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The gender dynamics of provisioning African Indigenous Vegetables as a meal in Kenya: A meal security perspective

Anne Aswani Musotsi [1]*, Meike Brückner [2], Parto Teherani-Krönner [3], Ann Kingiri [4]

[1]PhD candidate, Department of Food Technology; Jomo Kenyatta University of Agriculture and Technology, Kenya
[2]PhD candidate, Division of Gender and Globalization, Humboldt-Universität zu Berlin, Germany
[3]Division of Gender and Globalization, Humboldt-Universität zu Berlin, Germany
[4]African Centre of Technology Studies, Kenya
*Corresponding Author: aswanianne@gmail.com

Abstract

Several agri-food studies have been done to promote African Indigenous Vegetables (AIVs) with food and nutrition security being a major promoting factor. However, practices of preparation, cooking and sharing a meal have been less studied thus creating a missing link in agri-food studies. This paper seeks to reveal the socio-cultural practices of consumption of AIVs in Kenyan households. The paper introduces the innovative concept of meal security. Qualitative studies were conducted in Nairobi, Nakuru and Kakamega regions in Kenya between 2015 and 2017. Results revealed that consumption of AIVs in Kenyan households is highly gendered. Women are responsible for most of the tasks in relation to AIV preparation and cooking. However, women also use their agency to circumvent some of the challenges they face including choice of family meals and a time burden. The paper recommends strategies and innovations that can reduce these challenges including reduction in time for cooking, provision of infrastructure and challenging conventional gender norms.

Key words

African Indigenous Vegetables, household, meal security, women´s agency

Introduction

Socio-cultural dimensions are a strong determinant of food consumption worldwide. The choice of what people eat depends on their cultural background, the politics of the given food system and the environmental conditions for growing and cultivating food. Food choices and patterns differ: in continents, countries and even ethnic groups within one country. Hence, food is not just for health and nutrition but a symbol of cultural identity; it is also not only a collection of products that can be used for statistical or nutritional studies (Barthes, 2013). According to Teherani-Krönner (2017), human nutrition has to be understood as a socio-cultural phenomena that is diverse and complex. It cannot only be regarded in relation to its quantity or availability and political strategies of food cannot only be based on economic data. Further, De Vault argues that "food sustains social and economic life as well as the physiological being through the cultural rituals of serving and eating" (1991: 35).

Although human nutrition is very much entrenched in customs and beliefs that people encounter every day (Teherani-Krönner, 2011), yet, for a long time, nutrition has not been viewed through the socio-cultural eye. However, many researchers and practitioners in the field of anthropological studies interpreted and investigated the social and cultural dimensions of food (Brückner & Caglar, 2016). From the socio-cultural viewpoint, food is not just a daily

necessity, but "meals have got more meanings such as pleasure, feeling good and creating inspiring or quieting atmosphere" (De Vries, 2011: 6). The use of resources and the steps of processing and cooking food have been less studied. Teherani-Krönner argues that food preparation is seen as "too ordinary to be regarded as a scientific problem worthy of research and investigation" (2011: 22). This is probably the reason why for a long period even in feminist studies cooking has not become a subject of scientific investigation. This has created a persistent problem of cooking as a missing link (Teherani-Krönner, 2017). Hence, food may be available but without the knowledge to prepare and cook, it cannot be eaten as a meal.

A similar missing link can be identified in food security studies where the focus of study has mainly been the production of agricultural products with less attention on utilization. Consumption studies have equally not investigated food preparation activities at the household level. The concept of meal cultures (Teherani-Krönner, 2014), which will be introduced in this paper, unites all these dimensions and thus broadens the debate. According to Teherani-Krönner meal cultures, also referred to as meal security, not only influence food choices, preparation, cooking and serving but also what is edible and what is taboo.

In order to reveal the importance of food preparation activities and the role that women play in these activities, studies on the consumption of AIVs were conducted in Kenya between 2015 and 2017 The population of Kenya is characterized by a high ethnic diversity with correspondingly diverse meal cultures. According to Maundu (1999), over time a wealth of knowledge and experience about the environment, its resources and how best to use them has been accumulated. For example, knowledge about uses of plants as food, medicine and as poisons has been gathered. This deep-rooted indigenous knowledge is necessary for the survival and well-being of a community in its environment. To date, Kenya has 44 ethnic groups where different meal cultures are experienced. Formally, some ethnic groups consumed more food crops than others but due to urbanization, most people are now embracing food crops from other ethnic groups. In this way, not only has food diversity been created but also enrichment of meal cultures of the Kenyan people.

This paper will present a background on AIVs, the innovation of meal cultures/security concept and its relevance in agri-food studies and the agency of women in their choice of AIVs as a meal and how this influences AIV consumption. We will further discuss empirical findings of the study, embedding them in the meal security concept. Finally, we will conclude and give recommendations based on the findings.

