

Assessment of Complementary Foods and Child Feeding Practices in Dodoma Region, Tanzania

Monica Lyimo¹ and Yasinta Muzanila²

¹Department of Food Science and Technology,

²Faculty of Science,

Sokoine University of Agriculture

Corresponding Author: Monica Lyimo, E-mail: monilyimo@yahoo.com

Abstract

A study was carried out in Dodoma region, Tanzania to assess complementary foods and child feeding practices. Three hundred and twenty mothers with children aged between 6 to 24 months were selected randomly in four districts (Bahi, Chamwino, Dodoma Municipality and Kondoa) and interviewed using a structured questionnaire. The data were analysed using the descriptive statistics. Results show that maize, sorghum and finger millet were commonly used cereals for child foods in Dodoma region. All respondents introduced complementary foods using available cereals before their children attained the age of six months. The average age when children were introduced to complementary foods was between 3.2 and 4.7 months; being lowest in Dodoma Municipality and highest in Kondoa. Utilization and preference of cereals used in complementary foods varied among districts. Utilization of sorghum porridge by respondents ranged from 23.8% in Chamwino to 27.8% in Dodoma Municipality. Maize porridge ranged from 24.7% in Chamwino, to 31.3% in Kondoa. Finger millet was the most highly used cereal in Kondoa at (61.2%). Groundnuts, common legumes in Dodoma, were used in complementary foods at different rates varying from 20.5% in Chamwino to 32.4% in Kondoa. Respondents who feed children three meals per day ranged from 23.9% in Chamwino, to 26.4 % in Dodoma Municipality. These results show that most respondents did not adhere to the recommended practices of exclusive breast feeding for six months. There is a need therefore to sensitize women and the community at large on the importance of following recommended practices for breast feeding and promote appropriate complementary foods and feeding practices in order to avoid likely health complication among children.

Key Words: *Complementary feeding, cereal-legume foods, complementary foods*

Introduction

In most developing countries, inadequate intake of nutrients has continued to be the main cause of under-nutrition, and the resultant deficiency disorders in children. Meanwhile, appropriate feeding practices play a vital role to ensure that infant gets the right and adequate food at the right time. It is therefore necessary that children are given additional nutrients that are required for optimum growth and development (Fernandez *et al.*, 2002; Black *et al.*, 2008). It has been documented that appropriate feeding practices have short and long term impacts. These include growth failure, increased susceptibility to childhood infections, poor school performance, impaired intellectual and social development (WHO, 2008). The World Health Organization (2008; 2010) recommends that all infants should be initiated with breast-feeding within one hour of birth and exclusively breastfed from birth until 6 months of life. Thereafter, infants should be introduced to nutritionally adequate and safe complementary foods with continued breastfeeding up to two years or beyond. These recommendations comply with the global strategy to improve infant and young feeding practices. The global strategy for infant and young child feeding emphasizes the need for comprehensive national policies on infant and young child feeding, ensuring that all health services protect, promote and support appropriate breast-feeding and complementary feeding practices (WHO, 2008; 2010). Despite this recommendation, inappropriate complementary feeding practices remain a major public health problem in many developing countries contributing to child growth retardation, under nutrition, morbidity and mortality (Victor, 2010).

Malnutrition among under-five years old children is a public health concern in Tanzania with the high prevailing rates showing little improvement over the years. A 24 hour recall study conducted in Tanzania by Hussein (2005) to assess infant feeding practices revealed that 60% of Tanzanian babies were breastfed within one hour of birth. Breastfed babies from the age of 7 to 10 months who received complementary foods within 24 hours accounted 90.7%. Short duration of exclusive breast-feeding as well as introducing complementary foods too early (before the recommended 6 months) was found to be common in many parts of Tanzania.

Adoption of recommended breast feeding and complementary feeding practices and access to the appropriate quality and quantity of foods are essential components of optimal nutrition for infants and young children (Arabi *et al.*, 2012; UNICEF, 2012). If the complementary feeding period is not well managed it contributes significantly to high prevalence of

malnutrition among children who are less than five years of age (Daelmans and Saadeh, 2003). The main causes of malnutrition during this period are inadequate food intake and diseases (UNICEF, 2012).

