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Information needs and sources on food and nutrition security among farmers in Chamwino District, Tanzania

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Abstract

This study has investigated information needs and source on food and nutrition security in Chamwino District, Tanzania. The study employed a descriptive research design in which a mixed research approach has been followed to collect data using questionnaires and Focus Group Discussions (FGDs) from a sample of 84 respondents. The study employed a stratified random sampling to collect data from farmers. In general, the study's findings reveal that crops processing, storage, and preservation and climate change are the areas on which farmers need information most. The findings further signify that friends, radio, and mobile phones are sources of food and nutrition security information considered effective by respondents. The study's findings further indicate that access to food and nutrition security information in the study area is affected by various factors including income and education levels. Based on its results, the study recommends employing mechanisms that suit the population in the area when providing information. Apart from that, it is recommended that farmers receive information literacy lessons to enable them to more effectively seek and use information.

Keywords: Information needs, information sources, food security, nutrition security, farmers and Tanzania.

Introduction

Food and nutrition insecurity is one of longstanding global challenges (Breene, 2016). The challenge is associated with multiple factors such as shortage of food, insufficient purchasing power, poor distribution of food, and poor usage of food at the household level (Shwe & Hlaing 2011; FAO, 2017; FAO et al., 2017). Along these, other factors affecting food and nutrition security are erratic rainfall patterns, land degradation, violence and conflicts, natural disasters, diseases, price volatility, urbanization, crop failures, and poor access to food and nutrition information and knowledge (Matunga, 2008; Shwe & Hlaing 2011; OECD/FAO, 2016; Mbwana, et al. 2016; Sarun & Mutayoba, 2018; FAO, 2017). Although the agricultural sector in Tanzania is mainly composed of small scale farmers who are also poor, it is the backbone of the country's economy. Understandably, the sector is based in rural areas and mainly dependent on traditional farming methods (Bernard & Dulle, 2014). However, because these methods are associated with low yields, scarcity of food (food insecurity) is common in most rural communities. The situation is made worse by poor feeding practices in the areas, result in poor nutritional status (FAO et al., 2017). Because of these practices, which include poor food preparation, malnutrition is a problem even in areas where food is available (Tanzania Food and Nutrition Centre [TFNC], 2014). In fact, food insecurity and malnutrition are chronic among majority of the poor because apart from being unable to

afford food, they are also likely to lack information on how to properly prepare what they have so as to acquire necessary nutrients (FAO et al., 2018). The world trend of malnutrition indicates that in 2016, the number of undernourished people increased to an estimated 815 million from 777 million in 2015 (FAO et al., 2017). In Africa, particularly the rural Sub-Saharan region, the number of people suffering from malnutrition has risen from 44 million to 218 million during the period from 1992 to 2016 (OECD/FAO, 2016). The challenges communities in rural areas continue to face with regards to stable access to food are the reasons the number of undernourished people continues to rise (OECD/FAO, 2016; FAO, et al. 2015).

Considering that evidence suggests that poor and vulnerable rural community members' access to food is limited by their poor access to necessary information and knowledge (Elly & Silayo 2013; FAO. 2017), proper interventions are necessary. This, therefore, calls for sustainable, targeted, and well-formulated social protection programmes (Shwe & Hlaing 2011; Roel, von Hollema, & Rasanen, 2013; FAO et al., 2017). Such interventions should ensure that apart from informing people about what types of food crops to produce and how to do it so as to curb food insecurity, they should also equip them with knowledge on how to prepare food so as to ensure their nutrition security. This will ensure the prevention of malnutrition among populations that lack food and those that have food but still face malnutrition issues as for instance observed by TFNC (2014) in Mbeya region, Tanzania, a situation attributed to lack of access to food and nutrition security information and knowledge (OECD/FAO, 2016).