Background on African Indigenous Vegetables (AIVs)

AIVs in Kenya and in Africa have a very long history because they have been consumed for thousands of years. Varieties that are commonly consumed are for example Spider plant (*Gynandropsis gynandra*), African Nightshade (*Solanum scabrum*), Amaranths (*Amaranthus blitum*) and Cowpeas (*Vigna unguiculata*). Maundu (1997) defines indigenous vegetables as "crop[s] whose natural home is known to be in a specified region; in our case Africa." Thus, *exotic* or *introduced* vegetables are those whose natural home is outside of a particular region. During the colonial time, the image of AIVs was blemished as they were seen as weeds and a 'poor man's food'. Many consumers shunned them as they resorted to the newly introduced exotic vegetables, namely cabbage and kale (Abukutsa-Onyango, 2010). As observed by Maundu (1999), modern times brought new food habits and even several new crops. Consequently, many traditional plants, which evolved with the different cultures in Kenya, disappeared. It has taken the concerted effort of farmers, researchers and other stakeholders in order to save the few remaining species and to promote them for consumption. Studies have

shown that AIVs contain useful micronutrients and phytochemicals that are essential for health (Abukutsa-Onyango, 2007a; Mnzava, 1997; Smith & Eyzaguirre, 2007). These bioactive compounds are in some cases higher in AIVs than in exotic vegetables. For example, AIVs have higher amounts of calcium, iron, vitamin A and vitamin C as compared to their exotic counterparts (Abukutsa-Onyango, 2010). In addition, AIVs are adapted to the local agroecological conditions. Different varieties of AIVs are commonly grown and eaten in Kenya. Literature gives an overview of 126 species of AIVs in Africa (Shippers, 2000). These varieties contribute to biodiversity (Abukutsa-Onyango, 2007a). Owing to this, AIVs have made a comeback in diets of the Kenyan people both in rural and urban areas (Odongo et al. 2017, Cenarsky, 2015). Although there are still some challenges such as negative perception and the lack of knowledge about AIVs in part of the population, progress has been made.

In the past, AIVs have been regarded as being useful for the nutrition of low-income groups (Lotter et al., 2014; Smith & Eyzaguirre, 2007). Other studies on AIVs and their contribution to food and nutrition security in Kenya (Abukutsa-Onyango 2007a 2010; Maundu et al., 2009; Yang & Keding, 2009) agree in part with this. The Kenyan studies on AIVs and their potential benefits for nutrition and health (medicinal properties) have partly contributed to the tremendously increasing demand for AIVs in the last few years, particularly in urban and peri-urban areas. For stakeholders in the AIV value chain, this is a significant achievement towards food and nutrition security and income generation for local farmers. Recent studies show that not only has consumption increased but also prices of AIVs have shot up considerably (Gido et al, 2017; Teherani-Krönner, 2015). This could be attributed to the value chain upgrading and commercialization of AIVs (Githiga & Oketch, 2017). Our study revealed that in Kenya today, AIVs are found in supermarkets in both raw and cooked state and their price is higher compared to exotic vegetables.

Arguably, the change in dynamics of AIVs directly impacts gender relations, general wellbeing. Before commercialization of AIVs in Kenya, they were perceived as ‘women’s crops’. They were mainly grown by women in home gardens or collected from the wild in rural areas. Today, men have taken over the crop, entered the value chain and are producing AIVs for sale (Githiga & Oketch, 2017). Women are progressively losing the land that they used to produce AIVs to male dominated commercial production of AIVs. This is in line with Teherani-Krönner (2014) observation that, as long as work is unpaid, it will be associated with women. Further, the taking over of the kitchen gardens by men shows that women`s contribution to food security has not been recognized so far because women mostly produce for domestic consumption while men produce for commercialization to a large extent. This is the basis for the meal cultures concept, which brings the contribution of women to the fore.

The relevance of the meal cultures concept in food security studies

The concept of meal cultures is linked to Teherani-Krönner (2014, 2017). Meal cultures can offer a way to build new trans-disciplinary connections within the scientific debates on food and nutrition. According to Teherani-Krönner (2015, 2017), nutritional sciences need to take into account the processes of cooking since people do not eat raw food materials as implied by the food security concept. According to FAO, food security "exists when all people, at all times have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life” (2002). This definition illustrates, that a healthy diet of consumers is part of the concept but the practice of cooking, the knowledge, time and resources needed are not explicitly mentioned. The main shortcoming of the classical understanding of food security is the narrow focus on the role of food supply and economic criteria. This gives less relevance to the analysis of food