The ideal time to introduce complementary foods in the diets of infants is difficult to pinpoint. Complementary foods introduced too early are of little benefit to the infant and may even be harmful due to the possibility of choking, developing food allergies, or causing an infant to consume less than the appropriate amount of breast milk or infant formula (Croce *et al.*, 2004). Late introduction of complementary foods may cause an infant to develop nutritional deficiencies and/or miss that period of developmental readiness (Victor, 2010). Consequently, the infant may have difficulties in learning to eat complementary foods when they are introduced late. Meanwhile, when complementary foods are introduced appropriately according to the developmental stage of the infant, nutritional requirements can be met and the infants' eating and self-feeding skills can develop properly (Croce *et al.*, 2004). Paediatric nutrition authorities agree that complementary foods should not be introduced to infants before they are developmentally ready for them; this readiness occurs in most infants between 4 and 6 months of age (de Paoli, 2004).

Various cereals are grown and utilized for baby feed formulations based on ethnic and tribal groups. However, limited studies have been reported on child feeding practices in Tanzania. This study assessed the feeding practices for children in Dodoma region, which is one of the dry regions in Tanzania with limited food supply, which has the potential to have negative nutritional effects on children, especially the under five.

Methodology

This study was conducted in Bahi, Chamwino and Kondoa districts as well as Dodoma municipality in Dodoma Region, which lies between 4° to 7° latitude South and 35° – 37° longitude East. The region is centrally positioned in Tanzania sharing borders with four other regions namely; Manyara in the North, Morogoro in the East, Iringa in the South and Singida in the West. Much of the region lies on a plateau rising gradually from 830 meters above sea level (m.a.s.l) in Bahi Swamps to 2000 m.a.s.l in the highlands north of Kondoa (URT, 2013). These districts fall under similar semi-arid climate conditions, and they generally experience a similar seasonal calendar. Rainfall in these districts starts from late November and the peak is in December/January. The districts experience drought regularly, which has a significant impact on agriculture (crops and livestock), water, forest and human resources. The main staples grown in

the districts include sorghum, finger millet, cassava and maize, while major cash crops are groundnuts, sunflower, sesame and to a lesser extent castor, and pigeon peas.

Purposive sampling was used to select districts that grow groundnuts in large quantities within Dodoma region. Four districts (Bahi, Chamwino, Kondoa and Dodoma municipality) were identified with the help of District Agricultural Extension Officers. Four villages were then randomly selected from each district. These were Mundemu, Mtitaa, Kigwe and Lamaiti in Bahi; Muungano, Nghaleheze, Makoja and Msanga in Chamwino; Mbalawala, Kikombo, Chigongwe and Vikonje in Dodoma Municipality as well as Cheku, Mondo, Bukulu and Bolisa in Kondoa. The sampling frame for individual respondents covered all mothers with children aged 6 to 24 months. Twenty (20) women were randomly selected from each village. A total of 320 women were selected for the study, 80 from each of the districts.

Face-to-face interviews were conducted with each of the selected women and/or their partner using a structured questionnaire. Field work took place between January and February 2012 to collect data on feeding practices, age at which they start giving complementary foods, complementary foods used, and types of cereals and legumes (including groundnuts) that are used in complementary foods. The questionnaire was pre-tested and validated in one of the villages Kongwa district, not participating in the study. Data collected through the questionnaire were coded and analyzed using the Statistical Package for Social Scientists (SPSS) to compute descriptive statistics such as means, standard deviations, frequencies and percentages.

Results and Discussion

Age of introducing complementary feeding

In Tanzania, like in other countries world-wide, it is recommended that infants be exclusively breastfed from birth until six months of age (WHO, 2008), after which, complementary foods should be given, supplementing breast milk. This feeding regime ensures adequate child growth and development. Results of the present study show that most mothers did not adhere to the recommended feeding plan for infants. There were variations in the age at which children started using complementary feeding in the four districts.

The findings in Table 1 show that mothers in all districts start giving supplementary feeding to their children before six months of age. In Dodoma Municipality, supplementary feeding starts at about three months

on average, while in Kondoa district feeding starts a bit later when the children are approaching 5 months of age on average. Majority (about 80%) of respondents in the study area reported that breast milk was not enough to satisfy their babies' needs. As a result, the babies were reported to have been crying most of the time and sometimes they could not sleep. This compelled mothers to introduce solid foods to their children even before the age of six months. Inadequate breast milk from mothers could be attributed to poor health of the mothers due to inadequate intake of food.

