E-ISSN 2281-4612
ISSN 2281-3993

Academic Journal of
Interdisciplinary Studies

Vol 7 No 2
July 2018

sciendo

Research Article

Exploring Traditional Weaning practices in North Western Nigeria; Food, Knowledge and Culture: A Step towards Safeguarding Community Food Security

Majing Oloko

Department of Indigenous Studies,
University of Winnipeg, Manitoba, Canada

Regina Ekpo

Department of Geography,
Ahmadu Bello University, Zaria, Nigeria

Doi: 10.2478/ajis-2018-0050

Abstract

For many women in Nigeria who practice exclusive breast feeding, the weaning period is a crucial time. This is when children are introduced to solid food and such dietary change can be challenging for them, but also for care givers who are saddled with the responsibility of providing sufficient and nutritious food that would support healthy development. At this period, many women in rural communities utilize traditional foods of various kinds as weaning food. This paper highlights traditional food used by care givers in Makarfi Local Government Area (LGA) during weaning and the cultural teachings attached to weaning practices. Semi-structured interviews were conducted for 60 women who were purposefully selected from the ten districts in Makarfi LGA in Kaduna state, Nigeria because of their status as care givers. Results show that 95% of the participants derive their knowledge about foods used for weaning through cultural teachings that has been passed down through generations, while 5% got information from health practitioners. Some of the traditional foods used for weaning purposes include gyeda (Arachis hypoaea) and gero (Sorghum bicolar). This study reinforces the importance of traditional food and knowledge; and the need to take into consideration cultural practices when making food security policies.

Keywords: *weaning, traditional foods, food security, Northern Nigeria*

1. Introduction

The first two years of life are crucial stages to lay foundation for a healthy growth. In Nigeria where 17% of children under 6 months are exclusively breastfed and 37% of children under 5 years are stunted (chronically malnourished or low height for age) (Nigerian Demographic and Health Survey-NDHS, 2013); the food that infants eat during the weaning period is vital for healthy growth and development in young children. Weaning is the gradual process of introducing an infant with food other than breast milk. Experts recommend that after 6 months, a child requires adequate complementary food (alongside breast feeding for at least 2 years) for healthy growth and to prevent illness that could lead to death (WHO & UNICEF, 2002). For many mothers in Northern Nigeria this can be a stressful time because of the food security, human security and poverty challenges in the region. With a 69.0 % and 70.0% absolute poverty rate, the north east and north west performed the least in all poverty indices (food poor, absolute poor and dollar poor) in the last Common Country Assessment (NCCA) compared to the rest of the geo-political zones (NCCA,

2013). Our study community-Makarfi, is located in the north west which has the highest number of people who are described as being food poor -51.8% (NCCA, 2013). Food poverty is the inability of individuals and households to obtain an adequate and nutritious diet (Food Standard Agency, 2017). According to the UN, absolute poverty is a condition characterized by severe deprivation of basic human needs, including food, safe drinking water, sanitation facilities, health, shelter, education and information. It depends not only on income but also on access to social services (UN, 1995); children and women are said to be disproportionately affected by food insecurity and poverty. A child from a poor household is two and a half times more likely to die before their fifth birthday (NCCA, 2013). The food a child consumes in those crucial early years is therefore critical to his/her wellbeing, especially in a rural community which is situated in the country's poorest region.

Most rural dwellers in Nigeria rely on agriculture for livelihood (IFAD, 2012), this means that they get their food from their farms and/or generate income through agricultural related activities to meet their food and other needs. Many women in rural Nigeria turn to their traditional food as the main source of weaning food for their children. Reports show that the use of baby formula is relatively low country wide and local foods are mostly used as complementary foods for children in different forms (NDHS, 2013). Besides, the poverty rate in the rural areas is higher than urban poverty-66.1% and 52.0% respectively (NCCA, 2013), hence baby formula which is quite pricy wouldn't be an affordable option for mothers in the rural areas. This means that there is so much reliance on traditional foods and knowledge to thrive through the weaning process. Our study highlights the importance of traditional food and knowledge for the weaning process in a rural community in the north western part of the country.

Traditional food are foods that have been consumed historically by cultures, which holds cultural significance and has been passed down through generations. We use the term "traditional food" instead of "Indigenous food" because that is the term commonly used in related literatures from the region. The meals these participants make out of these foods are unique to their region in many cases.