Despite the documentation of the role of information in ensuring food and nutrition security, access to these resources in rural areas remains a challenge. This has been attributed to unfavourable socio-economic factors such as poor infrastructures, lack of accessible and affordable communication services, and gaps that exist between information producers and consumers (Matunga, 2008; Shwe & Hlaing 2011; OECD/FAO, 2016; FAO, et al., 2017). Although several studies (Momodu, 2002; Mwalukasa, 2013; Bernard & Dulle 2014; FAO 2017; FAO et al., 2017; FAO et al., 2018) have been conducted on information needs among rural farmers, information sources on climate change adaptation, and food and nutrition security; little remains known regarding information needs and sources on food and nutrition security in Tanzania. Thus, this study is an attempt to address this gap. The study aimed at investigating information needs, sources, and factors influencing access to food and nutrition security information among farmers in rural communities of Tanzania, a case of Chamwino District.

Literature Review

Information needs on food and nutrition security

According to Momodu (2002), Shwe & Hlaing (2011), and Jonathan & Udo (2015), the availability of relevant and timely information is vital in effective decision-making for personal, social, and work-related development. Similarly, a study by Roel, et al. (2013) reveals that relevant and timely information makes one well informed and able to take practical and genuine actions in solving socio-economic problems. Considering the diversity of socio-economic situations people are faced with on a daily basis, every individual has a different way of accessing information to meet a need at hand. On this, Jonathan & Udo (2015) reveal that every individual has discernible ways of looking for information to meet their information needs.

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Therefore, in order to improve food and nutrition security, information needs of rural community members with regards to food production, management, and preparation have to be met conveniently and affordably. Several studies (Breene, 2016; OECD/FAO, 2016; FAO, 2017) have found that identifying rural community members' information needs on both food and nutrition security is fundamental in supporting their socio-economic wellbeing. In other words, the authors suggest that there is a positive relationship between meeting information needs of rural communities and their being food and nutrition secure. In the same vein, Vakili, et al. (2013) affirm that when their information needs are met, rural community members are able to plan and make proper decisions on their household dietary matters. This relationship was further disclosed by Mbwana, et al. (2016), who argued that a household's level of food and nutrition security is determined by the knowledge its members have on food production, management, food nutrient composition, and frequency of food intake.

Sources of food and nutrition security information and their effectiveness

Several studies (Momodu, 2002; FAO, 2003; Lwoga, Stilwell & Ngulube, 2011; Mittal & Mehar, 2013; Bernard & Dulle, 2014; Brhane, Mammo, & Negusse, 2017; Aldosari, et al. 2019) have identified various sources of information that provide rural communities with information. These include; radio, television, newspapers, extension workers, agents of all types, family members, neighbours, magazines, and CD/cassette video. The purposes these sources serve differ because of the types of information individual can get from them (Momodu 2002; Lwoga, Stilwell, & Ngulube 2011; Bernard & Dulle 2014).

The effectiveness of food and nutrition security information sources varies with the angle you look at them from. On this, a study by Fanzo et al. (2013) revealed that extension agents or community workers are often mentioned as promising sources of nutrition knowledge for rural communities because they reach and interact closely with farmers in their own settings. Similarly, in a study by Mwalukasa (2013), it was pointed out that relatives, friends, and neighbours were the most popular and promising sources of information for many farmers. Further, a study by FAO (2003) stated that radio is the most powerful and cost-effective medium for reaching rural agricultural stakeholders today. FAO (2003) further revealed that radio and televisions were very effective sources of information due to their cost effectiveness and ability to reach a wider population within a short time.

Moreover, a study by Aldosari, et al (2019) revealed that radio and television were considered important sources for timely disseminating essential information to farmers in situations of urgency and emergency. In contrast, Elly & Silayo (2013) and Mwalukasa (2013) found television and radio ineffective in providing information to farmers because they frequently broadcast and telecast general information instead of specific contents needed by farmers'. The researcher also pointed out that media usually telecast and broadcast issues of national concern which might be less important for a particular farming context or without emphasis on food and nutrition security information.

Factors that influence access to food and nutrition security information

There are several factors that influence rural communities' access to food and nutrition security information. A study by Ochieng, et al. (2018) blames lack of education because without it, some people lack skills important in accessing food and nutrition information from some sources. The study further reports that lack of education facilities limits the sharing of

knowledge related to food and nutrition security community members' ability to. This was further elaborated by Mittal & Mehar (2013) who argued that farmers who are more highly educated are likely to diversify their information access by using multiple sources. In the same vein, farmers with high level of education can access and use printed media such as newspapers, magazines, textbooks, leaflets, training programmes, fliers, and brochures unlike those with low level of education that normally depend on traditional and interpersonal means for information sharing (Elly & Silayo, 2013). Duhan & Singh (2017) further pointed out that farmers with higher education have more tendencies to consult agricultural universities and state agriculture departments to get information on agricultural activities. It is obvious that educated farmers can better interact with scientists and experts in the agricultural sector.