Table 1: Mean child Age when complementary feeding was introduced

District	Mean Age (months)	N	Std. Deviation
Chamwino	3.7	65	2.928
Bahi	4.3	60	2.016
Kondoa	4.7	53	1.876
Dodoma Municipality	3.2	58	2.359
Sample mean	3.9		

Early supplementation with solid foods is common among African mothers where the majority start weaning their infants at the age of three to four months and in some cases they begin within the first two months of the baby's life. For example, most Ghanaian mothers start weaning their children by the third month of life (Anigo *et al.*, 2010). None of the respondents from the study area in Dodoma waited until their children were six months old to start complementary feeding as recommended by WHO (2003; 2008). More than 80% of the respondents in the study area stated that exclusive breast feeding for six months was not practical due to the eating habits of mothers, consisting of low food intake coupled with a busy work schedule, sometimes involving heavy work load for women. Women undertake household activities like fetching water, farm activities which occupy most of their time outside their households such that exclusive breast feeding for six months cannot be possible.

Supplementary feeding provides many benefits, especially when it is given to the child at the right age. Complementary foods (solids) provided when after six months of age, gives extra energy and nutrients to ensure appropriate growth and development of a child (<http://www.moh.govt.nz>, 2013). In contrast, when complementary foods are given too early they may contribute to incidences of diarrhoea, upper and lower respiratory tract infections, higher risk of obesity and diabetes leading to poor growth effects to the child. Studies from Bangladesh and Brazil have shown that breastfed children who were given additional food before the age of six months had a two- to threefold higher mortality rate from diarrhoea and

pneumonia during the first 6 months of life than infants who were exclusively breastfed (Black and Victoria, 2002). It has been reported that malnutrition increases markedly between 4 and 12 months of age, around the time infants begin to receive complementary foods in addition to breast milk (Davis *et al.*, 2003). Some complementary foods given to children do not have sufficient nutrients to meet the nutritional requirements for the actively growing infants. It is further reported that, milk substitutes provide too few calories and expose the infants to the risk of dying from infections (John, 2013).

Mean Child Age at which respondents stop breast feeding

Most respondents stop breast feeding after two years as it was observed in Chamwino, Bahi and Dodoma Municipality except in Kondoa where they stop at around 15 months (Table 2). Kondoa unlike the other districts has higher rainfall hence, more foods available. Availability of adequate food means that mothers can afford to stop breastfeed their children early and give them alternative foods. In that case children still get adequate amounts of required nutrients and are therefore not affected health-wise. Continued breastfeeding for two years or more has been recommended by the World Health Organization and UNICEF (http://www.unicef.org/nutrition/index_24824.html, 2014). The same organizations have further indicated that breastfeeding also lowers the risk of chronic conditions later in life, such as obesity, high cholesterol, high blood pressure, diabetes, childhood asthma and childhood leukaemia. These studies have also shown that breastfed infants do better in intelligence and behaviour tests than formula-fed babies, and such effects continue into adulthood.

Table 2: Mean child age (months) at which respondents stop breast feeding

District	District (Months)	Mean	N	Std. Deviation
Chamwino	27.6		65	5.367
Bahi	27.8		60	5.044
Kondoa	15.6		53	5.423
Dodoma Municipality	29.0		58	5.899
Sample mean	25.0			

Types of cereals used in complementary foods

The development of an optimum nutrition among children during the first two years of life is an activity that varies with age and results from a series of breast feeding and complementary feeding practices and behaviours, as well as having access to appropriate mixtures of foods. The results as presented in Table 3 show that the respondents in the study area use

available cereals to prepare local complementary food types for their children in the form of thin porridge made out of cereals and legumes. Maize, sorghum and pearl millet were used fairly often in complementary foods in all the districts studied. Finger millet was the most preferred cereal in Kondoa used by 61.2% of respondents compared to 23.8% in Bahi, 8.8 % in Chamwino and 6.2% in Dodoma Municipality. Again, maize was most common in Kondoa (31.3%) compared to the other districts. Meanwhile Pearl millet was most commonly used in Dodoma Municipality (41.3%) compared to 36.6% in Bahi, 17.4% in Chamwino and only 8.7% in Kondoa.