Understanding cultural beliefs and practices associated with weaning is the first step towards finding sustainable solutions to community-specific food security issues. Our study can potentially assist in identifying the most utilized food for weaning which could serve as priorities for food security programs. It can also potentially help to identify strengths, challenges and opportunities in the rural area especially for strategizing gender specific poverty reduction and nutritional related health issues since women mostly constitute the primary care givers in the region.

1.1 Weaning Practices across Africa

Weaning practices in Africa have mostly been studied from a scientific nutritional perspective, very few studies have explored the topic from a cultural perspective; i.e. culturally acceptable weaning food and significance of such food from a culture specific perspective. Our study aims to fill this gap by highlighting traditional weaning food and the cultural meanings from the Makarfi perspective. Our study would look at what access to culturally appropriate food at a young age means for community food security prospects. In this section, we would explore literatures about weaning practices, from both scientific and non-scientific perspectives, however, the limited literature that cover the latter means that most would be from a scientific nutritional perspective. This speaks to the need for studies that approach the subject from a cultural perspective. Food security has since moved beyond just the availability of nutritious food, but close attention is been paid to food preferences as well; this means that traditional foods have a vital role to play in order for people to satisfy their cultural food preferences and be "food secure".

Africa is an ethnically diverse continent with hundreds of groups, each with its unique practices. It would therefore be unsuitable to present any pan-African weaning practice. However, similarities abound but so also are nuances in the meanings cultures give to their weaning practices. In West Africa, report shows that the most common first solid and weaning food is a thin cereal gruel made out of various grains and different cultures have different names for it (Gong, Hounsa, Egal, Turner, Sutcliffe, Hall, Wild, 2004; Onofiok & Nnanyelugo, 1998). A study about

infant and young child feeding practices among the Datoga pastoralist of Tanzania show that most infants were normally introduced to solid foods after 6 months, while complementary food varied, some of the most commonly used food include fresh boiled non-human milk, maize porridge, and gruel (gruel can be made from various grains such as maize and sorghum). This study observed 81 children between 0-3years and 62 semi-nomadic herder families in northern Tanzania (Sallen, 1998). Like the Datoga study, the use of maize porridge as a complementary food was also found to be common in Mazabuke and Kafue districts in Zambia (Bwalya, Mukonka, Kankasa, Masaninga, Babaniyi & Siziya, 2015). In a study of 634 caregivers carried out in 2006 in the two districts, Bwalya, et al (2015) revealed that more than 50% of the participants reported having prior knowledge about complementary feeding; however, the authors revealed that about 81.2% got their information about complementary feeding from health care providers. How the remaining 19.8% know about what complementary food to use is not indicated. A study out of south Africa shows that weaning foods are cooked in a separate pot from the rest of the household due to cultural beliefs such as variation in cooking method and eating frequency between adult and children's meals, and the cultural belief that something negative could befall a child if he/she eats from the same pot as the mother once she becomes pregnant (Kruger & Gericke, 2002). The study which monitored mothers and caregivers of children under 3 years attending clinics in Moretele district South Africa, also reported cereal (maize meal and commercial products), fruit and vegetables to be the first and second choice of weaning food in the community (Kruger & Gericke, 2002).

1.2 Food Prohibitions across Nigeria: Implications and Opportunities for Weaning Practices

Some form of food restrictions, prohibitions or preferences exist in every culture around the world, for example in the Jewish culture, shrimps, oyster, reptiles, lobsters and animals that creep on the ground are not permitted for consumption and for any animal to be permitted for consumption it must chew the cud and have cloven hoof while aquatic animals must have both fin and scales and birds must have fins (Rochow, 2009). Hindu pregnant women are prohibited from consuming fruits such as pawpaw and jackfruits because it is believed that eating such foods could lead to loss of the pregnancy (Rochow, 2009). Pregnant Kiriwina Islander women from Papua New Guinea are prohibited from eating fish that attach themselves to corals for fear of having complicated births (Rochow, 2009).

