefits of F&V they don't consume a sufficient amount, this was because the different barriers such the high cost of fruit and vegetable, lack of cooking skills, lack of time to cook because of long working hours, and spoilage rate barrier while the facilitators were knowing the health benefit have encouraged them to eat more fruit and vegetables daily. The younger age group participants also mentioned that they are trying to develop a healthier diet than there parents by consuming more fruits and vegetable (Yeh *et al*., 2008).

A diet low in fruit was found to be the most important dietary contributor to mortality and lost years of healthy life, and a diet low in vegetables the fourth contributor. Despite its importance to health, FV consumption worldwide is still far below the recommended levels, in a study conducted in Brazil, fruit and vegetable consumption where just 24.1% of populations present an adequate intake the barriers that lead to low F&V consumptions is the negative characteristics (unhealthy) of the food environment to increase access and consumption of healthy foods like F&V is to develop and consolidate a public policy aimed at creating a healthy environment (Menezes, 2017).

A study conducted in the UK suggest that most of the sample population are aware of the 5-a-day F&V massage but they cannot change this into action correctly this is because of the decreased knowledge of F&V consumption and its benefits. To increase the consumption of F&V consumption in the UK it is important to increase the knowledge of the detailed 5-a-day F&V consumption message erase confusion of portion size and the need for variety this confusion in same UK individuals goes as deep as to believing the 5-a-day message relates to five portions of fruit and five portions of vegetable (Appleton *et al*., 2017).

A study done in Uruguay confirmed an income level is an underlying factor for food choice and barrier to adopting healthy eating. Low economic participants admitted that their food choice is based on the cost and satiety factor such as stew, which is prepared using rice, lentils, potatoes, carrot, onion, red peppers, pumpkin, and tomato sauce. Fruit, raw vegetable, and meat were mentioned by very few of the participants and those who mentioned meat as a part of there dish meant minced meat of chicken or beef either a high proportion of bones, but in middle-income participants mentioned a wide variety of dishes than those with low income, being meat based, salads, pies and pasta are the most frequently mentioned they also stated that they consume fruit, vegetable, and dairy products (Ares *et al*., 2017).

A study conducted on immigrants Russia, Somalia and Kurdish who are currently living in Finland, compared there consumption frequency of recommended healthy food like fruits, barriers, vegetables, fish and rye bread the immigrants that originated from Russia and Somalia origin ate rye bread than the Kurdish participants, vegetables were more frequently consumed by

Russian (60%), kurds (44%)and somalis (1%), consumption of fruits and barriers are consumed more frequently by kurds (63%), Russian (60%) and somalian (1%),however 85% of somilan participants consume fresh vegetables and 78% consume fruits and berries on 1-2 days a week, and fish are consumed more in Russians and somalias than Kurds.. The other used determinants were sex, age, and educational status. Women, older age groups and people with higher education level have a good association with healthy food consumption (Adebayo et al., 2017).

A study suggests that to improve eating behavior in disadvantage family removing structural barriers like delivering free F&V weekly is not enough other strategies like the social, cultural and intrafamilial influence of food choice targeting this household is needed and six interrelated descriptive themes were developed representing factors influencing F&V consumption in householdwith kids such as Early life exposure of F&V consumption can facilitate future consumption, individualized drivers personal motivation was required to make use of free products like the value of health personal interest and enjoyment of food , the house hold's evolving socio-cultural food enivornment, household resource constrants, social network and connection, and external organizations and the uilt environment (Carty *et al*., 2017).

2.5. Determinants of fruit and vegetable consumption in developing country

A study was done on urban and rural dwellers in Kenya In most of the households traditionally food is prepared by the women but knows this culture is slowly changing because of the gender role. In rural dwellers the knowledge of medical benefits associated with endogenous vegetables was positively and significantly associated with increased consumption of African indigenous vegetables but Most urban dwellers work long hours which provides them a small amount of time for preparation of food Because of this there are employed household cooks and this doesn't influence the consumption of leafy AIVs in urban dwellers (Gido *et al*., 2017).

A study conducted in Ghana shows that F&V consumption is low among young people because of factors like regional, residence, religious, educational and cultural. So the study suggested there is a big need for intervention by policymakers to educate the population about the health benefits of eating F&V because it could help greatly with the growing prevalence of noncommunicable diseases. Overall fruit and vegetable consumption was low in young people but the females are likely to consume more fruit and vegetables than their male counterparts

findings point to the need for interventions to educate young people in Ghana about the health benefits of eating fruit and vegetables (Amoateng *et al*., 2017).

2.6 Fruits and vegetable consumption and non-communicable diseases

In a study conducted in China suggest dietary soy food intake and a longer menstrual cycle are protective factors against lung cancer in nonsmoking Chinese women. Among smokers, there is a protective effect with higher consumption of vegetable intake, a reduction in risk was observed especially in both cruciferous and non-cruciferous, exerts a protective effect. A risk reduction was also observed in fruit intake. Association between soy food and soy isoflavonoids and lung cancer risk observed. In lifetime nonsmoker inverse relationship was observed between soy, soy isoflavonoids and fruit intake with lung cancer risk (Seow *et al*., 2002).

A dose-response meta-analysis conducted in 2014 on Fruit and vegetable consumption and mortality from all causes, cardiovascular disease, and cancer, supports the theory that higher consumption of fruit and vegetable is associated with a reduced risk of mortality from the above mentioned NCD. It decreases the risk by 5% in each additional serving of fruit and vegetables a day, 6% in fruits and 5% in vegetable consumption. The threshold being at 5-serving- a day, A significant relation was found in association with cardiovascular mortality; higher consumption was not associated with the risk of cancer mortalities. This study finalizes fruit and vegetable can decrease the risk of cardiovascular disease mortality but there was no evidence found that fruit and vegetable decrease the risk of cancer (Wang et al., 2014).

This study shows that breast cancer survivors who consume a healthy diet and are physically active may increase their years of survival after diagnosis. Those who eat a minimum of 5 fruits and vegetables servings daily, and performing weekly PA (physical activity) equivalent to 30 minutes of walking at a moderate pace for almost a whole week had a higher survival rate of 10 years than those who did not adhere to these lifestyle practices. The 10 years survival rate is seen in women who are not obese as compared to those who are obese. If these two health behaviors (consuming a minimum of five surviving of F&V and physical activity) reduced the probability of death in the follow-up period by 50%, whereas this effect was not seen if breast cancer survivors were adherent to only PA or F&V dietary pattern (Pierce *et al*., 2007).

In a study which was conducted in Iranian female nurses it was found that consumption of high energy-dense diets was associated with increased chance of metabolic syndrome (Mets) as a clustering of metabolic abnormalities, are a well-known risk factor for CVD, type 2 diabetes, and early mortality. and most of its features. Additionally, Dietary energy density (DED) is defined as the amount of energy per unit weight of food, was positively associated with inflammatory markers including hs-CRP (high-sensitivity co-reactive protein), TNF-α (Tumor Necrosis factor alpha) and IL-6 (Interleukin 6) concentrations. Longitudinal studies are needed to explore the relationship of Dietary energy density with the risk of metabolic syndromes and inflammation (Azadbakht*et al*., 2017).

In a systemic review and dose-response meta-analysis of prospective studies, 142 publications from 95 unique cohort studies were included 44 of them were from Europe, 26 of them are from the USA, 20 of them were from Asia, and 5 of them were from Australia.5 publication reported result from two studies that were combined. The finding reported that an increased Fruit and vegetable intakes were associated with reduced risk of cardiovascular disease, cancer, and all-cause mortality. The public health recommendations, of increasing fruit and vegetable intake for the prevention of cardiovascular disease, cancer, and premature mortality should be encouraged (Aune *et al*., 2017).

In another recent dietary intervention study, increased total vegetable severing of cruciferous vegetable regardless of race or breast cancer status showed improvement in the health of patients. The results are in agreement with the WHEL study on women with a history of breast cancer as well as another large clinical trial, both of which demonstrated a decrease in 8oxodG levels (inflammatory marker of breast cancer) with increasing intake of fruits and vegetables. It is possible that the decreases observed in previous studies may be partly due to larger effects in men than in women rather than generally higher intake of vegetables (Wirth *et al*., 2017).

In a study conducted in Maryland United States of America greater intake of fruits and vegetables was associated with lower risk of all-cause, cancer, and cardiovascular disease death. These findings agree with the general health recommendation to consume multiple servings of fruits and vegetables (5–9/day) to get the sufficient amount of benefit associated with F&V. Particular antioxidant nutrients, where examined higher intake of vitamin C and vitamin E were

not associated with all-cause cancer, and cardiovascular diseases mortality but Betacartinol was associated with a lower risk of all-cause mortality and nonstatistically significant lower risk of cancer mortality but not associated with cardiovascular disease mortality (Genkinger*et al*., 2004).

In a study conducted in South Asia Daily intake of less than five servings of F&V was associated with higher odds of depression. Prevalence of depression was high in all countries and was more prevalent among subjects who reported less than adequate level of F&V intake. An alarmingly large proportion of sample population did not adhere to the recommended amount of F&V consumption. Although the basic therapeutic approach for depression is pharmacological treatment, many clinical psychiatrists consider non-pharmacological approaches as an essential component of treatment. Non-pharmacological interventions such as dietary modification by encouraging higher consumption of F&V should be given more programmatic attention. The widespread production of F&V Nutrition programs aimed at promoting F&V consumption might prove beneficial to reduce the prevalence of depression in south Asian population. Further studies are required to understand the factors limiting the adequate consumption of F&V In order to promote F&V consumption at the national level, nutrition education and dietary behavior-changing programs can be integrated with community health projects. Addressing the barriers to access to F&V should also be taken into consideration in national food and nutrition security agenda. More in-depth studies are required to understand the barriers to and behavioral factors associated with F&V consumption (Bishwajit*et al*., 2017).

Several studies have shown a lack of diversity among poor populations, whose diets are predominantly carbohydrates with little or no animal products, fruits, and vegetables. Different studies in different countries have provided empirical evidence that dietary diversity scores are reliable measures for micro- and macronutrient adequacy for women of reproductive ages. So a diverse diet of a pregnant woman is expected to improve her nutritional profile and thus reduce the risk of maternal and child mortality and morbidity. If the diet is not diverse, it will be deficient in essential nutrients such as iron which is required for blood formation and oxygen transportation in the blood (Saaka *et al*., 2017).

In this study shows a marked decrease in Stomach Cancer (SC) incidence for both sexes worldwide from 1978 to 2007. These favorable trends may be due to changes in environmental

exposure and lifestyle in the populations, including the decline in H.pylori infection, the increasing intake of fresh fruits and vegetables, availability of refrigeration, decreasing intake of salted and preserved food and a decrease in smoking prevalence. The cohort analysis also suggested a decline in lifestyle and environmental risk factors over successive generations (Luo *et al*., 2017).

2.7. Pregnancy Health and Fruit and Vegetable Consumption

A study conducted in Brazil associated Higher Intake of sweets and sugar and low intake of fruit with depression, the common Brazilian diet pregnancy or not consists of rice, pasta, French bread, bean, bone less beef or chicken, eggs, margarine, coffee with sugar, and artificial juice was associated with higher prevalence of mental disorder especially during pregnancy this pattern was observed in women with low income and less education may be at greater risk of depression disorder when compared to those with higher level of education, adequate weight and healthier dietary pattern. So this finding reinforces to women increase their fruit consumption to ensure improved mental health during pregnancy (Ahlert *et al*., 2015)

A total of 25 studies reported women's nutritional outcomes, The Healthy Start studies reported perceived outcomes only some women said they consumed more cow's milk, fruits and vegetables after receiving Healthy Start vouchers, whereas other women said the vouchers 'freed up money to do other things' and 'helped them to manage better financially' The WIC (Women, Infant, and Children)studies were published between 1981 and 2015, but the most useful data was extracted from two studies comparing women's diets before and after the 2009 WIC revisions when the 'cash value vouchers' for fruits and vegetables were introduced there was no allowance for fresh fruits and vegetables before 2009. A longitudinal study of African–American and Hispanic women from WIC clinics in Chicago found significant dietary improvements for Hispanic mothers who reported consuming more fruit, more reduced fat milk less whole milk and less saturated fat African–American mothers reported consuming less whole milk but no other changes were statistically significant. There were no sustained dietary improvements in either group compared with baseline at 18 months (Ohly *et al*., 2017).

A comparative study conducted in Southern Ethiopia on pregnant and non-pregnant women food consumption and dietary behavior findings were similar, The pregnant study participants were

questioned if they have made any dietary adjustments during their pregnancy. Almost all pregnant study participants reported that there should be a dietary improvement during pregnancy. Out of the total pregnant women, food was consumed anytime convenient for the study participants more specifically when they get home. Generally, the dietary behavior of the study participants was similar regardless of the pregnancy status. The mean number of food groups consumed by the two study groups was comparable. The pregnant mothers had a mean of 3.7 food groups consumed while this was 3.4 for non-pregnant mothers. Egg and meat were consumed by only 2.2% of the study population, and similarly, the fruit was consumed by 3.4% of the total study population. Apart from dairy and eggs, intake of the different food groups was comparable in pregnant and non-pregnant women. The pregnant women had a higher consumption of dairy products and eggs compared to the non-pregnant participants (Asayehu et al.,2017).

A cross-sectional study conducted in maternal dietary intake during pregnancy and its association to birth size in rural Malawi, the proportion of participants with intake below the estimated average requirement was >50% for the most nutrients cereals were eaten on all 7 days measurement by all participants. Dark green leafy vegetable, another vegetable, other fruit, fish, legumes, nuts, and seeds were typically eaten several days and by more than 90% of the participants at least once during the seven measurements days (Hjertholm et al., 2018).

one study suggests that pregnant mothers should get adequate prenatal care not only to follow their pregnancy weight and how the pregnancy is going but should also give them the appropriate advice on how to identify food so they could adjust the maternal diet they should be told which foods are rich in fiber, protein, and micronutrient even if they are taking regular prenatal vitamin, micronutrient and fiber intake were constantly inadequate. So the study suggests that health professional should take the responsibility to counsel them whenever they have a contact in the attempt of improving maternal and child health (Myles et al., 2017).

A study conducted in Kenya supports the promotion of orange flashed potato (OFSP) by viewing collective evidence it says that as a viable nutrition-sensitive agriculture it can promote the consumption of vitamin A (VA) - rich foods which intern increases VA intake of pregnant women which in a long term this strategy may safely and effectively enhance maternal diet and

nutrition Integrating promotion with health services is feasible and may have added nutrition and health benefits; however, additional research is needed to identify cost-efficient strategies that motivate increased participation in community-based nutrition education activities. Furthermore, given the time required to plant and harvest OFSP, even rapidly maturing varieties, it may be beneficial to target women before pregnancy to maximize VA intakes (Girard *et al.*, 2017).