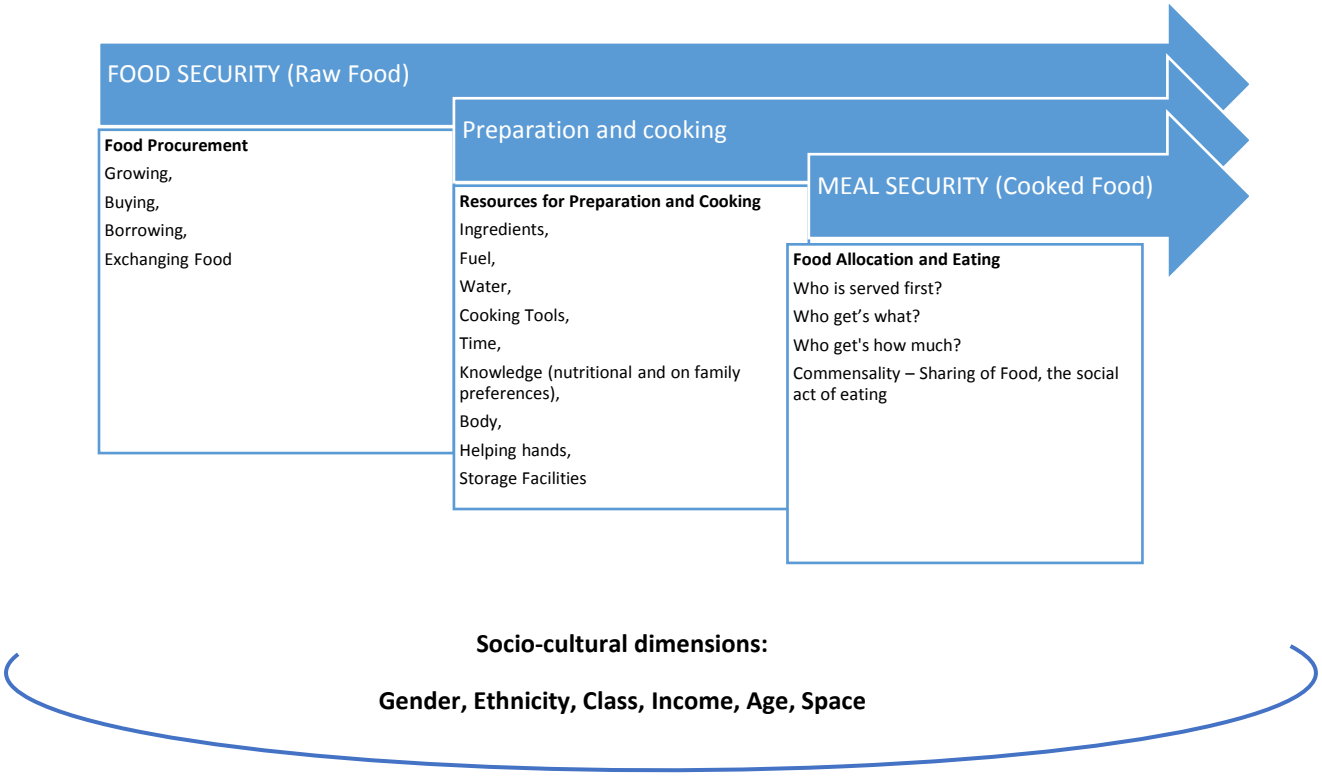
utilization, its nutritional components and to those actually processing and preparing food. We propose that the concept of meal cultures can be a framework contributing to a more complete understanding of food (in) security.

The way food security is theorized and conceptualized by scholars has long been criticized since the focus is mainly on the supply side. Burchi and De Muro (2016: 11) in a recent paper argue that this narrow view persists: "although in 1996 the World Food Summit adopted, with a large consensus, a much broader and advanced definition of food security that includes, in addition to availability, other fundamental dimensions of food security – such as access to and utilization of food, a narrow sectorial focus on agricultural supply, productivity and technology still dominates the international food security discourse and practice." Simon Maxwell`s discussion on a post-modern understanding of food security facilitated a shift from the macro to micro level focusing on the "perceptions of the food insecure themselves" (Maxwell 1996). Burchi and De Muro conceptualize food security towards a capability approach of which one pillar is food utilization. They argue that more data on food utilization is needed, on the nutritional knowledge of consumers, the diversity of meal practices and the actual practice of cooking. They state: "[…] having enough calories obtained from one single type of food cooked in a way that does not derive the right nutritional contents from it is likely to cause the person to be food insecure." (Burchi and De Muro 2016: 17). They further give attention to culturally acceptable food. With this understanding they provide an important, critical and wider perspective on food security. However, the gendered activity of cooking and the important position of women in food utilization is not adequately addressed.

In the meal cultures concept, Teherani-Krönner (2014) presents cultural, socio-ecological and gendered factors that contribute to consumption of food. Analyzing consumption using these factors reveals that consumption is a complex issue that is influenced by resources available, knowledge of preparation and cooking of the meal, time for food preparation, gender relations, sharing of a meal and beliefs and rituals among others. Most food has to be cooked before eating and the importance of cooking cannot be over-emphasized as it contributes to making the food safe for consumption, increasing bioavailability of the nutrients and making food palatable. Teherani-Krönner (2011) argues that the quantity of food available within a country or household is not a sufficient indicator of food security. Agricultural products do not satisfy human beings, but processed and cooked meals. Further, there are socioecological factors, cultural and gendered practices that affect food preparation and eating (Teherani-Krönner, 2014). By placing these factors at the center of analysis, the meal security concept brings a new perspective to approaches of individual and household food consumption. As in our example, all AIVs have to be cooked before eating. The whole process of transforming AIVs from the raw state (food) into an edible state (meal) requires time, knowledge, material and immaterial infrastructure (Brückner and Brettin, 2017). Besides, the process is affected by gendered food practices, food preferences and ecological conditions (Teherani-Krönner, 2014).