Moreover, a study by Sarun & Mutayoba (2018) identifies income as a challenge to access to food and nutrition information resources. The authors argue that people with low incomes cannot afford food and nutrition information sources. For instance, Bernard and Dulle (2014) found that televisions are expensive hence most rural farmers cannot afford them. As a result, these sources are used by an insignificant percentage of rural community members. Similarly, a study by Elly & Silayo, (2013) considers people with better incomes well positioned to have access to multiple information sources and resources hence their likeliness to have a better understanding of food and nutrition security. Likewise, a study by Fanzo et al. (2013) found that access to multiple information sources enables farmers to be well informed on different farming practices that can boost their yields and enhance food and nutritional security. Furthermore, according study by Bernard & Dulle (2014), due to low level of income, inadequate power supply, and high cost of purchasing; some information sources, for example TVs, are not accessible to majority of rural community members.

Research methodology

A descriptive research design was applied in this study to ascertain food and nutrition security information needs in the study area, the sources from which the information is obtained, and factors that influence access to the information. This study employed both qualitative and quantitative data in a mixed approach in order to gain a broad and deep understanding of the phenomenon while offsetting the weaknesses inherent in using each approach by itself**.** The qualitative approach was used to comprehensively analyze views on information needs on food and nutrition security and sources of information used to meet them. On the other hand, a quantitative approach was used to collect numerical data in order to statistically evaluate access to sources of information on food and nutrition security and the extent of influence existing factors have on access to food and nutrition security information in Tanzania. This study was carried out in two villages (Ilolo and Ndembe) in Chamwino District, Dodoma region. The area was selected because of its proneness to food and nutrition insecurity even when there is bumper harvest.

The study employed a stratified random sampling method to generate a sample of 84 respondents from a population of 2,015 village members in the selected study area. This sample size was representative enough and met the study's needs. The study has used a cross sectional survey method using questionnaires and Focus Group Discussions (FGDs) to collect data. The researcher and a research assistant administered questionnaires to 60 farmers, all of which were completed and returned, giving a 100 percent response rate. The researcher also held 4 focus group discussions sessions (2 per villages) which involved 24 farmers (6 per group). Ilolo village contributed FDG participant No. 1 to 6 involved in one session, and No. 7 to12 involved in another session while Ndembe village contributed participant No. 13 to 18

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to the third session and No. 19 to 24 for the last session. FDGs helped the researcher to get more detailed information on respondents' beliefs, ideas, or opinions on the research topic quickly so as to validate information obtained through questionnaires. The study used Statistical Product and Services Solution (SPSS) program version 21 to generate percentages and frequencies from quantitative data which have been presented in tables and figures. On the other hand, qualitative data were analyzed using content analysis and descriptively presented in narrative form.

Results

Demographic characteristics of respondents

Respondents were asked to indicate their gender, marital status, age category, education level, and income level. These variables were required because they are useful in determining access to information on food and nutrition security. The responses received have been processed into results presented in Table 1.

Table 1: Demographic characteristics of respondents

Socio-Demographic (n = 60)		**Frequency**	**Percent**
Gender	Male	26	43
	Female	34	57
Marital status	Single	6	10
	Married	41	68.3
	Separated	13	21.7
Age category	15-19	4	6.6
	20-24	7	11.6
	25-29	11	18.3
	30-34	13	21.6
	35-39	18	30
	Above 40	7	11.6
Education level	Informal education	11	18.3
	Primary	31	51.7
	Secondary	9	15
	Certificate	6	10
	Diploma	3	5
Income per day	less than 1000	10	16.7
	1001-2000	23	38.3
	2001-3000	12	20
	3001-4000	8	13.3
	above 4000	7	11.7

Source: Field data, 2019

The results show that female respondents represented a significant percentage (57%) while male respondents represented 43% of the total questionnaire respondents. This suggests a balance in the composition of females and males in the population of the study area.