A systemic review conducted on the dietary change of women's during and before pregnancy Dietary intake before and during pregnancy has significant implications for the mother and unborn child with a number of health outcomes related to poor dietary intake. An increased intake of F&V is recommended as part of the healthy diet because they are linked with numerous positive health outcomes this study result suggests that the lessons should be clear not only do pregnant women need to increase their F&V consumption but they should be advised to reach the public health recommendation of their country (Hillier et al., 2017).

2.8. Energy Density Diet versus Healthy Diet

This cross-sectional study was a bit to the opposite side its finding revealed that dietary diversity was positively associated with general and central obesity among adults in southwest China and that excessive energy intake and micronutrient deficiencies of varied diets. Dietary imbalance coming with dietary diversity is important cause for increased obesity, This study also showed the inadequate intake of some important micronutrients even for participants with high DDS, Although dietary diversity is suggested and encouraged, public health messages should emphasize to improve moderate and balanced dietary diversity in selected food items (Zhang e*t al*., 2017).

In a study conducted in urban Burkina Faso in a diet of women of reproductive age found that their diet lack a range of micronutrient goes as far as them needing iron and folic acid supplementation all this can be avoided if successful strategies can be found to increase the proportion of women regularly consuming nutrient-dense grains like sorghum, nuts, seeds, fresh and dried dark green leafy vegetables, specific nutrient-rich fruits, and liver because local foods can meet micronutrient needs. To achieve the needed change strategies would likely be needed to increase both consistent availability in markets and constant economic access and also to

increase demand. And low-cost nutrient dense food should be identified and promoted (Arimond et al., 2017)

The effect of increased Fruit and Vegetable consumption on selected micro and macronutrient intake in four randomized controlled trails in a total of 316 individual study results found no significant interactions which would have indicated that the relationship between change in nutrients and change in self-reported FV consumption depended on age or sex. Similar interactions were found in the pooled regression analysis of four Fruits and Vegetables intervention studies that used similar approaches to achieve dietary change found significantly increased intakes of energy, carbohydrate, sugars and fibre and significantly decreased intakes of fat including SFA, PUFA and MUFA, and starch, with increases in F&V consumption. In addition, significant increases were observed in vitamin C and β-carotene intake. The observed modest increase in energy intake associated with increased consumption of FV points to a need to guide individuals regarding the appropriate substitution of FV for other foods to ensure the impact of the overall dietary change is energy neutral (Fulton et al., 2017).

CHAPTER III

Methodology

3. METHODOLOGY

3.1. Study Area

The study was conducted in four districts of Oromia and Southern Nation Nationalities and Peoples Regions.

Oromia is divided into 17 zones, 245 woredas, and 36 towns administrative with 6500 kebele subdivisions. The selected kebeles of Oromia were found in towns of Meki (seeraawaakalee), and Ziway (Anannoo shishoo).

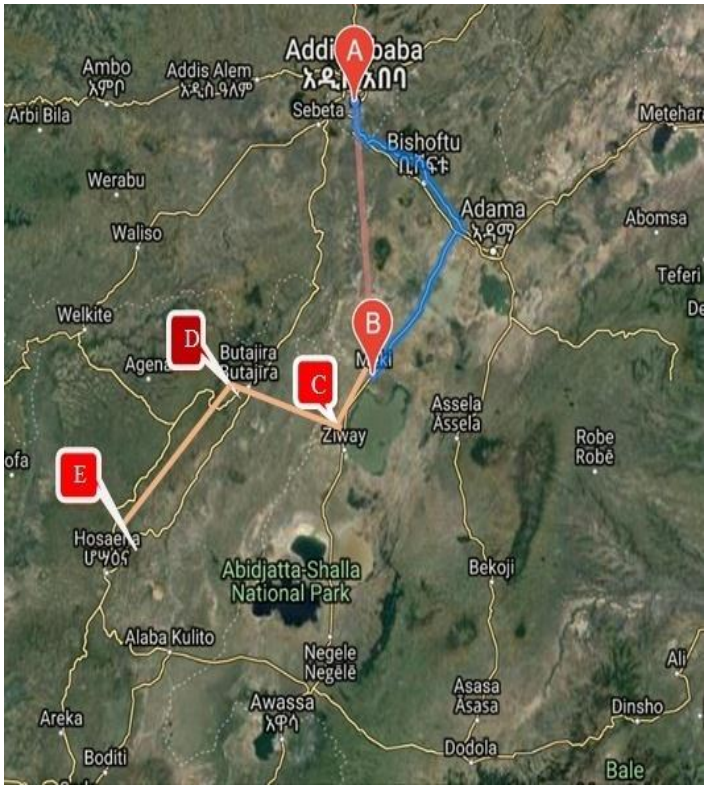
Meki is a town in east-central Ethiopia located in Mesraq Shewa zone of the Oromia region it has latitude and longitude of $8^0$9'N $38^0$49'E with an elevation of 1636 meter above sea level. Meki is the administrative center of Dugda Woreda. Based on figures from the Central Statistical Agency in 2005, Meki had (in 2007 G.C or 1997 E.C) an estimated total population of 36,597 of whom 18,422 are men and 18,175 are women.

Ziway is a town located on the road connecting Addis Ababa to Nairobi in east-shewa zone of the Oromia region of Ethiopia. Ziway has a latitude and longitude of $7^0$56'N $38^0$43'E with an elevation of 1643 meter above sea level. The 2007 national census reported a total population for Ziway of 43,600 of whom 22,956 were men and 20,704 were women.

Southern Nations, Nationalities and Peoples' region represents 10% of Ethiopian land area. The region is divided into 13 administrative zones, 133 woredas, and 3512 kebele subdivisions. The selected kebeles from the Southern regions were found in towns Butajira (Mekicho), and Doyogena (Gamora Gawada).

Butajira is a town and separate woreda in south-central Ethiopia located at the base of the Zebedermass in the Gurage zone of the SNNPR. This town found at a latitude and longitude of $8^0$07'N$38^0$22'E and an elevation of 2131 meter above sea level. It is surrounded by Meskane woreda. Based on 2007 census conducted by the CSA, It has a total population of 33,406 of whom 16,923 are men and 16,483 are women.

Doyogena is one of the woredas in SNNPR of Ethiopia found in the Kambata Tambara zone. It has a total population of 78, 634 of whom 38,605 are men and 40,029 women. 6,722 (8.55%) of its population are urban dwellers.



Keys

A- Addis Ababa

B- Meki

C- Ziway

D- Butajira

E- Hosaena

Source Google Map

Figure 1: Map of the route from Addis Ababa to the study sites

3.2. Study Design

A community-based cross-sectional survey that studied the dietary pattern and the different enablers and barriers of F&V consumption was assessed among 384 women of reproductive age in Seeraa Waakalee (Meki), and Anannoo Shishoo (Ziway) in Oromia region and Gemora Gawada (Doyo gena), and Mekicho (Meskan) in Southern Nation Nationalities and Peoples Regions.

3.3. Study Population, inclusion and exclusion criteria

All women of reproductive age (18-49) in the four cluster (kebeles) were considered as the study population. Women were eligible to be included in the study if they met the following criteria: women who have been living in the area two years prayer to the study and are still living in the study area during the study period, given consent to participate in the study, in the 18-49 years age ranges, and apparently healthy.

3.4. Sample Size

The sample size was determined by single proportion formula

$$n = \frac{Z_{\alpha/2}^2 \; P(1-P)}{d^2} \qquad \frac{1.96^2 * 0.5(1 - 0.5)}{(0.05)^2} = 384.16 \sim \mathbf{384}$$

Where;

n - The minimum sample size required for very large source population (≥10,000)

Z - The critical value for a given confidence interval (95%)

P - the Expected proportion of the event to be studied (0.5)

D - Margin of error (5%)

n = 384 + 10% =422.2 ~ 422

Therefore, the sample size of our study participants was 384

3.5. Sampling Techniques

The ATONU project is implemented in the four regions of Ethiopia 20 kebeles within the regions (in Amhara 5 kebeles, in Oromia 6 kebeles, in Tigray 4 kebeles, and in SNNPR 5 kebeles are included). In this study, two kebeles from Oromia and SNNPR each were chosen. From Oromia region (Anannoo Shisho 107 participants have included 79 Non-ATONU participants and 28 ATONU participants and, Seera waakelee 105 participants 83 Non-ATONU participants and 22 ATONU participants were included). From Southern Nation Nationalities and Peoples region (Mekicho 70 participants 54 Non-ATONU and 16 ATONU participants and Gemora Gawada 102 participants 88 Non-ATONU and 14ATONU participants were included in the

study). Total of 304 Non-ATONU and 80 ATONU participants were included as a study participant.

3.6. Study Variable

- Socioeconomic factors (occupation, marital status, number of children, pregnancy and lactation, water source, distance from a water source, land size, the energy source used for light and cooking, and age)
- Dietary factor (Dietary diversity score, Fruit and Vegetable preference, coffee intake, the time it takes from cooking to consumption, cooking methods, the perception of healthy and unhealthy food)
- Anthropometry (BMI)
- In-depth interview and Focus Group Discussion (enablers and Barriers of fruits and vegetables consumption)

3.7. Data collection tools and procedures

Data collection tools (i.e questionnaires) were prepared in English and translated into Amharic and Oromifa to asses' socio-demographic, dietary diversity using the 24-hour recall, Fruits, and Vegetables preference, and consumption frequency. 'Intensive' training was given to data collectors and pre-testing was done before the actual field work. Data was collected by trained health professionals and under the direct supervision of the principal investigator. After the interview anthropometry was measured and chosen participants continued with focus group discussion and in-depth-interview.

3.8. Anthropometric measurements

Women's Anthropometric measurements were taken (height and weight) to calculate the Body Mass Index (BMI) as weight/height^2. Weight was measured using digital weight scale (SECA) while wearing light clothing and no shoes. Height was measured using height measuring tape against a vertical wooden board.

3.9. Dietary data collection

Using the 24- hour open recall, participants were asked to list the food and beverage consumed in the previous day. The ingredients used to prepare the listed foods were assessed, the time it

took from the preparation to consumption and the processing (cooking) method used was recorded.

Fruit and vegetable preference was captured by asking the like and dislike of F&V from a list of available F&Vs.

The frequency of F&V consumption over the previous week was also asked using a food frequency questionnaire the listed F&Vs available in the area.

3.10. In-depth interview

In-depth interview was conducted with ten participants randomly selected in each kebele randomly. A total of 40 in-depth interviews were conducted. The interviews aimed to gain an in-depth understanding of the potential barriers and enablers of F&V consumption. The interview took 30 to 45minutes/person.

3.11. Focus group discussion

A total of seven focus group discussions were conducted with six participants in each group. One group of pregnant women, 3 different groups of ATONU beneficiaries and 3 groups of Non-ATONU beneficiaries were included. The session was tape-recorded by a Sony voice recorder and took an hour and a half per group.

3.12. Data quality control

The following quality controls measures were taken. Preliminary visits to the study areas were conducted in October 2017 in both regions which helped in to refine and adapt the questionnaires. The questionnaires were pre-tested before the actual field work. Data collectors were trained for three days on how to administer the questionnaire, and the supervisor was trained on how to probe for the in-depth interview and the focus group discussion. All anthropometric measurements were conducted by the principal investigator using a beam balance with non-detachable weighting scale. During the survey, strict daily supervision checking the consistency and the completeness of the questionnaires were implemented by the PI before the anthropometric measurement was conducted and proper feedback was given to data collectors on the daily basis.

3.13. Data processing and analysis

The statistical analyses were carried out using IBM SPSS statistical version 23. Descriptive statistical analysis (Frequency, percentiles, mean, median and standard deviations) and cross tabulation (Chi-square test) were conducted. In-depth interview and Focus group discussions were analyzed manually as more data emerged same ideas were added in categories.

3.14. Ethical consideration

Ethical clearance was obtained from the IRB of the College of Natural and Computational Sciences, Addis Ababa University. At the time of data collection, written consent was collected from the participants (women of reproductive age). Those who were willing to participate were included in the study. Confidentiality of the participants was ensured. A formal letter was also submitted to the regional office and kebele to ask for permission and support during the study period.

CHAPTER IV

Results &Discussion

4. RESULTS AND DISCUSSION

4.1 Socio-demographic characteristics

Variables	Frequency(%) /Mean ±SD

A total of 384 women of reproductive age from seeraawaakalee (Meki), Anannoo Shishoo (Ziway), Mekicho (Butajira) and Gemora Gawada (Doyogena) were included in this study. The socio-demographic characteristics of the study participants including are presented **Table1**.

The mean age of study participants was 31 years close to half (48.7%) has the same level of formal education, whereas 41% were Illiterate. Majority of the study participants were married, 85.4% were housewives 62.2% were from farming households. Close to half of the study participants had ≥5 children. Some 6.5% and 47% of the study participants were pregnant and lactating, respectively. More than 90% of the participants had separate toilet facilities (pit latern used for toilet), over 80% had improved source of water (Tap water, water pump, and protected spring) and about a third (28.6%) had some form of light in their households used firewood for cooking purposes.

Age (years)	31.0 ±7.5
Educational status	
Illiterate	160 (41.7)
Primary school	187 (48.7)
Secondary school	31 (8.1)
Other	6 (1.6)
Occupation	
Housewife	350 (91.1)
Farmer	28 (7.3)
Other	6 (1.6)
Marital status	
Married	328 (85.4)
Widowed	21 (5.5)
Live together	32 (8.3)
Other	3 (0.8)
Number of children	
1-2	96 (25)
3-4	101 (26.3)
>5	187 (47.4)
Pregnancy and lactation	
Pregnant women	25 (6.5)
Lactating women	180 (46.9)
Neither pregnant nor lactating	179 (46.6)
Owns farming land	239 (62.2)
Separate toilet facility	355 (92.4)
Water source	
Tap water	327 (85.15)
Water pump	12 (3.1)
Protected spring	23 (6.0)
Other (unprotected spring, rain and surface water)	22 (5.7)
Access to electricity (out of 384 participants)	110 (28.6)
Cooking fire source	
Charcoal	29 (6.5)
Wood	371 (83.6)
Animal Dung	34 (7.7)
Others (electricity,bio gas, kerosine)	10 (2.6)

Table1. Socio-demographic characteristics of (N=384) women of reproductive age, 2018

4.2. Anthropometric characteristics food consumption pattern

More than a quarter of the studied women were affected by one or more form of malnutrition. While 19% were underweight, about 7% were overweight/ obese.