In Nigeria, some of the food prohibitions or "taboos" reported among ethnic groups tend to apply to women and children; specifically pregnant women and young children. While there is no shortage of studies that report on food prohibitions, it is challenging to find studies dedicated to reporting the consequences of breaking such food prohibitions from the keepers' perspectives. We are highlighting food prohibitions to show food preferences across cultures. Food preference and access to culturally accepted food is one of the tenets of food security. The idea is not to undermine the food prohibitions but to create a conversation about weaning food preferences that policy makers and leaders can take into consideration when formulating policies for such communities. An older study by Ogbeide (1974) which highlighted the nutritional effects of food taboos in mid-west Nigeria reported that children were not normally fed egg and meat because it was believed that consuming those types of food would make them steal. This was corroborated by Ekwochi, Osuorah, Ndu, Ifediora, Asinobi, & Eke (2016) in a similar study out of Enugu state eastern Nigeria which reveled that children under 2 years of age were not fed egg for the same reason. Furthermore, Ekwochi et al (2016) reported that some women avoided eating small animals such as snails and grass cutters because they belief it would make their children to become sluggish and salivate a lot. It is important to note that slightly more than 50% of participants in the Enugu case said they do not adhere to such taboos. A lot of these food restrictions are no longer strongly adhered to due to increased education, and awareness. While foods such as eggs, snails and grass cutters are good sources of nutrients that can be beneficial to pregnant mothers and young children (Ekwochi, et al, 2016) study show that most Nigerians get over 80 percent of their protein from plants (Onimawo, 2010), meat is derived from livestock, game and poultry; however fish has remained a more accessible alternative to many. A common weaning food among ethnic groups across the country – pap; is plant based. Study has shown how caregivers add traditional food stuff

such as crayfish, fish, groundnuts, soya beans, palm oil, and plantain in weaning food to enhance nutritional content and taste (Adeniyi, 2012). It is important to highlight the potentials and options available to caregivers while creating awareness and showing respect for cultural norms.

2. Method

This paper is based on a field work carried out between July and September 2016 in Makarfi LGA of Kaduna state. Makarfi is one of 23 other LGA's in Kaduna state in northern Nigeria. According to the last census in 2006, Makarfi LGA has a population of 146,574 and a projection of 170, 574 in 2011 (National Population Commission of Nigeria, 2010). Agriculture is the main activity of the community; this has been aided by the upland soils which have supported the cultivation of traditional weaning foods such as groundnut, beans and millet (Oloko, Mamman & Ekpo, 2017). Makarfi is characterized by wet and dry seasons. With almost six months of dry season (November to May), the community engages in dry season farming. The Fadama soils (low laying swamp lands containing rich deposits suitable for farming) in the community offer a rich resource for dry season production of rice, sugarcane and vegetables such as amaranth, carrots and onions. Figure 1.0 shows a map Kaduna showing Makarfi LGA.

The purpose of the study was to explore the traditional food caregivers' use in weaning their infants and to examine cultural practices and meanings of such practices. To achieve the purpose set out, sixty mothers between the ages of 18 to 45 were recruited to participate in the study. Since the research aimed at exploring weaning practices, it was important to talk to care givers in specific; hence, participants were selected with the help of a community member who actively participates in community activities especially those that involve the women folks. Semi structured interviews were conducted to collect data about traditional weaning food and practices, while questionnaires were used to collect demographic and income data.