Regarding marital status, the findings show that a significant percentage (68.3%) of respondents was married. In terms of age categories, the findings show that majority (70%) of respondents were aged between 25 and 40 years. This seems to imply that the population of the study area is youthful; a good quality for food production. Concerning education level, the results have revealed that only 5% of respondents had diploma level of education; meaning that majority of the respondents had low level of education, that is informal (18.3%), primary (51.7%), secondary (15%), and certificate education (10%). Among the respondents, those with daily incomes between 1001 and 3000 Tanzanian Shillings made up 58.3% while 16.7% had daily incomes of less than 1000 Tanzanian Shillings and 11.7% earned above 4000 Tanzanian shillings.

Information needs on food and nutrition security

Respondents were asked to state the types of food and nutrition security information they would like to be provided with. This was done so as to identify the respondents' information needs on food and nutrition security. Table 2 presents the results on food and nutrition security information needs of the respondents:

Table 2: Information needs on food and nutrition security

Information needs on (n = 60)	Frequency	Percentage
Food crops processing, storage and preservation	53	88.3
Climate change	49	81.7
Agricultural Finance and investment	37	61.6
Market and trade	35	58.3
Food preparation	29	48.3
Land ownership	21	35

Source: Field data, 2019

The results show that there are different kinds of information needed by community members in the study area. The findings indicate that majority of respondents mentioned that they needed to be informed on food crops processing, storage, and preservation (88.3%); and climate change (81.7%). The results also show that there is substantial need for agricultural financing and investment (61.6%), market and trade (58.3%), food preparation (48.3%), and land ownership (35%) information.

These needs were confirmed during FDGs where majority of respondents appeared interested in knowing about the same various things. For instance, the respondents' need for information on proper methods for processing, storing, and preserving food crops was apparent. On this, key respondent No. 4 shared the following:

> Our food is usually spoiled due to lack of access to information on processing, storage, and preservation mechanisms. We normally use our traditional methods which sometimes do not work. As a result, our harvests fail to retain their nutrients. This does not only affect nutrients levels, but also exacerbates food scarcity.

With regards to climate change, FGD participant No. 7 expressed the need for information for dealing with climate change as following:

> In our village there is a prolonged history of droughts which have increased land degradation. To cope with this, farmers are looking for other means of survival by cutting down trees which has increased the risk of precipitation decrease in the area. As a result, land itself is no longer productive due to soil degradation. The level of soil fertility is too low to ensure high yields of food crops. Therefore, farmers need to be well informed on the types of crops to produce that will withstand climate changes. Not only that, but also they have to be aware of the right time for planting food crops.

On the other hand, another FGD participant No.14 suggested that learning new farming ways would help to deal with climate change:

> New ways of cultivation, for example using irrigation schemes are best solutions to overcome challenges of climate changes. Considering that we have been suffering from drought and low rainfall for many years, we need to find an alternative source of water that will support majority of farmers' food production. This will not only ensure the availability of food but also improve nutrition statuses of farmers.

Another FGD respondent No. 6 elaborated on financial and investment information needs by saying that:

> Those who are well informed on financing and investing in agricultural sector normally get high profits than those who lack information and capital. This is because they can effectively utilize small plots by applying manure and using modern irrigation systems. On the other hand, those who lack both information and capital rely on traditional farming methods and the unpredictable rainfall.

With regards to market and trade information, FGD participant No. 20 shared the following:

> Very few are familiar with where to sell their products. For this reason, most of us sell our crops cheaply. We do not know well the market trends and selling prices of crops. Middlemen always buy our products at prices only them decide. As a result, our buying power of food types we don't have and inputs for the following seasons is low.

The presence of needs for food preparation information was also attested to by group participant No. 9 through the following statement:

> Right information on health and sanitation is important because it will guide us in the preparation of our food. Having the right information on how to prepare food will help us to boost our nutrients consumption. This is why every individual needs to be aware of how to prepare food and maintain hygiene standards.