Table2. Anthropometric characteristics

BMI	Frequency (%) /Mean±SD
Participants who are nor pregnant or lactating	
Underweight	42 (23.07)
Normal	125 (68.68)
Overweight	13 (7.14)
Obese	2 (1.09)
Total	182 (100)
Particiapants who are pregnant	
Underweight	1 (4)
Normal	21 (84)
Overweight	3 (12)
Total	25 (100)
Participants who are lactating	
Underweight	31 (17.51)
Normal	138 (79.66)
Overweight	8 (4.51)
Total	177 (100)
All (384) participants	
Mean Height	1.57± 0.06
Mean weight	52.06± 7.83
Mean BMI	21.04±2.69
Women less than 1.45	14 (3.64)

Indeed, the main staple of women of reproductive age was starch based **(Figure 2).** Injera and Enset are predominantly consumed cereals and tubers. Pulses were the next widely consumed food groups (40-50%). Nutrient-dense food groups like dairy, egg, meat, fish, and poultry were

rarely consumed. Dairy is consumed by only 28.9% and 22% of women in Oromia and SNNP regions, respectively. Dark green leafy vegetables (Ethiopian kale) and other vegetables mostly (potatoes and cabbage) are consumed still in a low amount 37.4% and 16.2% in Oromia and SNNP, respectively. Consumption of fruits was particularly low. Only a quarter of the respondents met the minimum women dietary diversity score **(Figure 3).** In contrast, in a study conducted in small households in Tanzania and Uganda more than half of the participants (52%) in both districts had a moderate DDS 4-5 food groups (32%) had high dietary diversity ≥ 6 food groups while (16%) had low dietary diversity <3 food groups (Nabuuma et al., 2018)

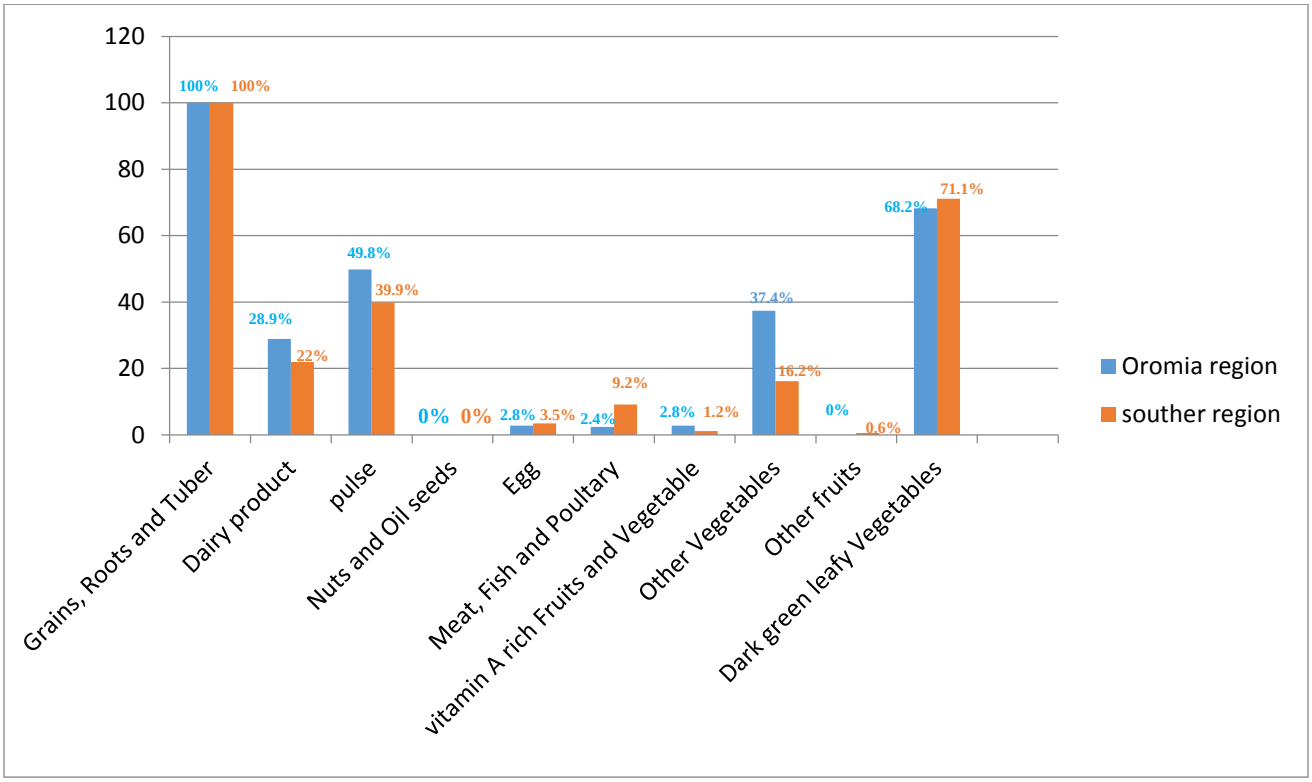


Figure 2: Food groups consumed by women of child-bearing age

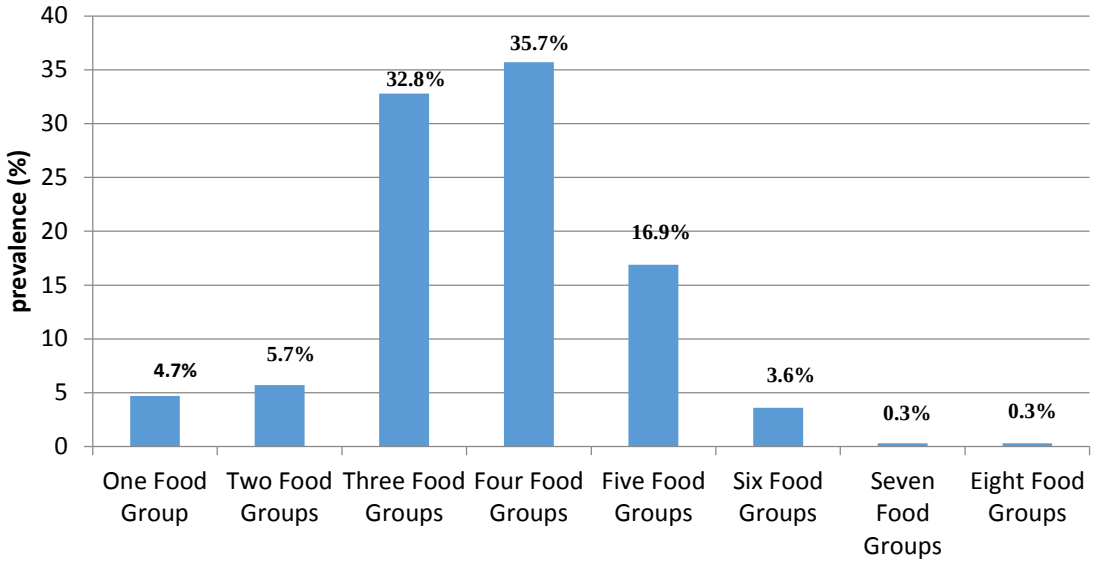


Figure 3: Dietary Diversity Score

Ownership of home gardening, education, and perception of F&V as healthy was positively associated with fruit and vegetable consumption (Table 3), but only the perception of F&V as healthy was associated with fruit consumption.

In a study conducted in bangladish Roughly three-quarters of the homestead vegetable produce often end up being consumed within the household (Schreinemachers et al., 2015). Differently in a study conducted on women who have a home garden have increased consumption of fruits and vegetables 65.9% of our study participants eat fruits three times a week and 66% eat vegetables three times a week.

	Vegetable consumption	**Fruit consumption**
	Correlation coeff. (P-value)	
Ownership of home gardening	**23.23 (0.002)**	7.25 (0.30)
Perceive F&V as healthy	**17.18 (0.02)**	**15.4 (0.02)**
Educational status	**136.9 (<0.001)**	25.6 (0.11)
N. of children	18.1 (0.203)	14.4 (0.27)

Table3. Factors associated with vegetable and fruit consumption

4.3. Food safety and level of processing

One of the proxy for food safety, we have asked how long after preparation do household eat the mean meal. The preparation to consumption time mostly in the range of 0-2 hours **(Figure 4),** especially for breakfast meals (93.5%). More than 60% of the respondents also indicated that lunch and dinner, they also consume it is fresh (within two-hours after preparation).

Mostly used processing method is cooking, baking, fermentation **(Figure 5)**. Frying is also used especially for breakfast meals the mostly eaten breakfast is roasted cereals (Kollo) which are fried without oil and egg is also eaten in a very small amount of the participants (2. 8%). This shows that the processing methods are also healthy.

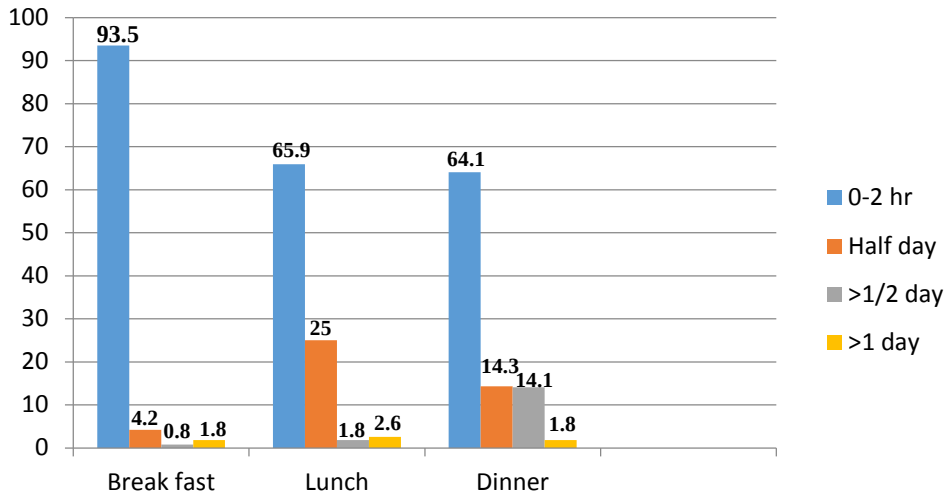


Figure 4: Food safety

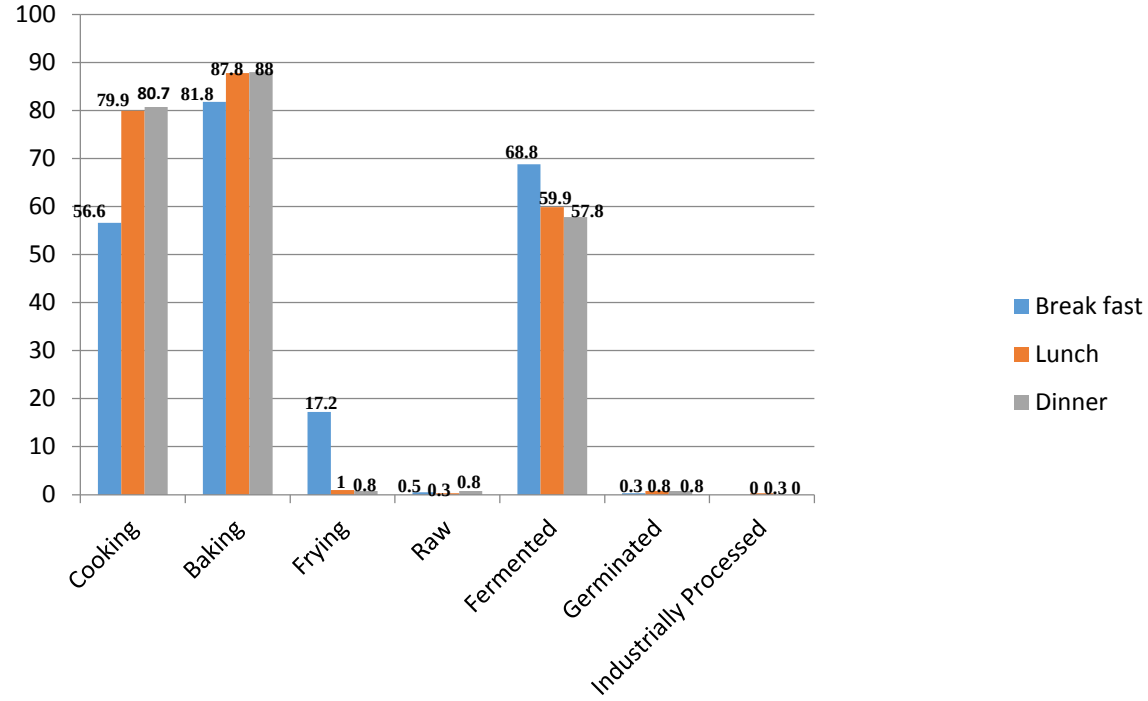


Figure 5: Food Processing

4.4. Coffee intake frequency and sweeteners' use

Out of 384 participants, 316 of them drink coffee three times a day, of which 38.8% drink it with salt and butter.

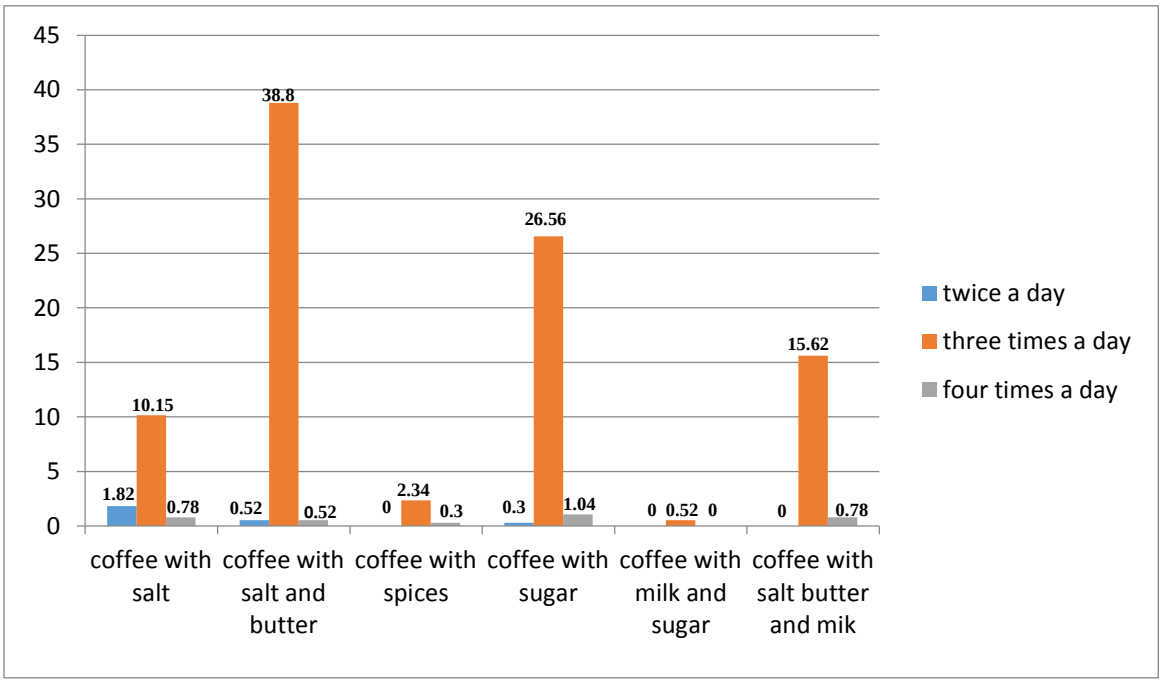


Figure 6: Coffee intake and use of salt, sugar or butter

In this study conducted in southern Ethiopia, salt intake was estimated on Average (SD) to be 17.2 (13.8g) per person a day. It is high because in the rural region people consume salt in their coffee several times a day in addition to other food items (Gebreegziabher et al., 2017). In our study, 12.8 % of the participants consume their coffee with salt, 39.8% consumed with salt and butter, and 16.4% drink coffee with milk, butter, and salt.