Figure 1 shows the relationship between food and meal security. It synthesizes our discussion on meal security/cultures by focusing first on the activities and resources that are needed in order to cook a meal. Second, it is addressing the act of sharing and eating a meal in the household and power relations in food distribution come to play. Third, it embeds meal security in specific socio-cultural conditions. This illustration reveals a reticulation in which, if one element is lacking or does not work, there is a high chance of not having a meal within the household. Therefore, it cannot be assumed that only increased production and availability of AIVs in the market will contribute to food and nutrition security. These factors will be discussed further in the empirical findings.

Figure 1: The relationship between food and meal security



Women's agency in provision of AIVs for a meal

In the recent past, there have been growing debates about women's agency. Agency has been defined by the World Development Report on Gender equality and development as "an individual´s ability to make effective choices and to transform those choices into desired outcomes" (2012: 50-51). We understand it as having the capacity to act and to decide independently and to have power and creativity in living daily life.

Generally, women are less recognized as significant stakeholders for achieving food security (Bellows et al., 2016, Teherani-Krönner, 2011). They are often seen as a vulnerable and a marginalized group. Taking a right-based approach, Bellows et al., note that "women and girls face violation of their rights to adequate food and nutrition more often than do boys and men" (2016:1). Paradoxically, for a majority of cultures, women are the ones who decide what the family eats. They choose and procure food. They prepare and serve family meals. However, the lack of recognition of women's contribution to the process could be attributed to the focus on the food security concept. The concept of food security is more agro-economically oriented and looks for the quantity of raw agricultural products. As we will show in the empirical section, our study confirms the important role of women in everyday consumption of food in households. The meal security concept when placed in the Kenyan context brings into focus the role played by women to ensure that their families get not only a healthy and nutritious meal, but one that is acceptable to them. If women did not dedicate their time and effort to prepare and cook AIVs, there would be no increased consumption at home. Thus, studies on AIVs for food and nutrition security need to embed their findings in the meal

security concept. Only then can it be determined whether the interventions to promote AIV consumption are working in the right direction or more needs to be done.

In this paper, we focus on the gendered practices of AIV consumption. It might be the case that women lose their share in AIV production but they also find ways to deal with it e.g. in collective farming groups. Arguably, women are the ones responsible for securing AIVs for domestic consumption. It is not our intention to neglect the laborious and time-consuming elements of AIV preparation that women have to undertake, it is rather to address women's important role in daily food security and in promoting AIV consumption.

Background of the study and methods

The empirical study conducted in Kenya was part of the project "Horticultural Innovations and Learning for Improved Nutrition and Livelihoods in East Africa" (HORTINLEA) under the sub-project "Meal Cultures in Market Trends and Consumption Habits". The overall guiding question of the HORTINLEA research project was: *How do AIVs influence food security in Kenya?* For our subprojects research, the guiding question was: *How do meal cultures influence the consumption of AIVs in Kenya?* The study, therefore, sought to investigate factors that influence preparation, cooking and eating of AIVs at the household level, thus 'opening up the black box of the kitchen'. The study gave attention to AIVs and their related practices, hence, we cannot ancipate the outcome for a wider range of foods. However, some of the results linked to practices and resources, for instance the gendered division of labour, might show results that can be generalized and help to explain meal cultures and security in Kenya more generally.

The study areas were Nairobi (urban), Nakuru (peri-urban) and Kakamega (rural). Seventy in-depth interviews cutting across the three geographical areas were conducted. They involved participatory cook-along interviews (32 in total), semi-structured interviews (17), focus group discussions (15) and expert interviews (6). In the cook-along interviews, the researchers accompanied and observed the respondents as they prepared and cooked AIVs. Serving and eating were done together with the household members. Observation was made of the infrastructure for cooking, tools and equipment available, sources of AIVs (e.g. kitchen gardens, markets, supermarkets, and door-to-door seller), time for cooking and who does what in the household. The cook-along interviews were predominantly conducted with women as mostly those were interested in participating, presumable because it involved cooking. In order to also integrate the perspective of men we conducted semi-structured interviews without cooking which made it possible to also discuss with men. Further, the focus group discussions usually comprising of 6-8 people, both women and men, enabled us to discuss with a mixed-gender group. Expert interviewees were people who were considered to be endowed with knowledge on AIVs; through either prolonged experience in preparation and cooking, working in a research organization with AIVs or working with the community in AIVs. We held several expert interviews, one with a male and female participant, three interviews with female experts and one with a male expert.