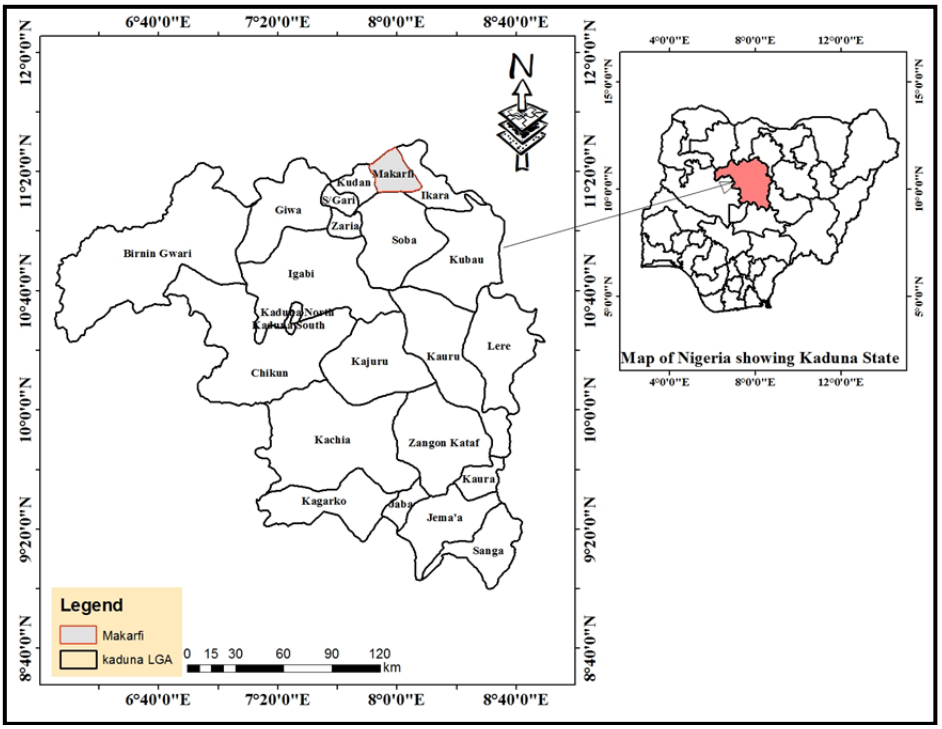

Fig. 1.0: Map of Kaduna State Showing Makarfi Local Government Area. Map credit: Administrative map of Kaduna State.

3. Results and Discussion

Twenty nine (48.3%) women who participated in our study reported breast feeding their children for up to 2 years, while 20 (33.3%) reported breastfeeding for up to 18 months. Eight participants (13.3%) reported breastfeeding for 15 and the remaining three (5%) for 12 months. This is in line with the NDHS (2013) findings that children who reside in rural areas are more likely to be breast fed for longer (average of 19.5 months) than women in urban areas. As to why (motivation) they decided to initiate weaning and utilize traditional food, a significant number of the participant (95%) reported that their decision was based on traditional teachings received from family (specifically mothers and grandmothers) about the timing and the benefit of introducing traditional complementary food at the time they did. The remaining three participants (5%) said their decision was partly influenced by their health practitioners during their pre and post natal visits. One of such participants said: *"I live close to the lady that registers us for antenatal classes. She was always checking to make sure I attend classes. She said I have to have my baby in the hospital and to make sure I feed the baby nothing but breast milk for six months before I start giving our food" (Participant 49, Makarfi field interview, July 2016).* This number is significant because it reinforces the importance of traditional knowledge and generational teaching/learning in food security and community development strategies (Kamwendo & Kamwendo, 2017).

Participants reported utilizing traditional food such as *gyeda (Arachis hypoaea)*, *dawa* (*Pennisetum glaucum)* and *wake* (*Vigna unguiculata)* to prepare weaning meals. See table 2.0 for an overview of traditional foods and their description. Some of these foods can be eaten alone; however, in many cases they are prepared in combination for the desired nutritional balance. One of such meals

The types of weaning food used by participants in our study such as groundnuts is in line with suggestion by Adeniyi (2012) who recommended a local alternative to the expensive, packaged mostly imported weaning foods. Adeniyi's alternative is made up of traditional foods which are easily accessible within the community; including maize, soya beans and groundnut. This weaning food competes favorably in terms of nutritional content and cost with the commercial packaged products (it is over four times less expensive) (Adeniyi, 2012). Participants' in our study use groundnut in a unique way, which is quite different from the way groundnut is used in southern region. In Makarfi, caregivers reported making *kunun gyeda* (groundnut porridge) as part of the weaning meal and a way of incorporating nutritious additions like groundnuts in children's meal. It is typically made out of groundnut paste and thickened with either rice or grains (millet, sorghum)

Fermentation is a practice commonly used by Nigerians for processing/preparation of weaning foods such as the pap. Fermentation is a food preparation method that has been utilized by mothers in Makarfi for generations. One participant explains the importance of the cultural practice: *"Jiko (fermentation) brings out the good in the grain" (Participant 32, Makarfi Field interview July, 2016)*. Study show that fermentation can be beneficial by removing some toxic or unwanted food components, enhance taste, change some nutritive content of food which can be beneficial to human, and reduce contamination (Marco, Heeney, Binda, Cifelli, Cotter, Foligne, Ganzle, Kort, Pasin, Pihlanto, Smid, Hutkins, 2017). All the participants in our study reported learning about fermentation from family traditions and not from health professionals. Participants in our study also added that fermentation enhances the taste of the pap hence making it more palatable for the children and makes digestion easier.