In a study conducted in 18 countries with a range of income level their finding suggests that individuals in countries with low gross national income consume fewer fruits and vegetables (Miller et al., 2016) which was related to our findings of affordability, availability, and distance from market as significant barriers **(Tables 4 &5).**

As you can see on **Table 4** Out of 384 Participants 322 of them own home garden out of which 35 of them eat vegetable every day of the week. Out of those who preserve F&V as healthy 8 participants consume vegetable every day of the week. From those who are an educated 9 participants eat vegetable every day of the week, from those who attended primary school 23 participants eat vegetable every day of the week, from those who attended secondary school 4 participants eat vegetable every day of the week, and from those who attended more than secondary school none of the participants consume vegetable every day of the week. More than 179 participants have more than 5 children out of which 20 paticipants eat vegetable every day of the week. More than 70% of the participants' blam there low consumption levels on affordability, while almost 50% blams it on availability.

Table4. Frequency of vegetable consumption and associated factors

	How many times a week do you consume vegetable (N %)						
	1	**2**	**3**	**4**	**>4**	**7**	**Total**
Owns home garden	52(13.54)	62(16.14)	89(23.17)	46(11.97)	38(9.89)	35(9.11)	322(83.85)
Perceive F&V as healthy	20(5.20)	32(8.33)	37(9.63)	22(5.72)	4(1.04)	8(2.08)	122(32.03)
No education	31(8.07)	40(10.41)	45(11.71)	23(5.98)	10(2.60)	9(2.34)	158(41.14)
Primary	24(6.25)	39(10.15)	49(12.76)	23(5.98)	28(7.29)	23(5.98)	186(48.43)
Secondary	8(2.08)	2(0.52)	11(2.86)	5(1.30)	1(0.26)	4(1.04)	31(8.07)
>secondary	1(0.26)	1(0.26)	1(0.26)	0(0)	0(0)	0(0)	3(0.78)
No of children							
1-2	17(4.42)	23(5.98)	29(7.55)	15(3.90)	8(2.08)	4(1.04)	96(25)
3-4	15(3.90)	15(3.90)	32(8.33)	9(2.34)	15(3.90)	12(3.12)	98(25.52)
>5	31(8.07)	42(10.93)	43(11.19)	27(7.03)	16(4.16)	20(5.20)	179(46.61)
Affordability	44(11.45)	70(18.22)	87(22.65)	40(10.41)	21(5.46)	28(7.29)	290(75.52)
Availability	8(2.08)	6(1.56)	8(2.08)	3(0.78)	14(3.64)	3(0.78)	42(10.93)
I don't know the preparation method	2(0.52)	0(0)	0(0)	0(0)	0(0)	0(0)	2(0.52)
takes time to prepare	0(0)	1(0.26)	1(0.26)	1(0.26)	0(0)	0(0)	3(0.78)
I don't like the taste	0(0)	0(0)	0(0)	1(0.26)	0(0)	0(0)	1(0.26)
Market place is far	0(0)	0(0)	0(0)	0(0)	4(1.04)	0(0)	4(1.04)
I don't understand the benefit	9(2.34)	5(1.30)	8(2.08)	5(1.30)	0(0)	3(0.78)	30(7.81)

As you can see on Table 5 fruit consumtion is very low. No one of the participants who own home garden eat fruit every day of the week this is the same as participants with no education and with those who have more than 3 children, More than 50% of the participants blam there very low consumption on affordability while 20% of the participants blams it on Aavilability.

Table5. Frequency of fruits consumption and associated factors

	How many times do you consume fruit N (%)						
	1	2	3	4	>4	7	Total
Owns home garden	103(26.82)	120(31.25)	72(18.75)	21(5.46)	4(1.04)	0(0)	320(83.33)
Perceive F&V as healthy	34(8.85)	40(10.41)	33(8.59)	13(3.38)	3(0.78)	1(0.26)	124(32.29)
No education	60(15.62)	55(14.32)	33(8.59)	9(2.34)	0(0)	0(0)	157(40.88)
Primary	54(14.06)	75(19.53)	39(10.15)	11(2.86)	3(0.78)	0(0)	182(47.39)
Secondary	8(2.08)	11(2.86)	7(1.82)	3(0.78)	1(0.26)	1(0.26)	31(8.07)
>secondary	0(0)	2(0.52)	3(0.78)	1(0.26)	0(0)	0(0)	6(1.56)
1-2	24(6.25)	41(10.67)	17(4.42)	9(2.34)	2(0.52)	1(0.26)	94(24.47)
3-4	34(8.85)	39(10.15)	18(4.68)	6(1.56)	0(0)	0(0)	97(25.26)
>5	61(15.88)	63(16.40)	45(11.71)	9(2.34)	2(0.52)	0(0)	180(46.87)
Affordability	59(15.36)	95(24.73)	54(14.06)	16(4.16)	4(1.04)	1(0.26)	229(59.63)
Availability	40(10.41)	23(5.98)	12(13.12)	3(0.78)	0(0)	0(0)	78(20.31)
Distance from market	19(4.94)	16(4.16)	13(3.38)	4(1.04)	0(0)	0(0)	52(13.54)
Other	1(0.26)	8(2.08)	2(0.52)	1(0.26)	0(0)	0(0)	12(3.12)

4.5. Healthy and unhealthy foods as perceived by respondents

About 24% reported that there is food that is unhealthy as long as it is well cooked **(Figure 7)**. This suggested that the term healthy includes concepts of food safety, which is not the case globally. Cereals (19.8%), legumes (26.8), fruits and vegetables (46.4) were considered healthy. A little over 10 % think that Industrially Produced Food (IPF) are healthy (11.5%); whereas, 45.1% think that animal products (MFP) and eggs are healthy. Only a third of the participants (29.2) mentioned dairy as healthy. Surprisingly, 15.6 % of the participants think that sugar and oil (13.8%) are healthy. Foods/dietary pattern such as wheat(11.71%), fruits and vegetables (16.40%), legumes (18.75%), eating only one food group (10.93%), foods that are not cooked well (6.25%), industrially-processed food (2.34%) were considered as unhealthy by some.

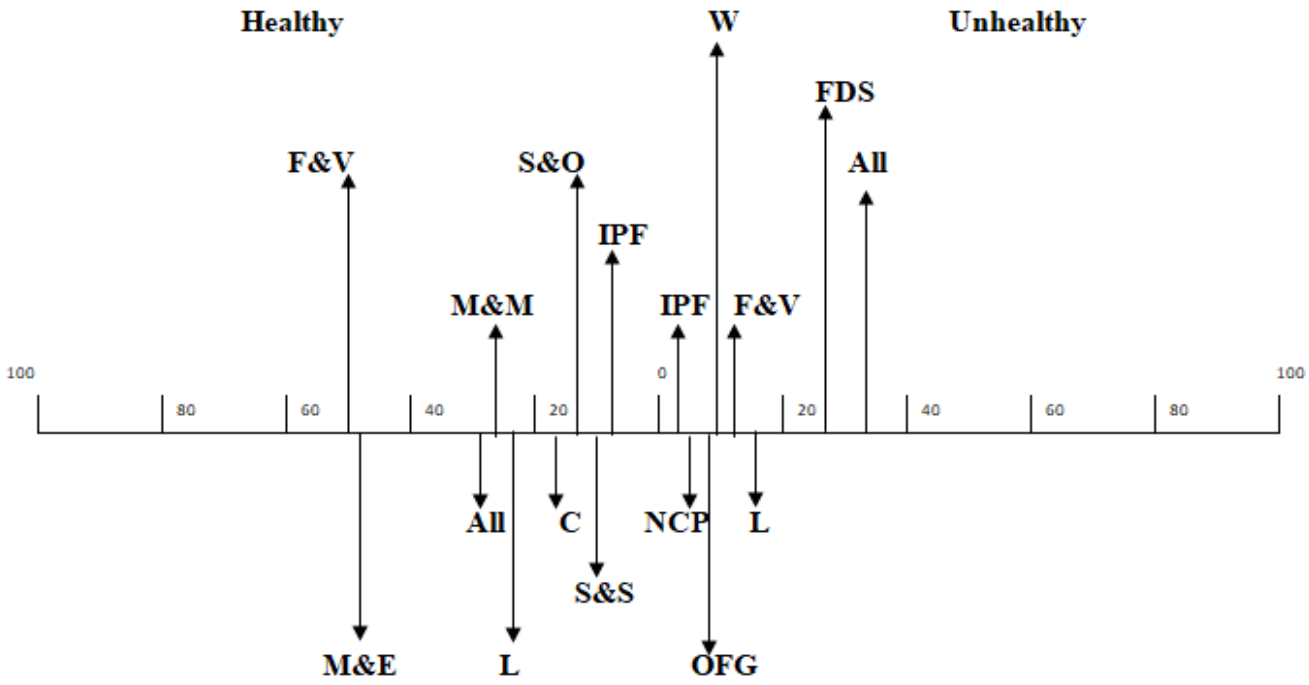


Figure 7: Healthy and unhealthy foods as perceived by respondents

Keys:- F&V(Fruits and Vegetable), M&E(Meat and egg), M&M(Milk and Milk product),All(all food are healthy), L(Legumes), C(Cereals), S&S (Spices and Salt), S&O (Sugar and oil),IPF (Industrially processed food), NCP(food that is not cooked properly),OFG(only one food group),W(wheat),and FDS (food that doesn't have enough spices).

4.6. Fruits and vegetables preference

The most preferred fruits were banana, papaya, avocado, lemons, and Mangos. The least liked fruits were pears and apples and that is because most of the respondents do not know them. Almost all of the vegetables except lettuce and spinach are wel1 known, but they were not consumed because of affordability issues. The most consumed vegetable is kale both in Oromia and Southern regions.

Table 6: Most preferred Fruits and Vegetables

Fruits and vegetables	Frequency (%)
Papaya	342 (89.1)
Banana	337 (87.8)
Avocado	309 (80.9)
Lemon	320 (83.3)
Mango	284 (74)
Onions	370 (93.8)
Kale	362 (94.3)
Potatoes	362 (94.3)
Carrots	358 (93.2)
Cabbage	354 (92.2)

4.7. In-depth interview and Focus group discussion

A total of 7 focus group discussion with a group of six participants and 40 in-depth interviews were conducted in selected kebeles of Oromia and Southern region. The participant's age in focus group discussion was 18-40 and an in-depth interview 18-49. Both the focus group discussion and In-depth interview were taken in addition to the survey.

Findings from FGD and IDI indicates that most of the participant's associated fruit and vegetables with positive health outcomes which was similar to a study conducted in the USA (Yeh et al., 2008). However, WHO's daily recommendation of more than 400g or ≥5 serving of fruit and vegetable a day is unknown. Instead, it is assumed that consuming fruit and vegetables once in a while is enough. The main reason why participants were not consuming fruits and vegetable is affordability followed by availability for fruits, and distance to market which contributes to affordability because of transportation cost. Not knowing the preparation method was also mentioned in some vegetables.

The finding of both FGD and IDI are summarized as follows:

Knowledge of fruits and Vegetable benefits

"*We know that it good for our health and the health of the child in the womb because it has vitamins*" voiced a 27-year-old who is pregnant with her 4th child and the other participants agree

"fruits and vegetables have vitamins which have many functions in the body" a 30-year-old women's impute from the in-depth interview

"*fruits and vegetables improve health, makes our body strong, prevent disease, improves eyesight and brain development*" 39 years old in-depth interview participant

"*It grows on small land and it grows faster, and it helps with income as well if we put it on sale"* said a 42-year-old ATONU beneficiary in-depth interview

Barriers of fruit and vegetable

"*I don't go to the market to buy fruits and vegetables. I will only buy it if I have some money left over from other more essential commodities"*

49-year-old women in-depth interview

"*There are two market days in a week but I can only go once because of the long distance and lack of transportation. I also buy vegetables more often than fruits*"

32-year-old in-depth interview participant

"*The market is far from home so I have to take transportation. After the transportation cost, I only have money to buy the essentials and I have a large family size so I don't buy fruits and vegetables*"40-year-old pregnant women with her 9th child said and participant voice their agreement

"*Even if we can afford to buy fruits, we can't find different varieties at a time"*

Said a 28-year-old focus group participants mentioned and the group agreed loudly

"Our village is sand with high water shortage so it is hard to facilitate a home garden, and buying fruits and vegetables is hard for rural life because of money and short storage life,"

20-year-old focus group participant who's an ATONU beneficiary

"I have large family size and small money, I would much rather feed my family Shiro and Enjera and find satiety much quicker than eating fruits and vegetables"

30 years old women

"*I have the knowledge that eating fruits and vegetables is good for health and because of my pregnancy I have cravings for it ,but they are not in my daily diet because I do not have the resources*"

20 years old, first-time pregnant women

What would you need to be changed for you to eat more fruits and vegetables every day?

"If the distance to the market is short" a 30-year-old in-depth interview participant

"If water is more available we can produce it in our garden" a 27-year-old women

"If we get the knowledge on how to cook it and if our husbands get the knowledge of its benefits not only for us but for them, then we could get them on board on giving as money to buy it" a 26-year-old Non-ATONU focus group participant voiced

"If we get seeds and a good training on how to make them grow" 34-years- old women

Limitations of the study:

We only collected a one day 24-hr recall, but this was complemented with a food frequency for fruits and vegetables consumption. The present study was sponsored by ILRI, which presented the conditions of conducting the survey in their project sites. Nevertheless, our findings were in line with reports from national surveys.

CHAPTER V

Conclusion & Recommendation

5. CONCLUSION AND RECOMMENDATION

In conclusion fruit, consumption was rare, while the consumption of dark green leafy vegetables such as Kale was common. Many of the respondents considered fruits and vegetables as healthy but did not know about the amount recommended for a meaningful health effect. Affordability, distance to market and access were major barriers hindering the consumption of fruits and vegetables. Altogether, more dietary diversity with the integration of nutrient-dense foods including animal source foods is needed.

The following are the recommendations made based on our findings:

- Introduce homestead home gardening with livestock earning, and fruit and vegetables production
- The home-gardening could be more effective if production is informed by food preference
- Cooking demonstrations should be an integral part of the promotion of homestead gardening
- Unhealthy components of diets like consumption of coffee with salt should be discouraged.