Furthermore, respondents expressed the need for land ownership information in the study area. On this, FGD participant No. 13 said:

> A lot of issues on land ownership are not clear to most of us. We have seen our leaders use cultural justifications, which are rather archaic to make decisions on land ownership. These justifications marginalize women, who culturally have no right to own family land. We have witnessed women left without land after husbands pass away. These women's access to land entirely depends on decisions of the deceased's clan members. This means their livelihoods are severely affected, leaving them food and nutrient insecure.

Based on these results, people in the study area have various information needs that need to be met so as to enhance chances of making them food and nutrient secure.

Sources of information

Respondents were asked to tick the information sources they access information on food and nutrition security from. The responses obtained are summarized in Table 3:

Table 3: Sources of Information

Sources of Information (n = 60)	**Frequency**	**Percentage**
Friends	54	90
Radios	47	78
Mobile phones	45	75
Village meetings	29	48.3
Fliers	18	30
Televisions	17	28.3
Newsletter	16	26.7
Brochures	13	21.7
Village offices' notice board	9	15

Source: Field data, 2019

Table 3 shows that friends (90%), radios (78%), and mobile phones (75%) are the most used food and nutrition security information sources. On the other hand, the findings indicate that fliers, brochures, newsletters, and village offices' notice boards are used by few (each less than 31%) respondents. The results further show that respondents in the study area consult multiple sources in their quest for food and nutrition security information as shown in Figure 1.

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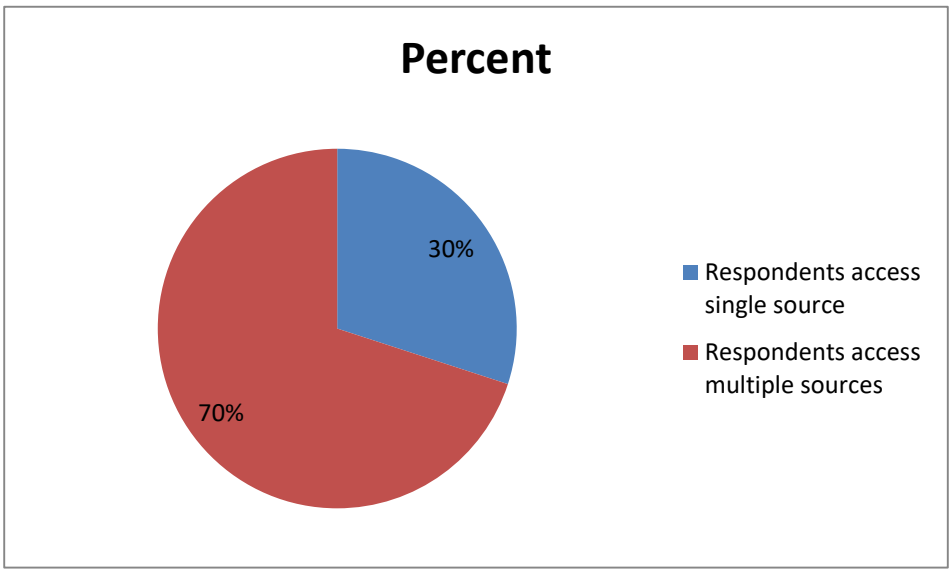

Figure 1: Access to food and nutrition security information
Source: Field data, 2019

As shown on Figure one, majority (70%) of respondents had access to multiple sources of information while 30% had access to a single source.

Effectiveness of food and nutrition security information sources

The study further intended to look at the effectiveness of information sources used by respondents to get food and nutrition information. Under this part, the study intended to know how respondents felt about the sources they obtain food and nutrition information from. The respondents were provided with a scale on which they were required to rate the sources as shown in Table 4:

Table 4: Effectiveness of food and nutrition security information sources

Sources of Information (n = 60)	Very Effective		Effective		Not effective	
	F	**%**	**F**	**%**	**F**	**%**
Friends	24	44.4	27	50	3	5.6
Radio	11	23.4	31	66	5	10.6
Mobile phones	13	28.9	28	62.2	4	8.9
Village meetings	3	10.3	14	48.3	12	41.4
Fliers	1	5.6	6	33.3	11	61.1
Televisions	3	17.6	5	29.4	9	52.9
Newsletters	2	12.5	4	25	10	62.5
Brochures	1	7.7	4	30.8	8	61.5
Village offices' notice board	1	11.1	2	22.2	6	66.7