Kunun Tsamiya which is made out of wet- grounded and cooked fermented millet or sorghum with *Tamarindus indica*, gives children the benefit of consuming food which is culturally believed to provide essential nutrients and medicinal benefits from the *Tamarindus indica* (It is believed to help prevent diarrhea in children especially during weaning).

All participants reported been aware of the risks of diarrhea during the weaning period. The majority attributed this to the onset of teething (85%) and the rest attributed it to the change in diet (15%). The use of traditional plants for medicinal purposes is very common among rural dwellers like those in Makarfi, therefore, all participants reported knowing at least two traditional (herbal) remedies for the treatment of diarrhea in children and adults. One participant shares the importance of having traditional medicinal knowledge: *"A mother has to know this for the good of her family*

because most of the time this is your only option. My mother used it and her mother used it, we are all alive" (participant 56, Makarfi field interview, August, 2016). There is a sense of connection between traditional medicine and food; these remedies which are mostly plant based form part of the weaning food. While health care clinics are present in the community, access to orthodox medicine was reported to be sometimes challenging due to the cost implications. (See table 1.0 for participants' income details). But reliance on traditional food as medicine is a tradition that has been sustained for generations regardless of availability of orthodox medicine. Some of the plants used for the treatment of diarrhea include: *Kirya (Prosopis Africana); Tsamiya (Tamarindus indica) and Bunsurun fadama (Leucas martinicensis).* See table 3.0 for list of plants participants use for the treatment of diarrhea. We did not inquire about doses or medicinal content of these plants. Our aim was to highlight traditional food and their uses from a cultural perspective. Our findings in this aspect were consistent with those of Kankara, Ibrahim, Mustafa & Go (2015) who carried out a comprehensive study in the neighboring state of Katsina which documented medicinal plants used for traditional maternal health care in the state. The study reported the use of the same plants by mothers to treat various maternal health ailments. Another difference is that participants in our study reported using these plants as part of the meal they give to children like *Tamarindus indica* which is added in pap and *Vernonia amygdalina* which can be eaten by both mother and child as soup/salad or liquid concentrate. This practice translates into preventative measures as oppose to only cure. It is important to note that we inquired from some participants (particularly those who admitted using the plant) whether they are concerned about losing some trees such as *Prosopis Africana* due to the use of its roots for making medicine; most participants responded with optimism that the herbalist/medicine folks who source for the roots do it responsibly. One participant puts it this way: *"the harvesters know exactly how to harvest the roots and barks so that the tree has some support left to keep growing. If they don't have that knowledge we will not be using this medicine today, because the people that came before us used it too" (Participant 23, Makarfi field interview, July, 2016).* In essence, what this participant is saying is that those local herbalists possess the traditional knowledge that has been passed to them and has helped them harvest sustainably. Inversely, it is also important to note that some of the participants mentioned having difficulties accessing certain medicinal plants at the time they request because the herbalists and medicine people are finding it difficult to find some plants. This can possibly be translated into challenges with species extinction, climate change and/or loss of biodiversity due to deforestation. Most rural dwellers in Nigeria use fire wood as their primary source of energy (IFAD, 2012).

Participants discussed challenges they face in their efforts to use their traditional food for weaning. Access to safe drinking water was an issue of importance to care givers. Makarfi, like many rural communities in Nigeria lack access to safe drinking water. The women have come up with ways to make up for the short fall by boiling well water and through rain water harvesting. One of the participants explained this way *"I like the raining season, for the food and the water. I have up to six 50litre kegs that I use to store rain water. It is very clean and easy to collect" (participant 7, Makarfi field interview, July, 2016).* While participants in our study did not mention hygiene (specifically home and food preparation hygiene) as a challenge, we acknowledge studies from the region that have explored the relationship between poor sanitation and weaning related illnesses such as diarrhea (Ogbo, Agho, Ogeleka, Woolfenden, Page, Eastwood & Global Child Health Research Interest Group, 2017; Onofiok & Nnanyelugo, 1998). Research that highlights weaning practices and the food utilized can potentially provide insights towards minimizing challenges such as diarrhea.