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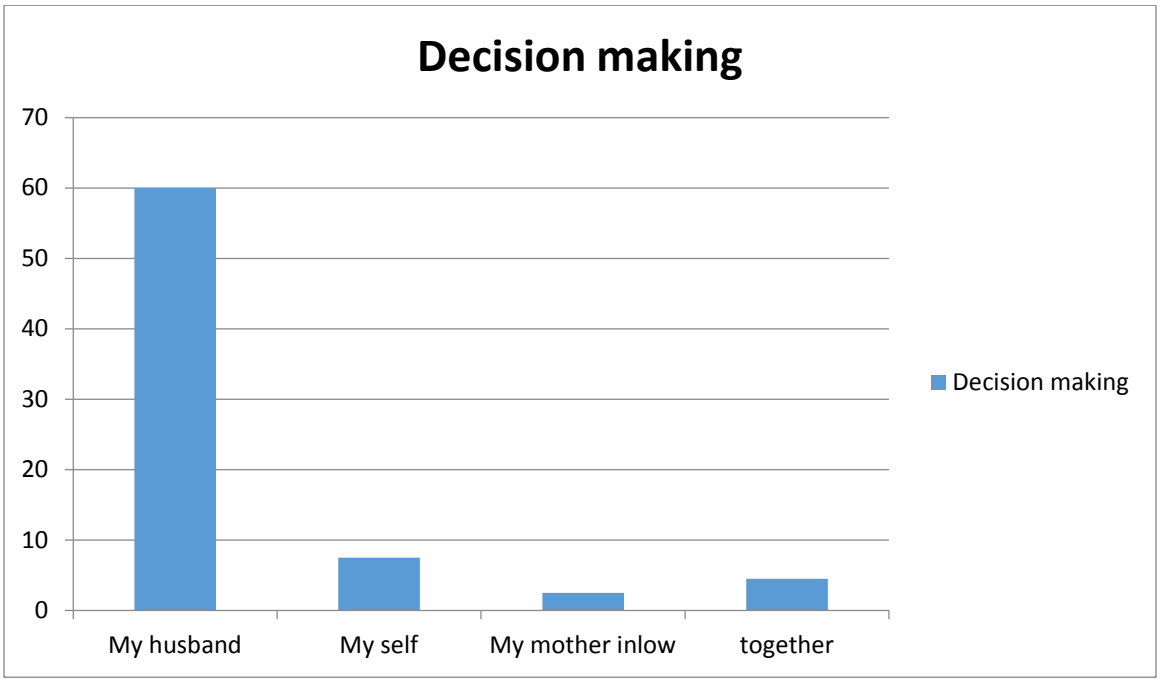
Annex

ANNEX

Annex 7.1. Atonu participants result

Variables	Frequency(%) /Mean ±SD
Age (years)	31.75 ±7.323
Educational status	
Illiterate	38 (47.5)
Primary school	37 (46.25)
Secondary school	3 (3.75)
Degree	1 (1.25)
Other	1 (1.25)
Occupation	
Student	1 (1.25)
Housewife	65 (81.25)
Farmer	12 (15)
Merchant	2 (2.5)
Marital status	
Married	70 (87.5)
Widowed	3 (3.75)
Live together	6 (7.5)
Divorced	1 (1.25)
Number of children	
1-2	12 (15)
3-4	19 (23.75)
>5	49 (61.25)
Pregnancy and lactation status	
Pregnancy	1 (1.25)
Lactating women	43 (53.75)
Farming landowner	46 (57.5)
Separate toilet facility	77 (96.25)
Water source	
Tap water	25(31.25)
Public tap water	47 (58.75)
Other	5 (6.25)
Electricity	29 (36.25)
Cooking fire source	
Charcoal	8 (10)
Wood	78 (97.5)
Animal Fuel	15 (18.75)

Variable	Frequency (%)
ATONU beneficiary	80 (20.8)
What do you get from the project?	
Chicken	74 (92.5)
BCC training	74 (92.5)
Women empowerment	62 (77.5)
Others	3 (3.75)
What has been successful?	
Chickens	62 (77.5)
Home garden	66 (82.5)
BCC	68 (85)
Women empowerment	46 (57.5)
Others	1 (1.25)
Do you consume eggs from the chickens you get from the project?	
Yes	71 (88.75)
What do you use your home garden produce for?	
For Food	66 (82.5)
For Money	2 (2.5)
Both	11 (13.75)
Other	1 (1.25)
How often does the coordinator give you the training?	
Twice a week	14 (17.5)
Once a week	19 (23.75)
Once every two weeks	38 (47.5)
Once a month	8 (10)
Other	1 (1.25)
How often do you attend the training?	
Every time it is given	47 (58.75)
Once in a while	17(21.25)
I haven't attended more than two since it started	2 (2.5)
Never attended	6 (7.5)
If you are married does your husband attend the training with you?	
Yes	68 (85)



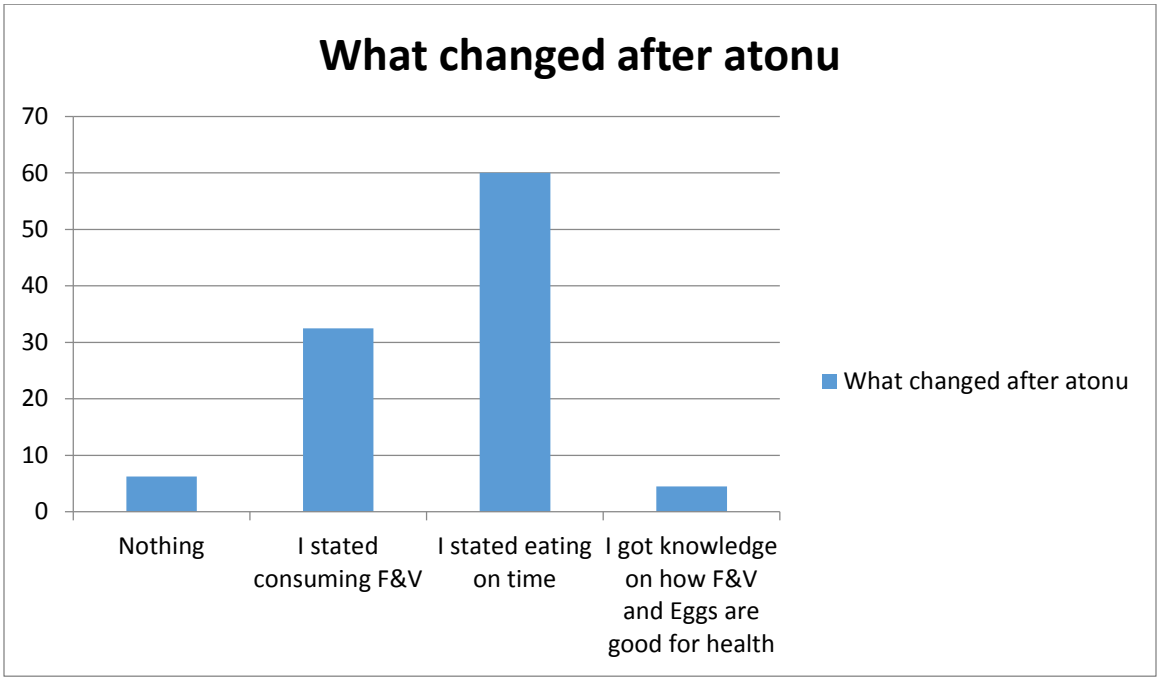
Variable	Frequency (%)
Do you have a budget plan?	
Yes	71 (88.75)
Do you communicate freely with your husband?	
Yes	73 (91.25)
Does your husband help you with household chores?	
Yes	55 (68.75)

What do you use your home garden produce for?	How many times a week do you consume fruits (N %)					
	1	2	3	>3	7	Total
Food	8(10)	2(2.5)	31(38.75)	7(8.75)	18(22.5)	66(82.5)
Money	0(0)	0(0)	0(0)	1(1.25)	0(0)	1(1.25)
Both	1(1.25)	1(1.25)	4(5)	5(6.25)	0(0)	11(13.75)
Others	0(0)	2(2.5)	0(0)	0(0)	0(0)	2(2.5)

	Value	Degree of freedom	Significance
Pearson Chi-square	15.101	18	.655

What do you use your home garden produce for?	How many times a week do you consume vegetable (N %)					
	1	2	3	>3	7	Total
Food	2(2.5)	7(8.75)	20(25)	11(13.75)	26(32.5)	66(82.5)
Money	0(0)	0(0)	0(0)	0(0)	2(2.5)	2(2.5)
Both	0(0)	0(0)	0(0)	2(2.5)	9(11.25)	11(13.75)
Others	0(0)	0(0)	1(1.25)	0(0)	0(0)	1(1.25)

	Value	Degree of freedom	Significance
Pearson Chi-square	72.514	15	.000


What changed after atonu
70
60
50
40
30
20
10
0
Nothing
I stated consuming F&V
I stated eating on time
I got knowledge on how F&V and Eggs are good for health
What changed after atonu

Annex 7.2. Consent form (English)

Consent statement for participating in the survey and anthropometry measurement

This survey is done to find the determinant of fruits and vegetable consumption in women of reproductive age in selected kebeles of Oromia and Southern Nation Nationalities and Peoples regions the findings of this research will be an input for nutrition, health and agricultural sectors. You are selected for this survey because you're a member of the selected kebeles and you're between the ages of 19-45. We kindly ask you to be a part of this study. If you are willing to participate, you will be asked about the different barriers and enablers of fruits and vegetable consumption. Your answers will not be disclosed to anyone except the primary investigator. If there is any question that you don't want to answer you can ask to skip or if you want to leave the survey, feel comfortable to do so at any time.

In addition to this, we will measure your height and weight. It will help us to your nutritional status. The measurement does not impose any harm to you. If you have any question about the survey and measurement you can ask me to clarify.

Contact information: -

Are you willing to participate in the survey?

1. Yes
2. No, stop

If you are willing to participate in the survey continue with the questions; if not you can leave.

Annex 7.3. Questionnaire (English Version)

No	Questions	Choice		Skip
	Region			
	Kebele			
	Got (CLUSTER)			
	Household number			
1	Respondents name			
2	Age (in complete years)			
3	Religion			
4	Have you ever went to school?	Yes	01	
		No	00	
5	Educational status	Illiterate	00	
		Primary school	01	
		Secondary school	02	
		High school diploma	03	
		Technical/vocational certificate	04	
		College student	05	
		University student	06	
		Degree	07	
		Diploma	08	
		Other (specify)	88	
6	Occupation	Student	01	
		Housewife	02	
		Farmer	03	
		Fisher	04	
		Merchant	05	
		Mining	06	
		Laborer	07	
		Government work	08	
		Other (specify)	88	
7	How do you get your salary?	In money	01	
		In-kind	02	
		Both in money and in kind	03	
		Other (specify)	88	
8	Marital status	Single	01	
		Married	02	
		Widowed	03	
		Divorced	04	
9	If you are married do you live with your husband or are you	I live with my husband	01	
		We live separately	00	

	living separately?			
10	Do you have children?	Yes	01	
		No	00	
11	If you answer to the above question is yes how many do you have?	[__/__]		
12	How old were u when you had you, first child?	Age in completed years [__/__]		
13	Are you currently breastfeeding?	Yes	01	
		No	00	
14	Educational status of the husband	Illiterate	99	The answer to question number 8 is single or widowed skip
		Primary school	01	
		Secondary school	02	
		High school diploma	03	
		Technical/ vocational certificate	04	
		Diploma	05	
		Degree	06	
		None	99	
15	What does your husband do?	Student	01	The answer to question number 8 is single or widowed skip
		Unemployed	02	
		Farmer	03	
		Fisher	04	
		Merchant	05	
		Mining	06	
		Laborer	07	
		Government work	08	
		Other (specify)	88	
16	How does your husband get his salary?	In money	01	If your answer to the above question is unemployed skip to number 17
		In-kind	02	
		Both in money and in kind	03	
		Other specify	88	
17	Do you have a light source in your house?	Yes	01	
		No	02	
18	What fire source do you use for cooking?	Charcoals	01	
		Wood	02	
		Kerosene	03	

		Electric	04	
		Biogas	05	
		Animal fuel	06	
		Coffee waste	07	
		Dried grass	08	
		Others specify	88	
19	Do you have a clock in the house	Yes	01	
		No	00	
20	Do you have a television	Yes	01	
		No	00	
21	Do you have a radio	Yes	01	
		No	00	
22	Do you have a telephone in the house?	Yes	01	
		No	00	
23	Does anyone from the household have a mobile phone?	Yes	01	
		No	00	
24	Do u have a refrigerator?	Yes	01	
		No	00	
25	Do you have a motorcycle?	Yes	01	
		No	00	
26	Do you have a bicycle?	Yes	01	
		No	00	
27	What do you use for transportation?	Car age	01	
		Baggage	02	
		Taxi	03	
		Car	04	
		Motorcycle	05	
		Bicycle	06	
		Other specify	88	
28	Whose house do you live in?	Rental	01	
		My own	02	
		Relatives	03	
		Other specify	88	
29	Do you have a place to do home gardening?	Yes	01	
		No	00	
30	If you do you have a home garden?	Yes	01	
		No	00	
31	How do you use your home garden produce?	To sale	01	
		Many of it to the sale and some of it we consume	02	
		For our self	03	
		Other specify	88	

32	Does anyone in the household have a farming land?	Yes	01	
		No	00	
33	What is your water source?	Tap water	01	
		Public tap water	02	
		Protected dug well	03	
		Unprotected dug well	04	
		Surface water	05	
		Rainwater	06	
		Water pump	07	
		Protected spring	08	
		Unprotected spring		
		Other specify	88	
34	How much time does it take to get to the water source?	Have tap water in the household	01	
		Half an hour	02	
		About an hour	03	
		More than an hour	04	
		Other specify	88	
35	How many separate rooms does your house have?	One	01	
		Two	02	
		Three	03	
		More than three	04	
		It doesn't have separate rooms	99	
36	Do you have a separate toilet	Yes	01	
		No	00	
37	Who is in charge of decision making in the household?	My husband	01	
		I am	02	
		My mother in low	03	
		Other specify	88	
38	Do you have a budget plan in the household?	Yes	01	
		No	00	
39	Do you communicate freely with your husband?	Yes	01	
		No	00	
40	Does your husband help you in different household chores?	Yes	01	
		No	00	
41	How many times a week do you eat fruits?	Once	01	
		Twice	02	

		Three times	03	
		Four times a week	04	
		More than four times a week	05	
		Every day of the week	06	
		I don’t eat fruits	99	
42	Depending on the answer why do eat fruits that often what is keeping you from eating fruits every day?			
43	If your answer to the above question is that you don’t eat fruits could you tell me the reason?	Affordability	01	
		availability	02	
		market is far	03	
		I don’t like the taste	04	
		my husband doesn’t like it	05	
		my children don’t like it	06	
		I just don’t get the benefit of eating fruits	07	
		I think of them as a luxury food	08	
		Other specify	88	
44	How many times a week do you eat Vegetables?	Once	01	
		Twice	02	
		Three times	03	
		Four times a week	04	
		More than four times a week	05	
		Every day of the week	06	
		I don’t eat vegetable	99	
45	Depending on the answer why do you eat vegetables that often what is keeping you from eating vegetables every day?			
46	If your answer is that u don’t eat vegetable could you tell me why?	Affordability	01	
		Availability	02	
		I don’t know the preparation method	03	
		The preparation takes a long time	04	
		I don’t like the taste	05	

		My husband doesn't like vegetable	06	
		My children don't like vegetable	07	
		Market is far	08	
		I don't think eating vegetable has any benefit	09	
		I think of eating vegetables as luxury food	10	
		Other specify	88	
47	What do you think is a healthy food?			
48	Which one of the following do you think is a healthy food?	Cereals	01	
		Legumes	02	
		Fruits and Vegetable	03	
		Industrially processed foods	04	
		Meat & poultry	05	
		Milk and milk products	06	
		Sugar and oil	07	
		Spices and salt	08	
		All of the above	09	
		Others specify	88	
49	Could you tell me why you think that is a healthy meal?			
50	How many times a week do you prepare that meal?			
51	What do you think is not a healthy food?			