In Dodoma Municipality, there was more frequent use of other cereals accounting for 55.3% of the respondents in this category. Cereals are a good source of carbohydrates that provide energy and must be supplied in large proportions in the diet (Solomon, 2005). It has been reported earlier that the first solid food and the most popular weaning food in Africa is a thin cereal gruel called by different names depending on the type of cereal or the country it originates from (Solomon, 2005). Usually, the type of complementary food used may vary depending on the available foodstuff and resources. For most rural and poor urban mothers, such complementary food involves using traditional home-made semisolid porridge prepared from staple cereals, tubers, legumes and condiments (Akeredolul, 2014). However, it is argued that such porridge is very low in energy density, and is very poor in providing fat, iron and vitamins.

Table 3: Utilization of cereals in complementary foods (n=80)

Cereal	% of respondents			
	Chamwino	Bahi	Kondoa	Dodoma Municipality
Maize	24.7	17.6	31.3	26.4
Sorghum	23.8	25.4	23	27.8
F/millet ¹	8.8	23.8	61.2	6.2
P/millet ²	17.4	32.6	8.7	41.3
Others ³	25.5	17	2.1	55.3

¹F/millet = Finger millet, ²P/millet = Pearl millet, Others³ = non cereal foods like roots and tubers

Types of Legumes used in complementary foods

In addition to cereals, results in Table 4 indicate that respondents use various legumes including groundnuts, cowpeas, pigeon peas, beans, soybeans and bambara nuts as additives in complementary foods. All respondents reported that they started feeding complementary foods containing legumes other than groundnuts when their children were aged 12 months and above. The reason for such late inclusion of other legumes

is that they normally have a lot of indigestibility problems. Similar observations have been reported earlier by Anigo *et al.* (2010) that other legumes apart from groundnuts are rarely used for early weaning; they are introduced much later because they are associated with indigestibility, flatulence (accumulation of gas in the alimentary canal) and diarrhoea associated with their use.

Table 4: Utilization of legumes in complementary (n=80)

Legumes	% of respondents			
	Chamwino	Bahi	Kondoa	Dodoma Municipality
Groundnuts	20.5	22.2	32.4	24.9
Cowpeas	12.5	62.5	12.5	12.5
P/peas ¹	0	0	100	0
Beans	15.3	23.1	51.3	10.3
B/nuts ²	27.2	9.1	45.5	18.2
Soy beans	10	10	70	10

¹P/peas=Pigeon peas. ²B/nuts=Bambara nuts

Utilization of groundnuts in complementary foods

Groundnuts were used in various forms in combination with other complementary foods as shown in Table 5. Some respondents mixed raw groundnuts with cereals and milled together as reported by 32.6 % of the respondents in Kondoa, 23.8% in Dodoma Municipality, 22.7% in Bahi and 20.9% in Chamwino. Others mixed roasted groundnuts and cereal grains before milling, this represented about 41.7% of the respondents in Kondoa, 25.0% in Bahi, 16.7% in Chamwino and Dodoma Municipality respectively. The rest of the respondents mixed groundnut flour with cereal flour before cooking. Roasting the groundnuts helps to remove the skin, which reduces contamination including aflatoxins. The practice of using roasted groundnuts may reduce the cooking time for porridge, unlike raw groundnuts, which require porridge to boil for a long time, to get rid of unpleasant groundnut raw flavour in porridge.

Table 5: Forms of groundnuts used in complementary foods (n=80)

Gnuts	% of respondents			
	Chamwino	Bahi	Kondoa	Dodoma Municipality
Usage				
R/Gnuts ¹ & cereals	20.9	22.7	32.6	23.8
R/Gnuts ² & cereals	16.7	25	41.7	16.7
Gnut/ flour ³ & cereal flour	35.3	17.6	0	47.1

R/Gnuts¹ & cereals= Milled raw groundnut, R/Gnuts² & cereals= Milled roasted groundnut, Gnuts=Groundnuts.

It was observed that the respondents add various proportions of groundnuts ranging from 10 to 50% of the groundnuts cereal based complementary foods (Table 6). Groundnuts when used in complementary food provide protein and fat which help to increase the density of cereal based porridge and makes it taste better. Fat helps the absorption of vitamin A and other fat-soluble vitamins (Anigo *et al.*, 2010). Protein builds, maintains, and replaces tissues in the body, and is also required to make up muscle tissue which in turn helps to keep the body active, strong, and healthy.