In terms of the type of Indigenous food mostly used for weaning purposes in our study community and the cultural teachings as regards to their benefits; our findings are in line with an older study by Uweagbute (1991) who reported greater use of cereal weaning foods among the Hausa's compared to the two other major ethic groups in Nigeria (i.e. Yoruba and Igbo). Uweagbute's study analyzed the nutritional content of weaning foods used by mothers from these groups and reported that cereal used by the Hausa mothers had higher protein contents which could be attributed to processing techniques (Uweagbute, 1991).

Table 1.0: Demographic and Economic Data of Participants from Makarfi

	Variables	Number of Participants	Percentage (%)
Age	18-20	6	10
	21-30	26	43.3
	31-4-	20	33.3
	41-45	8	13.3
Total		60	100
Occupation	House wife	4	6.6
	Farmer	30	50
	Trader	20	33.3
	Public servant	4	6.6
	Student	2	3.3
Total		60	100
Income (Naira)/Month	10,000-15,000 ($US 27-41)	2	3.3
	>15,000-20,000 ($US >41-55)	22	36.6
	>20,000-25,000 ($US >55-69)	32	53.3
	>25,000-30,000 ($US > 69-83)	2	3.3
	>30,000 and above ($US >83)	2	3.3
Total		60	100

Table 2.0: Traditional Weaning Food used by Caregivers in Makarfi

Common name	**Scientific Name**	**Common meal prepared**	**Description**	**Cultural significance**
-Dawa -Gyero	*Pennisetum glaucum Sorghum bicolar*	Fura da Nunu	Millet/Sorghum balls and fresh cow Milk	Because of the cow milk, this meal is believed to provide a close alternative to the breast milk plus the energy giving benefits of the millet
		Danbu	Grounded, cooked and shredded millet/sorghum	Mostly fed to infants as snack between major meals
		Tuwon dawa/gyero	Thick paste of grounded millet/sorghum. Eaten with soup	Because it is eaten with soup, “tuwo” is believed to be a balanced meal. Soups are made mostly out vegetables like okro, spinach, jute leaf
		Kamun dawa/koko	Millet/Sorghum pap. Sometimes local spices are added	This is a preferred choice especially at the on-set of weaning because it is easier for digestibility
		Kunu	Gruel made up of millet/sorghum and sprouted rice (sometimes dried sweet potatoes)	This is a beverage that serves as a great source of hydration especially in the hot dry season
Shinkafan-gida	*Oryza glaberrima*	Tuwon shinkafa	Thick paste of local rice. Eaten with soup	This is usually introduced at the later months (average 10-12 months) because of chewing and digestion considerations
		Shinkafa	Boiled rice eaten with soup	This is sparsely used due to reduced production and societal preference for imported polished rice. However, this is known to have superior nutrients
Wake	*Vigna unguiculata*	Gwaten wake	Beans porridge, cooked with local condiments	This is one of the common and preferred meals because of its simplicity
		Alele	Peeled grounded boiled beans-usually grounded with bell pepper, onions and sometime crayfish/fish/liver/egg is added	While this is considered a nutritious meal, it is given cautiously to make sure the child can tolerate the meal as it is known to cause stomach upset in some children. As a precaution, it is mostly given in the day time to allow enough time for digestion
		Kosai	Peeled and grounded beans. Usually fried	This is often used a breakfast option or a snack.
		Danwake	Ground beans balls (mixed with maize flour as a thickener). Usually eaten with groundnut oil and spices if desired	Participants commented on the high appeal of this meal. The ball makes it a fun meal for the children.
Gyeda	*Arachis hypoaea*	Kunun gyeda	Pap made up of ground nut and local spices. Usually thickened with rice or millet paste	Groundnut is believe to be a rich source of fat children need especially since they do not get much breast milk fat during weaning

Table 3.0: Medicinal plants used by caregivers in Makarfi for treating diarrhea during weaning

Local name	Scientific name	Common method of preparation/use	Cultural meaning/benefits
Tsamiya	*Tamarindus indica*	Soaked in water, solution added to mostly pap and gruel	Used to prevent diarrhea
Kirya	*Prosopis Africana*	Roots and bark boiled in water and liquid concentrate is consumed, usually alone for maximum results	Used for the treatment of severe diarrhea
Bunsurun Fadama	*Leucas martinicensis*	Leaves are boiled in water and liquid consumed or crushed raw and added to meal	Used for the treatment of diarrhea
Minjirya	*Erythrina senegalensis*	Roots and bark boiled in water (sometimes with leaves of *Magnifera indica L.*) liquid is consumed in gruel made of Tsamiya (*Tamarindus indica*)	Believed to be an effective remedy for the prevention/treatment of diarrhea
Shuwaka	*Vernonia amygdalina*	Consumed by both mother and child. Leaves are washed into very tiny pieces and added in meals/soups. Mothers consume the infusion	Because of the bitter taste, mothers consume this and believe that their babies get it through the breast milk. It is believed to help purify the breast milk and help the child cope with teething and prevent/cure diarrhea