52	Could you tell me why you think that is not a healthy meal?			
53	Do you make the meal you mentioned above?			
54	If you do how many times a week do you make it?			
55	Why do you prepare it?	Because of its availability	01	
		Affordability	02	
		I like it	03	
		My family enjoys it	04	
		Because I think its health	05	
		All of the above	06	
		Other specify	88	

24hr Recall

Could you share with me what u eat and drink yesterday starting from when you wake up in the morning

On what day of the week was this data collected circle below?
Monday 01 Tuesday02 Wednesday03 Thursday04 Friday05 Saturday06 Sunday07

Time	Place	Food & drink	Ingredients	Preparation	Time from preparation to consumption

Key: - For preparation level

((1) Cooking, (2) Baking, (3) Frying, (4) Raw, (5) Fermented, (6) Germinated), (7)packed industrially processed

Time from preparation to consumption

((1)0-2hr, (2) half day, (3)>1/2 day, (4) >1day)

Fruits and vegetable preference

1) I like it
2) I don't like it
3) Don't know it
4) I prefer it but it is hard to get

Fruits	1	2	3	4	Vegetables	1	2	3	4
Banana					Carrots				
Orange					Potatoes				
Watermelon					Cabbage				
Mango					Kale				
Grapes					Spinach				
Strawberries					Beetroot				
Apple					Tomatoes				
Pear					Green chills				
Mandarin					Green peas				
Lemon					Lettuces				
Papaya					Onion				
Avocado					Garlic				
Grapefruit					Ginger				
Others specify					Others specify				

56	Are you an ATONU beneficiary? If your answer is yes answer the following questions if you are not thank you for your participation	Yes	01	
		No	00	
57	How long ago did the project start?	Three years ago	01	
		Two years ago	02	
		A year ago	03	
		I don't remember	00	
		Other (specify)	88	
58	What did you get from the project? More than one answer is possible	Chickens	01	
		Home gardening	02	
		Bcc training	03	
		Women empowerment	04	
		Other (specify)	88	
		I didn't get anything	99	
59	What has been successful from everything you get from ATONU? More than one answer is possible	The chickens	01	
		The home gardening	02	
		The Bcc training	03	
		The women empowerment	04	
		Other(specify)	88	
60	Do you consume eggs from the chicken you get from the project?	Yes	01	
		No	00	
61	For what do you use the home gardening produce?	For food	01	
		For money	02	
		Other (specify)	88	
62	How often does the ATONU coordinator give the training?	Twice a week	01	
		Once a week	02	
		Once every two weeks	03	
		Once a month	04	
		Other(specify)	88	
63	How often do you attend the training given?	Every time it's given	01	
		Sometimes	02	
		I haven't attended more than twice since it started	03	
		I have never attended one	04	

		Other (specify)	88	
64	If you are married does your husband attend the training with you?	Yes	01	
		No	00	
65	What does the training include?	Women empowerment	01	
		Healthy eating	02	
		How to cook F&V	03	
		Other (specify)	88	
66	After ATONU what changed in your house for the better?	My husband helps me in the household	01	
		We consume more F&V	02	
		We consume eggs and chicken meat	03	
		All of the above	04	
		Nothing changed	99	
		Other (specify)	88	
67	After ATONU what changed in your dietary behavior?			
68	How much a week do you consume vegetable after ATONU?	Once a week	01	
		Twice a week	02	
		Three times a week	03	
		More than three times a week	04	
		Every day of the week	05	
		Other (specify)	88	
		I don't eat at all	99	
69	How much a week do you consume fruit after ATONU?	Once a week	01	
		Twice a week	02	
		Three times a week	03	
		More than three times a week	04	
		Every day of the week	05	
		Other (specify)	88	
		I don't eat at all	99	

In-depth interview

1) What do you know about fruits and vegetables?
2) Do you know the benefit of eating fruits and vegetables?
3) How many times a week do you eat fruits?
4) How many times a week do you eat vegetables?
5) What is keeping you from eating fruits every day?
6) What is keeping you from eating vegetables every day?
7) What would you need to be changed in order for you to eat Fruits every day?
8) What would you need to be changed in order for you to eat vegetables every day?

Focus group discussion

Focus group is going to be discussed by following four question sequences

- → **Main questions (usually open-ended questions)**
- → **Follow up questions**
- → **Probing questions (make them say more about the answer they gave)**
- → **Prompted questions (cue or aids to help them remember)**

1) When do you think about fruits and vegetables what comes to your mind?
2) Do you think eating fruits and vegetables is good for your health?
3) Do you like eating fruits?
4) Do you like eating vegetables?
5) Why do you eat fruits and vegetables?
6) What encourages you to eat Fruits and Vegetables frequently?
7) What are the barriers for you to consume fruits and vegetables frequently?

    Is it because you don't know how to cook them?

    Is it because you don't like the taste?

    Is it because your family don't like eating fruits and vegetables?

    Is it because the marketplace is far?

    If for reasons that is not mentioned can you share with the group?

Anthropometric measurement

Name	
Age	
Height	
Weight	

BMI	
Underweight (< 18.5)	
Normal (18.5 – 24.9)	
Overweight (25 – 29.9)	
Obese (≥30)	
Class 1 obese (30 - 35)	
Class 2 obese (35 - 40)	
Severe obesity (>40)	

Annex 7.4. Amharic consent

ትውውቅና ፍቃድ መጠየቅ

ሥሜ …….. ይባላል የመጣሁት ከአዲስ አበባ ዩኒቨርስቲ ሲሆን የመጣሁበት ዓላማ ካለማቀፍ የእንስሳት ምርምር ኢኒስቲትዮት / ኢልሪ / በመተባበር በቀበሌአችሁ ያለውን የሴቶች የአትክልትና ፍራፍሬ አመጋገብ ለማጥናት ነው።

ከዚህ ጥናት የሚገኘው ጥልቅ መረጃ ለጤና ፣ ለሥነምግብ እንዲሁም ለግብርናው ዘርፍ እንደግብአት ሆኖ ሊያገለግል ይችላል። እርስዎም የዚህ ቀበሌ ነዋሪ በመሆኑም እና እድሜአቸው ለመውለድ የሚችሉ ማለትም /19-49/ ያሉ ሴቶች እንዲሳተፉ በትህትና እንጠይቃለን። በጥናቱ ላይ ለመተባበር ፍቃደኛ ከሆኑ ቃለ መጠይቁ ከ15-20 ደቂቃ የሚወስድ ሲሆን የእርስዎም ሆነ የቤተሰብዎ የግል መረጃ በሚስጥር የሚያዝ ይሆናል። ለመመለስ የማይፈልጉት ጥያቄ ቢኖር ለማለፍ ወይ ቃለ መጠይቁን ለማቋረጥ ቢፈልጉ መብትዎ የተጠበቀ ነው። ሆኖም የርስዎ ተሳትፎ አስፈላጊ ስለሆነ እንደሚሳተፍ ተስፋ እናደርጋለን በተጨማሪም በጥናቱ ላይ የክብደትና የቁመት የሚለካ ይሆናል ልኬቱ በጤናዎ ላይ የሚያመጣው ምንም ዓይነት ችግር አይኖርም።

ቃለ መጠይቁ ወይም ልኬቱ የተመለከተ ጥያቄ ካለዎት ወይም ከላይ የጠቀስኩት ሀሳብ ግልፅ ያልሆነ ነገር ካለ ሊጠይቁኝ ይችላሉ ጥያቄውን ለማብራራት ዝግጁ ነኝ በጥናቱ ላይ ለመሳተፍ ዝግጁ ኖት?

እሳተፋለሁ …….

አልሳተፍም …….

በጥናቱ ላይ ለመሳተፍ ፍቃደኛ ከሆኑ ጥያቄውን ይጀምሩ ፍቃደኛ ካልሆኑ አመሰግናለሁ መጠይቁን ያቋርጡ ለተጨማሪ ጥያቄ ወይም ማብራሪያ በዚህ ስልክ ሊደውሉ ይችላሉ።

Annex 7.5. Amharic questioner

ተ.ቁ	ጥያቄዎች ማስታወሻዎች	አማራጭ / መልሶች /		ዝለል
	ክልል			
	ወረዳ			
	ቀበሌ			
	የቤት መለያ			
	የቤት ቁጥር			
1	የተጠያቂዋ ስም			
2	የትውልድ ዘመን	ቀን ….. ወር ….. ዓ/ም …….		
3	የየትኛው ሀይማኖት ተከታይ ነሽ			
4	ትምህርት ተምረሽ ታውቂያለሽ	አዎ	01	
		አላውቅም	00	
5	እስከ ስንተኛ ደረጃ አጠናቀቅሽ / ተምረሻል /	ክፍል ……../…….	01	
		የቴክኒክና ሙያ	02	
		የዩኒቨርሲቲ / ኮሌጅ ዲፕሎማ/	03	
		የዩኒቨርስቲ / ኮሌጅ ዲግሪ/	04	
		የተለያየ ከሆነ ጥቀሽ	05	
6	የሥራ ዓይነትሽ ምንድነው?	ተማሪ	01	
		የቤት እመቤት	02	
		ገበሬ	03	
		ዓሣ አጥማጅ	04	
		ነጋዴ	05	
		ማዕድን ፈላጊ	06	
		የጉልበት ሠራተኛ	07	
		የመንግስት ሠራተኛ	08	
		የተለየ ከሆነ ጥቀሽ	88	

7	በምን ዓይነት የክፍያ ሁኔታ ደሞዝ ይከፈልሻል?	በብር	01	
		በዓይነት	02	
		በብርና በዓይነት	03	
		የተለየ ከሆነ ጥቀሽ	88	
8	የትዳር ሁኔታሽ ምንድነው?	ያላገባ	01	
		ያገባ	02	
		በሞት የተለየ	03	
		የፈታች	04	
9	የትዳር አጋር አብሮ ይኖራል? ወይስ ሌላ ቦታ ነው የሚኖረው?	አብረን እየኖርን ነው	01	
		ሌላ ቦታ ነው የሚኖረው	02	
10	ልጆች አሉሽ ወይ	አሉኝ	01	
		የሉኝም	00	
11	ስንት ልጆች አሉሽ	……../…….		የሉኝም ከሆነ ዝለይ
12	የመጀመሪያ ልጅሽን ስትወልጂ እድሜሽ ስንት ነበር	……../……../……. ቀን / ወር / ዓመተ ምህርት		
13	አሁን እያጠባሽ ነው ወይ	ነው	01	
		አይደለም	00	
14	የባለቤትሽ የት/ደረጃ ምንድነው	ክፍል ……../…….	01	የ8ተኛው መልስ አላገባም
		ቴክኒክና ሙያ	02	
		የዩኒቨርሲቲ / ኮሌጅ / ዲፕሎማ	03	
		የዩኒቨርሲቲ / ኮሌጅ ዲግሪ	04	
		የተለየ ከሆነ ጥቀሽ	05	

				ከሆነ ዝለል
15	የባለቤትሽ የሥራ ዓይነት ምንድነው	ተማሪ	01	
		ሥራ የለውም	02	
		ገበሬ ነው አሣ አጥማጅ ነጋዴ	03 04 05	
		ማዕድን ቆፋሪ	06	
		የጉልበት ሠራተኛ	07	
		የመንግስት ሠራተኛ	08	
		የተለየ ከሆነ ጥቀሺ	88	
16	በምን ዓይነት የክፍያ ሁኔታ ደሞዝ ይከፈለዋል?	በገንዘብ	01	የጥያቄ 15 መልስ ሥራ የለውም ከሆነ ዝለል
		በዓይነት	02	
		በገንዘብና በዓይነት	03	
		የተለየ ከሆነ ጥቀሺ	88	
17	በቤትዎ መብራት አለ ወይ?	የለም	00	
		አለ	01	
18	ምግብ ለማብሰል የምትጠቀሚበት የሀይል ምንጭ ምንድነው?	በከሰል	01	
		በእንጨት	02	
		በነጭ ጋዝ	03	
		በኤሌክትሪክ	04	

		በባዩ ጋዝ	05	
		በከብት	06	
		የቡና ገለባ	07	
		ሣር / ፉርሽካ	08	
		የተለየ ከሆነ ጥቀሺ	88	
19	በቤትሽ ውስጥ ሰዓት አለ ወይ?	አለ	01	
		የለም	00	
20	በቤትሽ ውስጥ ቴሌቭዥን አለ ወይ?	አለ	00	
		የለም	01	
21	በቤትሽ ውስጥ ሬዲዩ አለ ወይ?	አለ	00	
		የለም	01	
22	በቤትሽ ውስጥ ስልክ አለ ወይ?	አለ	00	
		የለም	01	
23	በቤት ውስጥ ተንቀሳቃሽ / ሞባይል /አለ ወይ?	አለ	01	
		የለም	00	
24	በቤት ውስጥ ፍሪጅ / ማቀዝቀዣ / አለ ወይ ?	አለ	01	
		የለም	00	
25	በቤት ውስጥ ሞተር ሳይክል አለ ወይ?	አለ	01	
		የለም	00	
26	በቤት ውስጥ ሳይክል አለ ወይ?	አለ	01	
		የለም	00	
27	የትራንስፖርት አገልግለት በምንድነው የምትጠቀሚው?	ጋሪ	01	
		ባጃጅ	02	
		ታክሲ	03	
		በመኪና	04	
		በሞተር ሳይክል	05	

		በሳይክል	06	
		የተለየ ከሆነ ጥቀሺ	88	
28	የምትኖርበት ቤት የማነው?	የኪራይ	01	
		የራሴ ነው	02	
		የዘመድ	03	
		የተለየ ከሆነ ጥቀሺ	88	
29	የጓሮ አትክልት መትከያ ቦታ አለሽ ወይ?	አለኝ	00	
		የለኝም	01	
30	የጓሮ አትክልት መትከያ ቦታ ካለሽ አትክልት ትተክይአለሽ ወይ	እተክላለሁ	01	የቁጥር 29 መልስ የለኝም ከሆነ ዝለል
		አልተክልም	00	
31	የጓሮ አትክልት ካለሽ ለምን ትጠቀሚበታለሽ?	ለሽያጭ ብቻ	01	የቁጥር 29 መልስ የለኝም ከሆነ ዝለል
		አብዛኛውን ለሽያጭ	02	
		ለቤት ውስጥ ፍጆታ ብቻ	03	
		ሌላ	88	
32	ከቤተሰብ አባላት መካከል ለግብርና	አለ	01	