Table 6: Proportion of groundnuts used in complementary foods

% Gnuts ¹ in Mixture	% of respondents			
	Chamwino	Bahi	Kondoa	Dodoma Municipality
10	25.6	23.3	37.2	14.0
20	26.3	21.0	30.3	22.4
30	15.5	19.6	41.3	23.9
40	0	0	28.6	71.4
50	0	0	0	0

¹Percent of groundnuts in groundnut cereal mixture; Gnuts= Groundnuts

The proportion of cereals to proteins within complementary foods depends on the energy requirement of a child, based on their age group. According to WHO (2003) energy requirements for children between 6-8 months is 280 kcal. For subsequent ages the requirements are as indicated; 9-11 months (450 k cal) and 12-24 months (750 k cal). For well constituted complementary food, 25% of the energy has to be contributed by fat, for all age groups, 6-10% should be provided by protein and the rest from carbohydrates (WHO/PAHO, 2003). To meet the WHO recommendation the proportion of groundnuts to cereals should be 30%. From the present study majority of respondents from Kondoa (41.1%) conformed to this recommendation, However, respondents from Dodoma Municipality

(71.4%) exceeded the recommended amount of groundnuts proportion which does not add value to the diet.

Reasons for using groundnuts in complementary foods

Various reasons were given by the respondents for including legumes especially groundnuts in the complementary foods (Table 7). Many respondents, especially in Kondoa district, were ignorant regarding the role played by groundnuts in the complementary foods for their children. This was construed based on their response where they mentioned that they used groundnuts because they are available as reported by 50% of respondents from Kondoa, 33.3% from Bahi and 16.7% from Dodoma Municipality. Others mentioned that groundnuts improve the babies' health (32.4% from Kondoa, 30.3% from Dodoma Municipality, 20.4 % from Chamwino and 16.9% from Bahi). Some respondents, within Kondoa district (37.5%) reported that they were advised by nutritionists to use groundnuts. Chamwino and Bahi had 25% each for this response while Dodoma had only 12.5% of the respondents who were driven by advice from health workers to use groundnuts.

Table 7: Reasons for using groundnuts in complementary foods (n=80)

Factor	% of respondents			
	Chamwino	Bahi	Kondoa	Dodoma Municipality
Availability	0	33.3	50	16.7
Add protein	22.7	27.3	36.4	16.6
Improve health	20.4	16.9	32.4	30.3
Advised ¹	25	37.5	25	12.5

¹Advised by health personnel

From these results, it is evident that most of the respondents were not well informed on the nutritional benefits of groundnuts for their children. Groundnuts are a good source of protein, fat, minerals and vitamins that are important in building, maintaining and repairing body tissues (Anigo *et al.*, 2010). Protein is required by everyone to maintain and repair the body, but it is especially important for babies and toddlers because protein supports growth and development. Inadequate protein intake can retard their growth and development, decrease immunity and weaken the child's body in general. Vegetables present another important component of complementary foods

Types of vegetables used in complementary foods

Vegetables are scarce in Dodoma especially during the dry season; from June to November. Vegetables are rich in vitamins and minerals and therefore very important in human diet. Respondents from all districts reported that they use vegetables (amaranthus, cassava, cowpea, sweet potato and pumpkin leaves) as complementary foods when they are available (Table 8). However, most of the vegetables were seasonal so available mainly during the rainy season.

Table 8: Utilization of vegetables in complementary foods (n=80)

Vegetables	% of respondents			
	Chamwino	Bahi	Kondoa	Dodoma Municipality
Amaranthus	19	23.7	26.3	31
S/ potato leaves	20.6	20.6	26.6	32.2
Cassava leaves	17	23	27	33
Cowpea leaves	21.2	19	27.4	32.3
Pumpkin leaves	17.8	19.2	29.1	33.8
Wild vegetables	19.1	18.6	28.4	33.8

S/potato leaves= Sweet potato leaves

Forms in which vegetables are used in complementary foods

Vegetables are given to children in different forms, including liquid vegetable extract, cooked plain leaves, or cooked vegetable leaves mixed with either groundnuts or other foods as shown in Table 9. The results show that 34.6% of respondents from Dodoma Municipality reported cooking vegetables with groundnut flour, whereas 50% of the respondents from Bahi mixed cooked vegetables with other food types. Feeding on liquid vegetable extract was practiced by 33% of the respondents in Kondoa and 31.8% in Dodoma Municipality and less practiced in Bahi and Chamwino.