In examing the gendered experience, its dynamic or persistence we were looking at the practice of a meal. The focus was on gender relations, how they are lived, embodied and manifested in relations of knowledge and responsibilites. Therefore, gender is understood as a pivotal social category that produces and reproduces certain practices and also material differences, for examplein terms of having access to resources, as they are regarded as female or male. On a more analytical note, we understand gender also as a process category which enabled us to explore women's agency and their strategies to challenge and resist the given

gender relations and to act in a powerful way. As mentioned before, most of the interviews were conducted with women but some with men and women. This had some interesting implications, especially in observing and reflecting how the dynamics in the interaction unfolded. The mixed-gender focus group discussions were beneficial in discussing the different and often contested positions of men and women in the household and to understand who does what and why. One interesting and very important contradiction we identified in the group interaction was that men actually had knowledge on how for example to prepare AIVs and they shared it with us during the discussion, however, when it came to cooking in the household we observed a lack of involvement of men in actually practicing and applying this knowledge.

These multiple methods of data collection were deemed necessary for triangulation purposes and further enhanced generation of more data and to validate the observations made. Data analysis was done using MAXQDA software for qualitative data analysis (Kuckartz, 2016). After collection, data were transcribed and evaluated for various relevant concepts and codes and later subjected to MAXQDA for qualitative content analysis.

Results and discussion

In this section, we present the empirical data and discuss them as follows: meal practices of AIVs, gendered responsibilities in preparation and cooking of AIVs, time as a hindering factor to meal security, serving and sharing the meal and finally, knowledge on meal preparation. We analyze those results by using the meal security framework. Subsequently, we will draw conclusions from the discussion.

Meal practices of AIVs

Consumption of AIVs can be identified as an integral part of the meal culture of the Kenyan people. This was revealed by the number of varieties eaten in the three research areas and also the frequency of consumption. Nine varieties of AIVs were mentioned as eaten frequently: spider plant, nightshade, cowpea leaves, pumpkin leaves, African kale, African vine spinach, jute mallow, slender leaf and amaranth. They were used to accompany different starchy staples such as *ugali* (stiff porridge), potatoes, cassava, yams and lately, rice and *chapatti*. In the rural areas, consumption was reported to be daily, while in peri-urban and urban areas, consumption was three to four times a week. This finding was consistent with Gido et. al. (2017), who found that rural dwellers had a significantly higher consumption of AIVs as compared to urban dwellers. This could be attributed to the fact that in rural areas, most households procured AIVs from their own home gardens while in peri-urban and urban areas, most households bought the AIVs from the market. The accessibility of AIVs by rural households made it easier for them to serve them on a daily basis.

In rural areas, women were said to consume AIVs more than men, while in urban areas consumption was the same for both men and women. This was demonstrated in the following statement from female respondents in a focus group discussion in rural areas:

> *I: Is there a difference in consumption of AIVs between men and women?*
>
> *R: Yes! Women consume AIVs more than men do.*
>
> *I: Why do women consume AIVs more than men do?*

> *R: Women are always at home and they are the ones who cook. Men go out; sometimes they eat meat and fish in restaurants and come back home when they are full. When they get home, they pretend to have a bad stomach or they just get in to a nasty mood so that they are not served AIVs. They ask for tea instead.*
>
> (Focus group discussion, Kakamega, 26/03/2015)

This reveals that the daily consumption of AIVs in the rural areas is often not a matter of choice. It may be attributed to lack of alternatives considering that meat and fish were perceived to be too expensive. Although women affirmed the daily use of AIVs, they would prefer if they can sometimes serve them with meat or fish. Men, because they were not directly responsible for family meals, found it easier to eat out of the home as an alternative to daily consumption of AIVs. In most peri-urban and urban households, men and women ate AIVs equally. This could be because the family in urban areas ate together and that AIVs were served less times as compared to rural areas.

Moreover, among these varieties of AIVs, there were those that were consumed by women and children only and shunned by men. For instance, men tended to dislike jute mallow and amaranth. This was attributed to their slimy texture, which did not entice men. The implication was that the women, sometimes had to cook a separate dish for the husband. This was mostly done in rural areas. In urban, peri-urban and urban areas, women said they did not have the time to cook separate meals because they were in formal or informal employment. One respondent in formal employment noted the following:

> *I: Do you have to cook something different for your husband when he does not like the AIVs that you have cooked?*
>
> *R: No! I cannot go running around in the dark just for him. I am empowered. It is not my fault that he does not like what I have cooked. If he does not eat what I have cooked then he will take tea.*
>
> (Cook along interview, Nairobi, 22/09/16)

For this respondent, the fact that she is in gainful employment makes her feel 'empowered': she has bargaining power whether to cook a separate meal for the husband or not. Though this statement may not be applicable for all women in gainful employment, it demonstrates that such women may feel more empowered to make firm decisions when they do not have time or when their time for cooking is limited. The above findings analyzed from a meal cultures perspective reveal gender dynamics associated with differences in consumption.

Gendered responsibilities in preparation and cooking: who contributes to meal security?