	የሚሆን የራሱ መሬት ያለው ሰው አለ?	የለም	88	
33	የመጠጥ ውሃ ከየት ታገኛለሽ?	የቧንቧ ውሃ እስከ ቤት ተዘርግቷል	01	
		የአካባቢ የቧንቧ ውሃ	02	
		የተጣራ የጉርንድ ውሃ	03	
		ያልተጣራ የጉድንድ ውሃ	04	
		የከርሠምድር ውሃ	05	
		የዝናብ ውሃ	06	
		የጉርንድ ውሃ በቱቦ የተዘጋጀ	07	
		የተጣራ የምንጭ ውሃ	08	
		ያልተጣራ የምንጭ ውሃ	09	
		ሌላ ካለ	88	
34	ውሃ ቀድቶ ለመምጣት ምን ያህል ጊዜ ይወስዳል?	በቤት ውስጥ የቧንቧ አለኝ	01	
		ግማሽ ሰአት	02	
		1 ሰአት አካባቢ	03	
		ከ1 ሰአት በላይ	04	
		ሌላ ካለ	88	
35	መኖሪያ ቤትስ ስንት ክፍል አለው?	አንድ	01	
		ሁለት ሦስት ምንም ክፍል የለውም	02	
36	የግል መፀዳጃ ቤት አለሽ ወይ?	አለኝ	01	

		የለኝም	00	
37	በቤት ውስጥ ውሳኔ ሰጪ ማነው?	ባለቤቱ	01	
		እኔ	02	
		የባሌ እናት	03	
		ሌላ ካለ	88	
38	በቤት ውስጥ የወጪ እቅድ አለ ወይ?	አለ	01	
		የለም	00	
39	ከባለቤትሽ ጋር በነፃነት ትነጋገሪያለሽ ወይ?	አዎ	01	
		አይደለም	00	
40	ባለቤትሽ በተለያዩ የቤት ሥራዎች ላይ ያግዝሻል ወይ?	ያግዘኛል	01	
		አያግዘኝም	00	
41	በሳምንት ውስጥ ምን ያህል ጊዜ ፍራፍሬ ትመገቢያለሽ?	አንድ ጊዜ	01	
		ሁለት ጊዜ	02	
		ሦስት ጊዜ	03	
		አራት ጊዜ	04	
		ከአራት ጊዜ በላይ	05	
		ሳምንቱን ሙሉ	06	
		ፍራፍሬ አልመገብም	99	
42	ከመልሱ በመነሳት በሳምንት ውስጥ ያን ያህል ጊዜ ፍራፍሬ ለምን ይመገባሉ?			
43	የ41ኛው ጥያቄ መልስ ፍራፍሬ አልመገብም ከሆነ ምክንያቱ	ዋጋው ውድ ነው	01	
		በቀላሉ አይገኝም	02	

	ምንድነው	ገበያው ሩቅ ነው	03	
		ጣሙን አልወደውም	04	
		ባለቤቱ አይወደውም	05	
		ልጆቼ አይወዱትም	06	
		የፍርፍሬ መመገብ ጥቅሙ አይገባኝም	07	
		የቅንጦት ምግብ ይመስለኛል	08	
		ሌላ ካለ	88	
44	በሳምንት ውስጥ ምን ያህል ጊዜ አትክልት ትመገቢያለሽ?	አንድ ጊዜ	01	
		ሁለት ጊዜ	02	
		ሦስት ጊዜ	03	
		አራት ጊዜ	04	
		ከአራት ጊዜ በላይ	05	
		ሳምንቱን ሙሉ	06	
		አትክልት አልመገብም	99	
45	ከመልሱ በመነሳት በሳምንት ውስጥ ያን ያህል ጊዜ አትክልት ለምን ይመገባሉ?			
46	የ44 ጥያቄ መልስ አትክልት አልመገብም ከሆነ ምክንያቱ ምንድነው?	ዋጋው ውድ ነው	01	
		በቀላሉ አይገኝም	02	
		እንዴት እንደሚሠራ አላውቅም	03	
		ሲሰራ ጊዜ ይፈጃል	04	
		ጣሙን አልወደውም	05	
		ባለቤቱ አይወድም	06	

		ልጆቼ አይወዱትም	07	
		ገበያው ሩቅ ነው	08	
		አትክልት መመገብ ጥቅሙ አይገባኝም	09	
		አትክልት የቅንጣት ምግብ ይመስለኛል	10	
		ሌላ ካለ	88	
47	ጤናማ ምግብ ነው የምትይው ምንድነው?			
48	ከሚከተሉት ውስጥ ጤናማ ምግብ ነው ብለሽ የምታስቢው ምንድነው?	ጥራጥሬ	01	
		የቅባት እህል	02	
		አትክልትና ፍራፍሬ	03	
		በፋብሪካ የሚዘጋጁ ምግቦች	04	
		ሥጋና እንቁላል	05	
		የእንስሳት ተዋጽኦ	06	
		ስኳርና ዘይት	07	
		ቅመማቅመምና ማጣፈጫ	08	
		ከላይ የተጠቀሱት በሙሉ	09	
		ሌላ	88	
49	ይሄ ምግብ ጤናማ ነው ብለሽ ያሰብሽውን ምክንያት ልተነግሪኝ ትችያለሽ?			

50	በሳምንት ስንት ጊዜ ይሄን ምግብ ታዘጋጃለሽ?
51	ጤናማ አይደለም ብለሽ የምታስቢው የምግብ ዓይነት ምንድነው?
52	ለምንድነው ጤናማ ምግብ አይደለም ብለሽ ያልሽው?
53	ይህን ምግብ በቤት ውስጥ ታዘጋጂያለሽ ወይ?
54	ካዘጋጀሽ በሳምንት ስንቱ ታዘጋጃለሽ?

55	ለምን ታዘጋጂያለሽ?	በቀላሉ ስለሚገኝ	01	
		ርካሽ ስለሆነ	02	
		ስለምወደው	03	
		ቤተሰቤ ስለሚወደው	04	
		ጤናማ ነው ብዬ ስለማስብ	05	
		ከላይ ያለው ሁሉ	06	
		ሌላ ካለ	88	

የ24 ሰአት የአመጋገብ ሁኔታ የተመለከቱ ጥያቄዎች

ትላንት ጠዋት ..... ከአንቅልፍሽ እንደተነሳሽ ምን እንደበላሽና እንደጠጣሽ እንድትነግሪኝ እፈልጋለሁ፡፡ ምግቡን የተመገብሽው በቤት ውስጥ ነው ቀጥሎ ምን ተመግበሽ በየትኛው ሰአት ላይ የሙሉ ቀን ያመጋገብ ሁኔታሽን ከላይ በተጠቀሰው መሰረት እንድትዘረዝሪልኝ እጠይቅሻለሁ፡፡ የሳምንት ቀናት / በቀኑ ላይ ያክብቡ / 01 ሰኞ 02 ማክሰኞ 03 ረቡዕ 04 ሐሙስ 05 አርብ 06 ቅዳሜ 07 እሁድ

ሰዓት	የተመገብሽበት ቦታ	ምግብ / መጠጥ	የንጥር ምግብ መገለጫ	አሰራር	ከሠራሽ ከስንት ሰዓት በኋላ ተመገብሽ

መግለጫ፡- የአሰራር መግለጫ

1) መቀቀል 2)መጋገር 3) መጥበስ 4) ጥሬውን 5) ኩፍ ብሎ 6) ፈልቶ 7) በፋብሪካ የተዘጋጀ

ከሰራሽ ከምን ያህል ሰዓት በኋላ ተመገብሽው

1) ከ0-2 ሰዓት 2) ግማሽ ቀን በኋላ 3) ግማሽ ቀን በላይ 4) ከአንድ ቀን በላይ

የምመርጠው አትክልትና ፍራፍሬ

1. እወደዋለሁ
2. አልወደውም
3. አላውቀውም
4. ምርጫዬ ነው ለማግኘት ግን ከባድ ነው

ፍራፍሬ	1	2	3	4	አትክልት	1	2	3	4
ሙዝ					ካሮት				
ብርቱካን					ድንች				
ሀብሀብ					ጥቅል ጎመን				
ማንጎ					ጥቁር ጎመን				
የወይን ፍሬ					ቆስጣ				
እንጆሪ					ቀይስር				
ፖም					ቲማቲም				
ፔር					አረንጓዴ ቃሪያ				
መንደሪን					አረንጓዴ አተር				
ሎሚ					ሰላጣ				
ፓፓያ					ሽንኩርት (ቀይ)				
አቮካዶ					ነጭ ሽንኩርት				
ግሪፕ (ቆምጣጤ)					ዝንጅብል				
ሌላ ካለ ጥቀስ					ሌላ ካለ ጥቀስ				

56	የአቶኑ ፕሮጀክት ተጠቃሚ ነሽ ወይ?	ነኝ	01	
		አይደለሁም	00	
57	ፕሮጀክቱ ከጀመረ ስንት ጊዜ ሆነው?	ከ3ት ዓመት በፊት	01	
		ከ2ት ዓመት በፊት	02	
		ከዓመት በፊት	03	
		ትዝ አይለኝም	04	
		ሌላ	88	
58	ከፕሮጀክቱ ምን አገኝሽ ከአንድ መልስ በላይ ይቻላል	ዶሮ	01	
		የጓሮ አትክልት ዘር	02	
		የባህሪ ለውጥ	03	
		የሴት ማብቃት	04	
		ሌላ	88	
59	ከፕሮጀክቱ ያገኝሽው ነገር የተሳካው የትኛው ነው ከአንድ መልስ በላይ ይቻላል፡፡	ዶሮዎቹ	01	
		የጓሮ አትክልቱ	02	
		የባህሪ ለውጥ ስልጠና	03	
		የሴት ማብቃት	04	
		ሌላ	88	
60	ፕሮጀክቱ ከሰጠሽ ዶሮዎች የሚጥሉትን እንቁላል ትመገቢያለሽ ወይ?	እመገባለሁ	01	
		አልመገብም	00	
61	የጓሮ አትክልትሽን በምን መልኩ ነው የምትጠቀሚው?	ለምግብ	01	
		ለገንዘብ	02	
		ሌላ	88	
62	በምን ያህል ጊዜ ነው የፕሮጀክቱ	በሳምንት ሁለት ጊዜ	01	

	ተወካይ ሥልጠና የሚሰጡአችሁ?	በሳምንት አንድ ጊዜ	02		
		በሁለት ሳምንት አንድ ጊዜ	03		
		በወር አንድ ጊዜ	04		
		ሌላ	88		
63	ሥልጠናው በሚሰጥ ጊዜ ምን ያህል ተሳትፎ አለሽ?	ሁሌም እሳተፋለሁ	01		
		አንዳንዴ	02		
		ከተጀመረ ከሁለት ጊዜ በላይ ተሳትፌ	03		
		አላውቅም	99		
		ምንም ተሳትፌ አላውቀም	04		
		ሌላ	88		
64	ባለትዳር ከሆንሽ ባለቤትሽ በሥልጠናው ላይ ይሳተፋል ወይ?	ይሳተፋል	01		
		አይሳተፍም	00		
65	ሥልጠናው ምን ምን ያካትታለ?	የሴቶችን ማብቃት	01		
		የጤናማ አመጋገብ ሥርአት	02		
		ስለ አትክልትና ፍራፍሬ	03		
		የአሰራር ዘዴ	04		
		ሌላ	88		
66	ከፕሮጀክቱ በኋላ በቤትሽ ውስጥ ያገኝሽው መሻሻል ምንድነው?	ባለቤቴ በቤት ውስጥ ይረዳኛል	01		
		አትክልትና ፍራፍሬ እመገባለሁ	02		
		የዶሮ ሥጋና እንቁላል እመገባለሁ	03		
		ከላይ የተዘረዘረውን ሁሉ	04		
		የተቀየረ ነገር የለም	05		
		ሌላ	88		
67	ከአቶኑ በኋላ በአመጋገብ ሥርአትሽ የመጣ ለውጥ አለ ወይ?				

68	ከፕሮጀክቱ በኋላ በሳምንት ስንት ጊዜ አትክልት ትመገቢያለሽ	በሳምንት አንዴ	01		
		በሳምንት ሁለቴ	02		
		በሳምንት ሶስቴ	03		
		ከሶስት ጊዜ በላይ	04		
		ሙሉ ሳምንቱን	05		
		ሌላ	88		
		በልቼ አላውቅ	99		
69	ከፕሮጀክቱ በኋላ ፍራፍሬ በሳምንት ስንት ጊዜ ትመገቢያለሽ	በሳምንት አንዴ	01		
		በሳምንት ሁለቴ	02		
		በሳምንት ሶስቴ	03		
		ከሶስት ጊዜ በላይ	04		
		ሙሉ ሳምንቱን	05		
		ሌላ	88		
		በልቼ አላውቅም	99		

ጥልቅ ቃለ መጠይቅ

1.ስለ አትክልት እና ፍራፍሬ ምን ታውቂያላሽ?

2.አትክልትና ፍራፍሬ መመገብ ያለውን ጥቅም ታውቂያለሽ ወይ?

3.በሳምንት ስንት ጊዜ ፍራፍሬ ትመገቢበለሽ?

4.በሳምንት ስንት ጊዜ አትክልት ትመገቢበለሽ?

5.በየቀኑ አትክልት ከመመገብ የሚያግድሽ ምንድነው?

6. በየቀኑ ፍራፍሬ ከመመገብ የሚያግድሽ ምንድነው?

6. ምን ቢቀየር በየቀኑ ፍራፍሬ መመገብ ትችያለሽ?

7. ምን ቢቀየር በየቀኑ አትክልት መመገብ ትችያለሽ

1.ስለ አትክልትና ፍራፍሬ ስታስቢ በአእምሮሽ የሚመጣው ምንድ ነው?

2. አትክልትና ፍራፍሬ መመገብ ለጤናሽ ጥሩ ይመስልሻል ወይ?

3.አትክልት መመገብ ትወጃለሽ?

4. ፍራፍሬ መመገብ ትወጃለሽ?

5. ለምንድ ነው አትክልትና ፍራፍሬ ምትመገቢው?

6. አትክልትና ፍራፍሬ በተደጋጋሚ እንድትበይ የሚያበረታታሽ ምንድ ነው?

7. አትክልትና ፍራፍሬ በተደጋጋሚ እንዳትበይ የሚከለክልሽ ምንድ ነው?

Annex 7.6. Oromic consent

WAL BARUU FI EEYYAMA GAAFACHUU

Maqaan koo _____ jedhama. Kanin dhufe Yuunivarsiitii Finfinnee irraa yeroo ta'u kaayyoon dhufeef ammo Inistiitiyuutii Qorannoo Beeladootaa (ILRI) waliin ta'uudhaan ganda keessan keessatti soorata kuduraalee fi muduraalee dubartootaa qorachuun barbaada.