Source: Field data, 2019

Findings in Table 4 indicate that friends are the most highly regarded source of information considering that a considerable percentage (44%) of respondents considered them very effective while 50% found them effective. From the table, it can also be seen that radio,

mobile phones, and village meetings are the other sources perceived well by respondents. The results seem to show that friends play an important role in providing information on food and nutrition security in the area of study. This was confirmed by FGD respondent No.5 who testified on the role played by friends as follows:

> Among friends, it is easy to teach each other or share ideas that increase our awareness and understanding on food and nutrition security. When information is sought from friends, the effects of differences in levels of education are normally not felt. Unfortunately, some people tend to access information from their friends, who are also not well informed on food and nutrition security hence being misled.

Apart from revealing the easiness of sharing this type of information among friends, this statement reveals that reliance on this source exposes people in the area to unreliable information.

Factors influencing access to food and nutrition security information

Respondents were also asked a multiple response question that required them to tick all the factors that influenced their access to food and nutrition security information. This question was posed so as to allow the study to obtain more understanding on the access to this type of information in the study area. The factors reported are summarized in Table 5:

Table 5: Factors influencing access to food and nutrition security information

Factors (n=60)	Frequency	Percent
Income status	51	85
Education level	47	78.3
Language barriers	35	58.3
Social beliefs	33	55
Lack of ICT skills	31	51.7

Source: Field data, 2019

The results show that majority (85%) of respondents mentioned their income status as a factor influencing their access to food and nutrition security information. This means that access to some information sources is likely to be different among the haves and the have-nots. Similarly strong was the effect of education level which was cited by 47(78.3%) respondents.

Discussions

The study findings show that respondents have a variety of food and nutrition security information needs. These include: needs for information on food crops processing, storage, and preservation; climate change; agricultural finance and investment; market and trade; food preparation; and land ownership. To start with, the need for information on food crops processing, storage, and preservation can be attributed to the fact that where food is scarce, information on good methods for ensuring what is available retains its quality is important. According to Buzby & Hyman (2012) food losses can be quantitative, as measured by decreased weight or volume; or qualitative, in form of reduced nutrient value and unwanted changes in taste, colour, texture, or cosmetic features.

On climate change it has been found that the area suffers from long term droughts and that farmers fail to forecast weather hence their inability to properly time the planting of food crops. This is study concurs with one by Shwe & Hlaing (2011) which found that information on climate change is essential as it helps in climate and weather forecasting so as to monitor anticipated storms, floods, and drought with the intention of planning crop production as seasons progress. Duhan & Singh (2017) also pointed out that information about weather forecasting is very helpful for farmers to move forward with their farm activities at the right time and in the right way.

Concerning markets and trade, it has been found that in the study area farmers were not well informed on market related information. Because of that, the farmers lack a clear understanding on where they can sell their produce, let alone how to set prices. Similarly, a study by Fanzo et al. (2013) reported that small-scale farming sector lacks thorough information on markets and prices for their crops.

Furthermore, the study has revealed a need for information on agricultural financing and investing opportunities. This can be attributed to the fact that even at small scale levels, farmers need inputs and machinery. These are likely to cost more than what the farmers can afford considering that majority of them have very low daily incomes. As such, the farmers' need for information on where they can find funds to finance their agricultural activities is understandable. As pointed out by a study by Fanzo et al. (2013), access to agricultural financing and investing information increases crop production.

Regarding the sources of food and nutrition security information used by farmers in the area of study, it has been found that friends are the most prominent sources. This reflects what Elly & Silayo (2013) found in their study where it was reported that sharing of information related to food and nutrition security among relatives, friends and neighbours plays an important role in enhancing knowledge acquisition. In other words, traditional and interpersonal ways of communicating or sharing information among farmers remain the most important sources of information. On the same, Bernard & Dulle (2014) affirm that due to proximity, using friends as a source of information ensures one of immediate feedback in a language they can understand.

On the other hand radio and mobile phones were considered as the best sources of information. According to a study by Souza, Nicolay, and Home (2016), with the wide spreading of mobile phones in rural areas, most farmers use them as means of exchanging information. The rapid growth of mobile phone use in developing countries has introduced a technology that offers several advantages over other alternatives in terms of costs, geographic coverage, and ease of use (Amir, Peter, & Muluken, 2016). With regard to radio, Souza, Nicolay, and Home (2016) found that there is high usage of radio in rural areas because of the presence of rural radios with special broadcasts dedicated to farming topics.