Findings showed that the preparation and cooking of AIVs is highly gendered. This is attributed to traditional gendered practices in most ethnic groups in Kenya, which disallow men to participate in kitchen work. Women, especially in rural areas, still adhere to these gender norms. Unfortunately, most women in rural areas do not view themselves as being engaged in productive work if they are not in formal employment. When we asked what they were engaged in economically, majority responded: *'I do not work, I am just at home'*. This showed that women did not know how to value their own work despite their engagement in various tasks in the home throughout the day. Cooking AIVs and the accompanying starches was a daily task for the women in the rural areas because AIVs were consumed daily. Due to their accessibility, availability and use as food throughout the generations, AIVs were an important part of the meal. As women ensured provision of this socio-culturally acceptable

meal, they created meal security for the whole household. In the rural area, men did not participate in meals preparation.

Neuhaus (2003) argues in a historical perspective analyzing cook books that a man as the one who is earning the income for the family could barely be waited upon to cook on a daily basis. However, this strict separation depicting men as primary wage earners and women as homemakers becomes problematic, when women are also engaged in income generating activities. Further, Teherani-Krönner (2011) observed that unpaid work was ordinarily the work of women, but when payment arises, men become engaged. Men would cook in restaurants because it is paid work, but the job ended when he returned home from 'work'. Neuhaus (2003) further observed that industrialization brought a clear distinction between the home and the industry. The home was considered a private space where consumption took place while production was done at the factory/industry (outside the home). As a result, the two spheres became gendered, with women assuming the role of consumer (home) and men producer (factory). The scenario in rural Kenya suggest that, despite the amount of effort that women put in preparing and cooking AIVs and daily meals, their work in contributing to meal security is not given recognition.

In peri-urban and urban areas, the study showed that a majority of women were engaged in formal and informal employment outside the home. Despite spending most of the time away from home, women were still expected to prepare and cook family meals. This may contribute to the decreased consumption of AIVs in peri-urban and urban areas. Our study confirms results from Kimiywe et al. (2007) study that found that business and full-time employed people consumed less AIVs as compared to unemployed and casual laborers. To cope with time constraints in preparation and cooking of AIVs on a daily basis, women invested in refrigerators. This enabled them to cook AIVs in bulk and store them for future use. This shows that despite time constraints, women are innovative and have ways of overcoming obstacles that could potentially hinder their families from eating AIVs and being meal secure.

In urban areas, men were sporadically involved in preparation of meals and kitchen work in general. Some men would participate in literally every task with regards to AIVs preparation. This includes plucking, washing, cutting and cooking, while others would just procure the AIVs and bring for their wives to prepare and cook. Still, others would be involved just in plucking. The fact that men could buy and bring home AIVs showed that they attached some value to them and that it gave them pleasure to eat AIVs. On further analysis, men who participated in cooking and kitchen work were either single or were raised in urban areas. One single male respondent living in Nairobi city said that he prepared AIVs for himself for health benefits. He said:

> *I eat AIVs almost on a daily basis because of my upbringing. I do not eat chips (author's note: potato). In fact, when I go out with my friends, they laugh at me when I order ugali (author's note: stiff porridge) and indigenous vegetables. They ask: how can you eat ugali and vegetables in a restaurant? You should eat something more special. But I know that this is the best for my health. I run every morning to exercise and the AIVs make me strong.*
>
> (Interview, Nairobi, 21/11/2015)

This statement demonstrates that (single) men, with the understanding of the benefits of eating AIVs may be engaged in the preparation and cooking. On the other hand, despite the convinced health benefits, there is no guarantee that a single man will continue doing this when he marries.

Participation of men in meal preparation could be attributed to technological advancement in the kitchen. According to De Vries (2011), technological advancement has eased work in the kitchen particularly for women. This could also have motivated men to participate in kitchen work. With the introduction of equipment such as gas and electric cookers, pressure cookers and refrigerators among others, work has been made easier for both women and men. Thus, less time and effort is spent in the kitchen. For instance, as found in our study, where the boiling/steaming of AIVs would take place daily for one to two hours, with a refrigerator, bulk cooking was done and the AIVs packaged into portions enough for daily servings. Men found this particularly convenient. However, even with the modern kitchen conveniences at their disposal, the participation of men in cooking within the Kenyan household was still very low. Majority of interviewees cited 'culture' as impeding men from participating in kitchen work. In regarding to this, it also has to be noted that the availability of kitchen technology very much depends on the economic position of a household.

For a husband to assist in the kitchen and to contribute to meal security depended not only upon the setting (rural or urban) but also the age group. Some men from the older generation said they were willing to assist in kitchen work but had misgivings because of gossip and negative comments from community members, their wives included. In one focus group in the rural areas, one male member who described in detail how to prepare spider plant had this to say:

> *I: Now that you describe so well how to cook AIVs, do you cook them at home?*
>
> *R: I know how to cook AIVs very well. I learnt from my grandmother whom I grew up with. But I can cook only if my wife is away or she is ill; for the children. I fear cooking because my wife might gossip about me with other women when they go to the water point to fetch water. Women are fond of this. Culturally, the kitchen is her sphere. When she sees me going there frequently, she might think that I want to take over. This will taint my image within my community.*
>
> (Interview, Kakamega, 26/03/2015)

The same trend was observed in the urban areas, where the older men did not cook or participate in kitchen work. One male respondent who was working and was now retired affirmed this. When asked why he did not cook, he said, in his culture men were not supposed to participate in kitchen work. Although our study was explorative and did not investigate 'culture' in depth, we were able to ascertain that this was a perspective held by majority of the older men as opposed to the younger men. This may imply that the socio-cultural construction of women belonging to the kitchen was still deeply rooted in the older generation. Nevertheless, the domain of cooking can be regarded as a powerful space for women, a space they did not want to give up or share with men.