4. Conclusion

Our study has shown that traditional foods like *Pennisetum glaucum* and *Arachis hypoaea* plays significant role in weaning; but also is the knowledge and cultural implications of how the foods are utilized. A significant number of caregivers in Makarfi shared how important generational knowledge transmission is – as that accounts for the majority of their source of weaning information (timing, food and medicine). While no significant food related taboos were reported by our participants; it was clear that certain foods such as kunun gyeda (Arachis hypoaea) and koko (Pennisetum glaucum; Sorghum bicolar) are preferred when it comes to weaning diets. The utilization of fermentation as a food processing technique was reported to be beneficial by participants because of believes that it enhances the nutrients and taste of the food and it helps ease digestion. The benefit of traditional food goes beyond the nutrition; it is evident in our study that participants utilize their traditional food as medicine as well; especially in the treatment of diarrhea, foods such as *Vernonia amygdalina* and *Leucas martinicensis* are used for that purpose. Although the nutritional status of children in Nigeria has improved over the years- from 41% in 2008 to 37% in 2013 (NDHS, 2013), regions like the North east and North west have recorded little progress and food and nutritional security continues to be a challenge in the region. Factors such as the insurgency in the North east and effects of climate change like irregular rainfall patterns, threats from desertification and poverty pose blockade to families who rely on farming for livelihood and for their food needs. The need for low-cost and readily accessible weaning food is a crucial move towards improving the nutritional status of children in Nigeria (Igbedioh, 2016). Study has found that the use of traditional weaning food is not only economically beneficial, but nutritionally beneficial as well (Ijarotimi & Ogunsemore, 2006).

While there is benefit in providing nutritional education for mothers, it is important to put into consideration community specific factors such as traditional food, knowledge and cultural practices. Working with what is available and building on that would provide for a sustainable solution.

4.1 Implications for Community Food Security

Understanding the cultural beliefs and practices associated with infant feeding in a community is a crucial first step to understanding infant health (Dettwyler, 1987) and food security issues in the community.

While food restrictions may have shortchanged mothers and children of nutrition they may have benefited from otherwise; it is important to understand what wellbeing, health, nutrition and food security means to cultures and communities and these can be best understood from highlighting perspectives, beliefs and practices. There are potentials in the traditional food systems

of communities that can be utilized towards providing affordable, nutritious and culturally acceptable weaning food.

The fate of a society is very much influenced by the health and well being of its young population, with an increased rate of rural to urban migration in the country and little incentive for young people to take up farming and other land based livelihoods, it is crucial that emphasis is laid on revitalizing traditional knowledge especially as it relates to food and traditional food system. The traditional food system and all the traditional food available to the locality make up the larger food system- no meaningful development would be achieved without looking at a holistic solution that puts every facet into consideration.

References

Adeniyi, O.R. (2012) "Cost and Quality Optimization of a Weaning Diet from Plant Protein, Corn Flour and Groundnut Using a Computer-aided Linear Programming Model", *International Journal of Agriculture and Forestry*, 2 (1): 41-45. doi: 10.5923/j.ijaf.20120201.07

Dettwyler, K.A. (1987) Breast Feeding and Weaning in Mali: Cultural Context and hard Data. Social Science and Medicine, 24 (8): 633-644 https://doi.org/10.1016/0277-9536(87)90306-6

Ekwochi, U., Osuorah, C. D. I., Ndu, I. K., Ifediora, C., Asinobi, I. N., & Eke, C. B. (2016). Food taboos and myths in South Eastern Nigeria: The belief and practice of mothers in the region. *Journal of Ethnobiology and Ethnomedicine*, *12*, 7. http://doi.org/10.1186/s13002-016-0079-x