The findings have shown that income level of respondents strongly affects their access to various sources of food and nutrition security information. This concurs with what a study by Sarun & Mutayoba (2018) found, where it was revealed that the income level of household determines the sources of information they can afford which in turn affects their food production. In the same vein, a study by Fanzo, et al. (2013) reported that income level determines information access rate hence affecting production of food. This indicates that the higher the levels of income of a household, the better access to food and nutritional information and the higher the production and better management of food. The strong effect of income on access to information in the area stems from the low income levels of farmers.

Similarly, one's level of education determines their likeliness and ability to use various sources of food and nutrition security information. People with higher education qualifications are not only capable of affording a variety of information sources, but also of understanding what majority of the sources contain. For this reason, the level of education (informal and primary) majority of farmers in the study area have is understandably a barrier to their access to and usage of food and nutrition security information sources. These findings are supported by Ochieng et al. (2018) who found that farmers with high level of education are in a good position to understand food and nutrition security information than those with low education level. This informs that, education means a lot towards using sources of authentic information about farming activities. To concur with the study, Duhan & Singh (2017) point out those farmers with insufficient education usually approach agriculture inputs dealers considered as unauthentic sources.

Further to that, low education and economic levels have impact on other factors such as social beliefs, language, and lack of ICT skills. These findings are supported by TFNC (2014) which found that low level of education deter large number of people from consuming different types of food. The study further revealed that majority of rural community members are being misled by their fellows into not consuming some food types.

The study's results on the effectiveness of food and nutrition information sources used by farmers in the study area show that majority of the sources (fliers, newsletters, brochures, and village offices' notice boards) were used by insignificant percentage of respondents. This can be attributed to low level of education among majority (70%) of the farmers who, according to the results, have informal up to primary education. For that reason, they are unlikely to be able to read print resources or have the interest to do so. These findings concur with a study by Naveed & Anwar (2013) which revealed that despite farmers being unlikely to read printed materials, information from these sources is usually accurate, relevant, and current information. In contrast, a study by Bernard & Dulle (2014) reported that information in printed format was partially relevant to the farmers' information needs. Similar findings were reported by Elly & Silayo (2013) who argued that despite the availability of print materials they do not accommodate the needs of farmers at local and rural context.

Regarding factors influencing access to and use of the information in question, the study has revealed that farmers in the study are face a number of them. One of the factors revealed is insufficient income. Similarly, a study by Brhane, Mammo, & Negusse, (2017) revealed that lack of money due to low level of income limits farmers' ability to buy mobile phones and radio. Moreover, due to low level of education, majority of farmers were not able to understand complex language used in print sources of information. This concurs with the results of a study by Brhane, Mammo, & Negusse (2017) which revealed that there is a need for repackaging agricultural information into various formats using simple and understandable languages.

Conclusion and recommendations

Information and knowledge are keys in solving food and nutrition security challenges. Therefore, food and nutrition security information needs to be shared among societies so as to alleviate food and nutrition insecurity. In the study area, there were various food and nutrition security information needs. As such, there is a need to provide farmers in the study area with a clear understanding on food and nutrition in order to curb the persisting problem of food and nutrition insecurity. While factors (e.g. low levels of education and income) that limit farmers' access to this type of information continue to be strong, the farmers will continue to face food and nutrition insecurity. Furthermore, the presence of these challenges compels

farmers to rely on informal information sources (especially friends) that are associated with access to unreliable information. For this reason, there is a need for immediate interventions that will ensure the earlier mentioned factors do not continue to block farmers' access to information. In this regard, establishing proper mechanisms for providing information to farmers in the area is very important. These mechanisms need to take into consideration all the demographic characteristics and factors confirmed by the study to have an influence on access to food and nutrition information in the study area. In addition to changing ways of providing information to farmers in the area, it is necessary that farmers in the area undergo a tailor-made information literacy course that will not only improve their ability to seek information, but also their usage of the information they access to improve their food production and management.

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