Gendered responsibilities in preparation and cooking of AIVs are revealed through the meal security concept. Clearly, activities for men and women with regards to preparation and cooking of AIVs can be distinguished depending on the setting (rural or urban), however it becomes visible, that women mainly contribute to a meal secure household. Further, the generation gap is seen to influence men's perception about their role in the kitchen.

Time for preparation and cooking: A hindering factor to meal security?

Preparation and cooking of AIVs involved numerous distinct steps. The steps were identified as sorting, plucking, washing, cutting, steaming/boiling and frying. This was consistent with

Musotsi et al. (2017) who found that these steps are time consuming and can take between 1 and 3 hours before some AIVs get ready to eat. Although assistance/helping hands could be very useful in reducing time and effort in the whole process, the study found that it was not always possible to get helping hands. For instance, during plucking, we noted that the process took a considerably shorter time when more than one person was involved. In the study, helping hands in rural areas were provided mostly by children (both female and male) and rarely by husbands. Both girls and boys could provide a helping hand to their mothers which denotes that mothers do not discriminate based on gender when it comes to need for helping hands. One female respondent expounded on this point as follows:

> *I: Would you teach your boys how to cook when they grow up?*
>
> *R: Yes! It is inevitable. Their times are not like our times. Now is different from our times. Now, both girls and boys go to school and come back at the same time with a lot of homework from school to do. They will both work and earn a living. Moreover, if he found himself living alone and far from home, won't he eat? So he has to learn how to cook.*
>
> (Interview, Kakamega, 25/03/2015)

This may imply that women who are bringing up their sons today have begun challenging the traditional gender norms which forbid men to go to the kitchen. This could be the reason why more men in urban areas cook and perform other kitchen chores. The statement further shows that women have the agency to influence socio-cultural practices of their children at a tender age. As observed by De Vries (2011), since there was a shift in roles between women and men when it comes to cooking food in Europe, the same trend is now evident in Kenyan households. We see this in the younger generation and especially those living in cities. Our study showed that more young men are now involved in preparation and cooking of food as well as other activities in the kitchen within respective households. This seems to be prevalent in middle income households, but empirical research should be undertaken to establish the actual situation.

House helps or domestic workers and some husbands provided helping hands in peri-urban and urban areas. Due to the working schedules of women, some of them employed house helps in order to do the housework. These house helps would help in some or all of the stages in preparation and cooking of AIVs. However, in some cases, the woman of the house had to oversee the processes or cook AIVs by herself since she did not trust the cooking of the house help. The study also found that some women entrusted AIVs sellers to provide assistance in plucking and sometimes washing. But this was based on trust and not an obligation of the seller. Nevertheless, assistance by the AIV sellers was not commonly practiced because consumers were skeptical about how plucking was done and the quality of water used for washing the AIVs. We, therefore, deduce since women now work away from their homes and their domestic tasks remain largely unchanged, they use not only kitchen technology, but also other ways as mentioned above to circumvent the problem of time and make sure that meal security is guaranteed.

Serving and sharing the meal

In specific local settings, serving and eating of meals in the household was an area of subjection for women. In rural and peri-urban areas, most women served their husbands first. If there were teenage boys, they would eat with their fathers in the living room of the main house. Girls and the younger children ate together in a separate kitchen house which was usually detached from the main house. Women would serve themselves last. This shows that

priority was given to men and older boys, and women were last. Men were given priority even when the food was little and not enough for everyone. Furthermore, it was not clear about the woman of the house, when and where she ate from. This was demonstrated in this statement by one of the respondents in the peri-urban area:

When I was growing up, I knew this one thing about my mother: that she did not eat and she did not sleep. We rarely saw her eat or sleep. Whenever we woke up, she was already awake before us. If she slept a lot, we would know she is unwell even though she would not tell us. She would serve all of us but not her plate.

(Focus group discussion, Nakuru, 22/10/2015)

This demonstrated that this family had formal times for meals but women did not necessarily have to be part of the meal. Despite the fact that she fed all of them, it was not easy to tell if she had a share of her own or not. With this understanding, the woman had to not only be responsible for the meal security of her family but also for herself. When we asked one woman about when and where she eats from, she said:

I am the one who cooks. I cannot cook and not eat. I know when I eat. But my priority is to serve my husband and my children.