Gong, Y., Hounsa, A., Egal, S., Turner, P. C., Sutcliffe, A. E., Hall, A. J., Wild, C. P. (2004). Postweaning Exposure to Aflatoxin Results in Impaired Child Growth: A Longitudinal Study in Benin, West Africa. *Environmental Health Perspectives*, *112*(13), 1334–1338. http://doi.org/10.1289/ehp.6954

Gregory Kamwendo & Juliet Kamwendo (2017) Indigenous Knowledge-Systems and Food Security: Some Examples from Malawi, *Journal of Human Ecology,* 48:1, 97-101, DOI: 10.1080/09709274.2014.11906778

Igbedioh, S.O. (1993) Undernutrition in Nigeria: Dimension, Causes and Remedies for Alleviation in a Changing Socio-Economic Environment. *Nutrition and Health*, 9 (1): 1-14. https://doi.org/10.1177/026010609300900101

Ijarotimi, O.S.& Ogunsemore, M.T. (2006) Weaning Food and their Impacts on Child Feeding Practices among low Income Nigerian Mothers. *Food and Nutrition Bulletin* 27 (4): 327-334

International Fund for Agricultural Development – IFAD (2012). Rural Poverty in Nigeria: Agriculture in the Federal Republic of Nigeria

Kankara, S.S., Ibrahim, M.H., Mustafa, M., & Go, R. (2015) Ethnobotanical Survey of Medicinal Plants used for Traditional Maternal Health Care in Katsina State, Nigeria. *South African Journal of Botany*, 97:165-175. https://doi.org/10.1016/j.sajb.2015.01.007

Katepa-Bwalya, M., Mukonka, V., Kankasa, C., Masaninga, F., Babaniyi, O., & Siziya, S. (2015) Infants and young children feeding practices and nutritional status in two districts of Zambia. *International Breastfeeding Journal*, 10 (5). http://doi.org/10.1186/s13006-015-0033-x

Kruger, R. & Gericke, G.J. (2002) A Qualitative Exploration of Rural Feeding and Weaning Practices, Knowledge and Attitudes on Nutrition. *Public Health Nutrition* 6(2): 217-223. DOI: 10.1079/PHN2002419

Marco, M.L., Heeney, D., Binda, S., Cifelli, C.J., Cotter, P.D., Foligne, B., Ganzle, M., Kort, R., Pasin, G., Pihlanto, A., Smid, E., Hutkins, R. (2017). Health Benefits of Fermented Food: Microbiota and Beyond. *Current Opinion in Biotechnology* 44:94-102.

Meyer-Rochow, V. B. (2009). Food taboos: their origins and purposes. *Journal of Ethnobiology and Ethnomedicine*, 5 (18). http://doi.org/10.1186/1746-4269-5-18

Ogbeide, O (1974) Nutritional Harzards of Food Taboos and Preferences in Mid-West Nigerian. *The American Journal of Clinical Nutrition,* 27 (2): 213-216.

Ogbo, F. A., Agho, K., Ogeleka, P., Woolfenden, S., Page, A., Eastwood, J., & Global Child Health Research Interest Group. (2017) Infant feeding practices and diarrhoea in sub-Saharan African countries with high diarrhoea mortality. *PLoS ONE*, *12*(2), e0171792. http://doi.org/10.1371/journal.pone.0171792

Oloko, M., Mamman, M. and Ekpo, R. (2017) "Underscoring the Role of Nigerian Rural Women in Environmental Protection: Lessons from Makarfi in Kaduna State, Nigeria". *African Journal of Environmental Science and Technology* 11(5) 213-218.

Onimawo, I. (2010). Nigerian Traditional Food System and Nutrition Security. International Scientific Symposium, Biodiversity and Sustainable Diets. *Ambrose Ali University, Ekpoma, Nigeria*. 2-16.

Onofiok, N.O & Nnanyelugo (1998) Weaning Foods in West Africa: Nutritional Problems and Possible Solutions. United Nations University, *Food and Nutrition Bulletin,* 19 (1).

Sallen, D.W (1998) Infant and young child feeding practices among African pastoralists: the Datoga of Tanzania. *Journal of Biosocial Science*, 30 (4): 481-499

Uweagbute, A.C. (1991) Weaning Practices and Weaning Foods of the Hausa's, Yoruba's and Ibo's of Nigeria. *Ecology of Food and Nutrition*. 26 (2) 139-153. https://doi.org/10.1080/03670244.1991.9991197