Odeeffannoon qorannoo kana irraa argamu eegumsa fayyaaf, soorataaf akkasumas qonnaaf galchii ta'ee ni fayyada. Isinis jiraattuu ganda kanaa waan taataniif umriin dahumsaa keessa kan jirtan (waggaa 19-49) akka hirmaattaniif kabajaan isin gaafadha. Qorannoo kana irratti hirmaachuuf yoo fedhii qabdu ta'e gaaffiin kun daqiiqaa 15-20 waan fudhatuuf odeeffannoon kees tahe maatii keetii icciitiin kan qabamu dha. Gaaffiin deebisuuf hin feene yoo jiraate irra taruun mirga keeti. Garuu, hirmaannaan kee barbaachisaa waan taheef akka irratti hirmaattu si affeerra. Itti dabalataanis qorannoo kana irratti ulfinaa fi hojjaan ni safarama. Safarri kun fayyaa kee irratti miidhaan fidu tokkollee hin jiru.

Gaaffiin ykn safara ilaalchisee gaaffii yoo qabaatte ykn dhimmoota armaan olii keessaa kan ifa hin taane yoo jiraate na gaafachuu ni dandeessu. Anis gaafficha ibsuuf qophii qaba. Qorannoo kana irratti hirmaachuuf qophii dhaa?

Nan hirmaadha, eeyyen _____

Hin hirmaadhu _____

Qorannoo kana irratti hirmaachuuf fedhii yoo qabaattan gaaffii itti seenaa. Fedhii yoo hin qabaanne ammo isin galateeffadha.

Gaaffii addaan cite. Gaaffii dabalataa yoo qabaattan ykn ibsa feetan lakkoofsa bilbilaa armaan gadiin gaafachuu ni dandeessu.

Annex 7.7. Oromic questioner

lakk	yaadannoo gaaffiiwwanii	deebii filannoo		irra tari
	naannoo			
	aanaa			
	ganda			
	mana addaa			
	lakkoofsa manaa			
1	Maqaa deebii kennituu			
2	Bara dhalootaa	Guyyaa…..ji'a….bara…		
3	Amantii kam hordoftaa?			
4	Barnoota barattee beektaa?	eeyyen lakki	01 00	
5	Hanga sadarkaa barnootaa	kutaa _____ BLTO…… Diippiloomaa Kolleejjii/Yunivarsiitii…….. Digrii Kolleejjii/Yunivarsiitii…….. Adda yoo tahe ibsi	01 02 03 04 05	
6	Gosti hojii kee maalii?	Barattuu Haadha warraa Qotee bulaa Qurxummii horsiistuu Daldaltuu Albuuda baasuu Hojii humnaa	01 02 03 04 05 06 07	

		Hojjettuu mootummaa Adda yoo tahe ibsi	08 88	
7	Miindaan haala kamiin siif kaffalamaa?	Qarshii Gosaan Qarshii fi gosaan Adda yoo tahe ibsi	01 02 03 88	
8	Haala heerumaa	hin heerumne heerumeera du'aan adda baheera hiikeera	01 02 03 04	
9	Abbaan manaa waliin jiraattaa? Moo bakka biraa jiraataa?	waliin jiraachaa jirra bakka biraa jiraata	01 02	
10	Daa'imman qabdaa?	Qaba Hin qabu	01 00	
11	Daa'imman meeqa qabdaa?	_____		hin qabdu taanaan cehi
12	Daa'ima isa duraa yeroo deessu umriin kee meeqa turee?	_____/_____/_____		
13	Amma hoosisaa jirtaa?	Eeyyen Lakki	01 00	
14	Sadarkaan barnootaa abbaa manaa keetii	kutaa _____ BLTO…… Diippiloomaa	01 02	

	meeqaa?	Kolleejjii/Yunivarsiitii……. Digrii Kolleejjii/Yunivarsiitii……. Adda yoo tahe ibsi	03 04 05	
15	Gosti hojii abbaa manaa kee maalii?	Barattuu Hojii hin qabu Qotee bulaa Qurxummii horsiistuu Daldaltuu Albuuda baasuu Hojii humnaa Hojjettuu mootummaa Adda yoo tahe ibsi	01 02 03 04 05 06 07 08 88	
16	Miindaan haala maaliin kaffalamaaf?	Qarshii Gosaan Qarshii fi gosaan Adda yoo tahe ibsi	01 02 03 88	Gaaffii 15 yoo hojii hin qabu tahe utaali
17	Mana keessan ibsaan jiraa?	Hin jiru jira	00 01	
18	Nyaata qopheessuuf humni itti fayyadamtu maalii?	Kasala Qoraan Gaazii Elektriikii Baayoogaas Koboota Badhee bunaa Furushkaa Adda yoo tahe ibsi	01 02 03 04 05 06 07 08 88	

19	Mana kee keessa sa'atiin jiraa?	Jira Hin jiru	01 00	
20	Mana kee keessa TVn jiraa?	Jira Hin jiru	00 01	
21	Mana kee keessa Raadiyoon jiraa?	Jira Hin jiru	00 01	
22	Mana kee keessa Bilbilli sararaa jiraa?	Jira Hin jiru	00 01	
23	Mana kee keessa moobaayiliin jiraa?	Jira Hin jiru	01 00	
24	Mana kee keessa Firiijiin jiraa?	Jira Hin jiru	01 00	
25	Mana kee keessa Motor Saayikiliin jiraa?	Jira Hin jiru	01 00	
26	Mana kee keessa saaykiliin jiraa?	Jira Hin jiru	01 00	
27	Tajaajila geejibaa maaliin fayyadamtaa?	Gaarii Bajaajii Taaksii Konkolaataa Motor Saaykilii Saayikilii Adda yoo tahe ibsi	01 02 03 04 05 06 88	
28	Manni keessa jiraattu kan eenyuu ti?	Kiraayii dha kan kooti kan firaati Adda yoo tahe ibsi	01 02 03 88	

29	Bakka kuduraalee itti dhaabdu qabdaa?	qaba hin qabu	00 01	
30	Yoo bakka oyruu qabaatte kuduraalee ni dhaabdaa?	nan dhaaba hin dhaabu	01 00	gaaffii 29 deebiin hin qabu yoo tahe cehi
31	Oyruu yoo qabaatte maaliif itti fayyadamtaa?	gurgurtaaf qofaa Baay'inaan gurgurtaaf Manaaf qofaa Kan biraa	01 02 03 88	gaaffii 29 deebiin hin qabu yoo tahe cehi
32	Miseensota maatii keessaa lafa qonnaa namni qabu jiraa?	jira hin jiru	01 88	
33	Bishaan dhugaatii eessaa argattaa?	Bishaan boombaa manatti galeera bishaan boonoo bishaan boollaa qulqulluu bishaan boollaa booruu bishaan lafa keessaa bishaan roobaa bishaan boollaa tuubboo qabu bishaan burqituu bishaan burqituu booruu kan biraa	01 02 03 04 05 06 07 08 09 88	

34	Bishaan waraabuuf yeroo hagamii sitti fudhataa?	Boombaa mana keessaa qaba daqiiqaa 30 naannoo sa'atii 1 kan biraa	01 02 03 04 88	
35	Manni jireenyaa kutaa meeqa qabaa?	tokko lama sadii kutaa hin qabu	01 02	
36	Mana fincaanii qofaatti qabduu?	Qabna hin qabnu	01 00	
37	Mana keessaa abbaan murtii eenyuu?	abbaa manaa koo ana haadha abbaa manaa koo kan biraa	01 02 03 88	
38	Karoora baasii qabduu?	qabna hin qabnu	01 00	
39	Abbaa manaa kee waliin walabummaan ni dubbattaa?	eeyyen lakki	01 00	
40	Abbaan manaa hojii mana keessaa si gargaaraa?	eeyyen lakki	01 00	
41	Torbanitti yeroo meeqa muduraalee soorattaa?	al tokko al lama al sadii	01 02 03	

		al afur al afur caalaa turban guutuu muduraalee hin sooradhu	04 05 06 99	
42	Deebii kana irraa ka'uudhaan torbanitti yeroo meeqa muduraalee soorattuu?			
43	Deebiin gaaffii 41 muduraalee hin sooradhu yoo tahe maaliif?	Gatiin qaalii waan taheef salphaatti hin argamu Gabaan fagoo dha hin jaaladhu abbaan manaa hin jaalatu ijoolleen koo hin jaalattu faayidaan isaa hin beeku soorata warra quufaa ti kan biraa	01 02 03 04 05 06 07 08 88	
44	Torbanitti yeroo meeqa kuduraalee soorattaa?	al tokko al lama al sadii al afur al afur caalaa turban guutuu muduraalee hin sooradhu	01 02 03 04 05 06 99	
45	Deebii kana irraa ka'uudhaan torbanitti yeroo meeqa kuduraalee			

	soorattuu?			
46	Deebiin gaaffii 44 kuduraalee hin sooradhu yoo tahe maaliif?	Gatiin qaalii waan taheef salphaatti hin argamu akkamiin akka hojjetamu hin beeku yeroo fudhata hin jaaladhu abbaan manaa hin jaalatu ijoolleen koo hin jaalattu gabaan fagoo dha faayidaan isaa hin beeku soorata warra quufaa ti kan biraa	01 02 03 04 05 06 07 08 09 10 88	
47	Soorataa fayyaa siif maalii?			
48	Kanneen armaan gadii keessaa soorataa fayyaa kan ta'e isa kamii?	dheedhii sanyii zayitaa kuduraaf muduraa oomisha warshaa foonii fi buphaa bu'aa beeladootaa sukkaaraa fi zayita mi'eessituu kan armaan olii hunda kan biraa	01 02 03 04 05 06 07 08 09 88	
49. Soorata fayyaati sababa ittiin jette natty himuu dandeessaa?				

50. Torbanitti soorata kana al meeqa soorattaa?
51. Soorata fayyaa hin qabne kan jettu isaan kamii?
52. Maaliif fayyaa akka hin qabne yaadde?

53. Soorata kana mana keessatti ni qopheessitaa?				
54. Soorata kana torbanitti al meeqa qopheessitaa?				
55	Maaliif qopheessitaa?	Salphaatti waan argamuuf rakasa waan taheef waan jaaladhuuf maatiin waan jaalatuuf fayya qabeessa jedhee waan yaaduuf kan armaan olii hundaa kan biroo	01 02 03 04 05 06 88	

GAAFFILEE SOORATA SA'ATII 24 ILAALLATAN

Kaleessa ganama _____ hirriba irraa akkuma kaateen maal akka nyaattee fi dhugde akka natty himtun barbaada. Nyaata kana kan nyaatte mana keessaatti. Itti aansuudhaan maal soorattee? Sa'atii kamittii? Soorata guyyaa guutuu akkaataa armaan olitti eerameen naaf tarreessi. Guyyaan torbanii guyyaa itti marsuudhaan wiixata 01, kibxata 02, roobii 03, kamisa 04, jimaata 05, sanbata 06, dilbata 07.

sa'atii	bakka itti nyaatte	nyaata/dhugaatii	ibsa soorata madaalawaa	akkaataa hojii isaa	hojii hojjettee sa'aa meeqa booda soorattee

Ibsa: Ibsa akkaataa hojii isaa

1. affeeluudhaan 2. tolchuudhaan 3. waaduudhaan 4. dheedhii 5. kuf jedhee 6. danfee 7. warshaadhaan qophaa'e

   erga hojjetamee sa'atii meeqa booda soorattee?

   1. sa;'atii 0-2 2. guyyaa walakkaa booda 3. Guyyaa walakkaa caalaa 4. Guyyaa tokko caalaa

KUDURAALEE FI MUDURAALEE ANI FILADHU

1. Nan jaaladha
2. hin jaaladhu
3. hin beeku
4. filannoo koo ta'us argachuun ulfaataa dha

muduraalee	1	2	3	4	kuduraalee	1	2	3	4
muuzii					kaarotii				
burtukaana					dinnicha				
habaab					goommana maraa				
maangoo					goommana gurraacha				
waynii					qoosxaa				
injoorrii					hundee diimaa				
poomii					timaatimii				
peerii					qaariyaa magariisa				
mandarin					atara magariisa/asheeta				
loomii					salaaxaa				
papayyaa					shunkurtaa diimaa				
avokaadoo					shunkurtaa adii				
komxaaxxee					zinjibila				
kan biraa ibsi					kan biraa ibsi				

56	piroojektii Atoonuu fayyadamaa jirtaa?	eeyyen lakki	01 00	
57	Piroojektiin erga eegalee yeroo meeqaa?	waggaa 3 dura waggaa 2 dura waggaa 1 dura hin yaadadhu kan biraa	01 02 03 04 88	
58	Piroojektii kana irraa maal argattee? deebii tokko caalaa deebisuun ni danda'ama	lukkuu sanyii oyruu jijjiirraa amalaa dubartoota hubachiisuu kan biraa	01 02 03 04 88	
59	piroojektii kana irraa waan argatte keessaa kan milkaa'e isa kamii; deebii tokko caalaa ni danda'ama	lukkuu sanyii oyruu jijjiirraa amalaa dubartoota hubachiisuu kan biraa	01 02 03 04 88	
60	Buphaan lukkuuleen piroojektii irraa kennaman ni soorattaa?	eeyyen lakki	01 00	
61	Oyruu qe'ee keessaa	soorataaf	01	

	haala maaliin fayyadamtaa?	galiif kan biraa	02 88	
62	Bakka bu'aan piroojektii yeroo hagamiitti leenjii isiniif kennuu?	torbanitti al lama torbanitti al tokko turban lamatti al tokko ji'atti al tokko kan biraa	01 02 03 04 88	
63	Yeroo leenjiin kennamu hirmaannaa hagamii qabdaa?	yeroo hundaa darbee darbee erga eegalee al lama caalaa hin hirmaanne kan biraa	01 02 03 04 88	
64	Bultii yoo qabaatte abbaan manaa kee leenjii irratti ni hirmaataa?	ni hirmaata hin hirmaatu	01 00	
65	Leenjiin kun maalfaa qabataa?	dubartoota geessisuu sirna soorata fayya qabeesaa waa'ee kuduraaf	01 02 03 04	

		muduraa Mala hojii kan biraa	88	
66	Piroojektii booda mana kee keessatti waan fooyya'e maalii?	Abbaan manaa koo mana keessatti na gargaara kuduraaf muduraa ni sooranna lukkuu fi buphaa ni sooranna kan armaan olii hundaa waan jijjiirame hin jiru kan biraa	01 02 03 04 05 88	
67	Atoonuu booda sirni soorataa kee jijjiirama qabaa?			
68	Piroojektii booda	torbanitti al	01	

	torbanitti yeroo meeqa kuduraalee soorattaa?	takkaa torbanitti al lama torbanitti al sadii al sadii caalaa turban guutuu kan biraa sooradhee hin beeku	 02 03 04 05 88 99	
69	Piroojektii booda torbanitti yeroo meeqa muduraalee soorattaa?	torbanitti al takkaa torbanitti al lama torbanitti al sadii al sadii caalaa turban guutuu kan biraa sooradhee hin beeku	01 02 03 04 05 88 99	