(Interview, Kakamega, 26/03/2015)

This shows that women do not have a designated place and time to eat although they find the space to eat even if others do not see it. During the time of cooking, she can taste and eat all the time. This is important because she might not find time and space to eat during the regular family mealtime since at that time, she may be overburdened with serving. On the other hand, it may show that women do not have enough time to enjoy the food they have cooked and end up eating alone and not with the rest of the household.

In urban areas, serving and eating was done differently. The family sat at the table and they all shared the meal. The woman would serve the food in bowls/pots and bring to the table. Family members would dish from the bowls according to the quantity desired. In this practice, it was easier to show whether the woman had eaten or not. Sharing of a meal and its implication on the nutrition and health status of each family member is vital for meal security, therefore and agri-food studies need to embed it in concepts/theories.

Knowledge as a key element of meal security

In our study, we found that women possess the knowledge on preparation, cooking and fermentation processes of AIVs. Knowledge on methods of plucking, cooking, preparation of additives such as lye and groundnut sauce are not easily available as they are explained orally and practically by those who have the knowledge. We found that there are very few other sources, including print materials, mass media and social media with this kind of knowledge. People who do not know how to prepare and cook AIVs rely on their friends who have the knowledge to teach them. Women are the custodians of this indigenous knowledge about preparation and cooking of AIVs and they use it every day to enact meal security. They pass this knowledge to their children, other family members and friends.

Women are thus endowed with knowledge that is relied upon by the whole society in order to promote their nutrition, health and culture. Brückner and Aswani (2017) observed that since women hold and transmit this knowledge, their role should be recognized in order to overcome any negative perception about AIVs. As they teach their young ones about preparation and cooking, they can also emphasize the knowledge on benefits of eating AIVs. As already mentioned, this knowledge is not considered scientific and, therefore, current

recipes in use are not backed up by research. This creates a gap in knowledge which the meal security concept identifies as a key factor affecting consumption. Lack of knowledge may also be attributed to ethnic group that did not have the AIVs or growing up away from home. Indigenous knowledge should be supported by scientific knowledge since it supports the meal security situation and wellbeing of individuals and communities.

Conclusion and recommendations

Our study concluded that AIVs are consumed because they are part of the meal culture of the Kenyan people. They are important components of meals and are eaten regularly. Preparation and cooking of AIVs is highly gendered and time consuming. Although women have the option of cooking vegetables that can cook faster such as kale and cabbage, they opt to provide AIVs because of meal culture and also nutrition and health. The consumption of AIVs in the households depended predominantly on women; therefore, without their effort AIVs would not be eaten and the meal security of the household would be in danger. Thus, women have agency as they spend their limited time, hold the knowledge on preparation and cooking and pass this knowledge to their children. This is significant because whereas many other people can cook exotic vegetables, the same does not apply for AIVs. Moreover, women find ways of overcoming the challenges that might prevent them from preparing and serving AIVs in their households. This agency has not been recognized as there are situations where women do not directly benefit from their efforts, such as the double burden of employment and cooking and lack of time for them to eat a meal.

Lastly, the meal security concept and its strong focus on gender relations is key and can contribute to optimal utilization of AIVs in Kenya. Placing factors such as the socio-cultural, economic, food preparation, cooking, sharing, and gendered norms at the center of analysis reveals that women play an important role in consumption of AIVs. They are the ones ensuring that households are not only food secure, meaning that food sources are available in the home, they also prepare, cook and distribute this food in form of a meal and therefore contribute to the meal cultures and wellbeing of their families. The results have shown, that it is fruitful to rethink the food security debate in asking: What happens after agricultural products have been bought or harvested? Who prepares and cooks them and under which circumstances? What are the preferences and activities of consumers? And what kind of strategies do they employ to put a meal on the table? The meal security approach offers a way to get a broader understanding of consumption practices in food insecure but also secure situations.

In terms of recommendations, this study has elicited useful findings that can inform policy and practice. Time and knowledge have emerged as key elements of meal security and a reflection of the gendered responsibilities in prepration, cooking and serving of AIVs. The following are three brief recommendations that may be considered in discussions about meal security, preparation, cooking, serving and eating of AIVs.

First, women would do better with regard to preparation and cooking of AIVs if they had helping hands. The immediate family members (husband and children) could do this and, therefore, the need to challenge the conventional gender norms and the gendered division of labour, especially in rural areas. Preparation and cooking would take a shorter time if helping hands are available. Second, innovations that can reduce time for preparation and cooking of AIVs should be enhanced. These would include innovations such as ready to cook or ready to eat AIVs. Such innovations would be helful for people in urban areas, most of who are in full time engagements outside the home and the time for meal preparation is limited. Third,

research and practice should support knowledge generation and dissemination in the area of AIVs preparation and cooking. Women, as key knowledge holders, should be actively involved in this process. Lack of knowledge on preparation and cooking of AIVs can lead to shunning them and, therefore, recipes of AIVs can be availed through various communication media. Internet is one latest source of information for many consumers. Besides, print media, availing recipes on internet will make knowledge on preparation and cooking more accessible. This will enhance knowledge and subsequently, improve consumption of AIVs.

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