Table 9: Forms of vegetables used in complementary foods n=80

Vegetables usage	% of respondents			
	Chamwino	Bahi	Kondoa	Dodoma Municipality
Plain leaves	19.3	18.8	30	31.9
Leaves & gnut flour	19.2	24.4	21.8	34.6
Leaves with other foods	20	50	20	10
Liquid vegetable extracts	15.2	20	33	31.8

gnut flour = groundnut

Vegetables contain a number of essential vitamins and minerals that cannot be found in other types of foods. They are rich in vitamins C, A, thiamine (B₁), niacin (B₃), pyridoxine (B₆), folic acid (B₉), E, minerals, and dietary fiber (Słupski *et al.*, 2014). Having fruits and vegetables in the daily diet has been strongly associated with reduced risk for chronic diseases and improvement in the body immunity in general thus reducing the incidence and prevalence of communicable diseases.

Sources of complementary foods available in Dodoma region

Formulation of nutritious complementary foods from local and readily available raw materials has received a lot of attention in many African countries including Tanzania. In the present study, most respondents reported that they use homemade complementary foods made from available cereals and legumes with the exception of one village in Bahi district, where respondents reported that they use commercial locally available complementary formulation and other complements supplied from the clinics (Table 10).

Table 10: Sources of complementary foods (n=80)

Source	% of respondents			
	Chamwino	Bahi	Kondoa	Dodoma Municipality
Home made	14	34.9	27.8	23.3
Commercially made	0	100	0	0
Clinic supplied	20	60	0	20

All respondents mentioned that commercially made complementary foods are very expensive and they are not readily available in the villages. It has been reported that the high cost of fortified nutritious proprietary complementary foods is always beyond the reach of most Nigerian families hence, many depend on inadequately processed traditional foods consisting mainly of un-supplemented cereal porridges made from maize, sorghum and finger millet (Ejigui, 2007). Low-quality complementary foods combined with inappropriate feeding practices put the children at high risk of facing under-nutrition and associated outcomes. The frequency and amount of food offered may be less than the amount required for normal child growth, or their consistency or nutrient density may be inappropriate in relation to the child's needs. Low feeding frequency of poor quality foods leads to low food intake, which puts child's health at risk. Likewise, high feeding frequency of poor complementary food could displace the more nutritive breast milk in the child's diet.

Number of meals per day fed to children

Inadequate amounts and poor quality of complementary foods, poor child feeding practices, and high rates of infections have a detrimental effect on health and growth in children less than 2 years of age (WHIO, 2003). Findings from this study have shown that there was variation in the frequency of child feeding, although almost an equal number of respondents from the four districts reported to feed their children three times a day. It was also observed that 41.3% of respondents (from Kondoa) fed their children four times a day compared to respondents from Dodoma Municipality (28.2%), Chamwino (18.0%) and Bahi (17.5%) (Table 11). A high frequency of feeding leads to high food intake and therefore increased intake of nutrient (Nyaruhucha *et al.*, 2006).

Table 11: Frequency of feeding per day (n=80)

No. of meals Per day	% of respondents			
	Chamwino	Bahi	Kondoa	Dodoma Municipality
One	0	33.3	0	66.7
Two	15.8	24.1	0	63.1
Three	23.9	26.4	23.3	26.4
Four	18	17.5	41.3	28.2

Types of foods given to children after breast feeding

Respondents from the study area mentioned various foods given to children after breast feeding as shown in Table 12. Results indicate that after breast feeding children are fed with porridge, milk, stiff porridge, potatoes, beans, vegetables and fish according to availability and affordability in the four districts. For example, 37.5% and 33.3% of respondents from Kondoa and Dodoma Municipality respectively reported to give milk to their children compared to only (16.7%) in Bahi and (12.5%). In all districts rice was fed to children almost at similar proportion (Table 12).

Table 12: Types of food given to children after breast feeding (n=80)

Food types	% of respondents			
	Chamwino	Bahi	Kondoa	Dodoma Municipality
Porridge	19.1	21.8	26.8	32.3
Tea	17.1	11.4	25.7	45.8
Milk	12.5	16.7	37.5	33.3
S/porridge	19.3	22.8	26.2	31.7
Potatoes	5.6	44.4	16.7	33.3
Rice	26.1	28.3	21.7	23.9
Beans	27.3	9.1	18.2	45.4
Vegetables	20.7	13.3	24.1	41.4
Fish	10.5	25.0	22.0	42.5

It was observed that more than one third of respondents (41.4%) from Dodoma Municipality fed their children vegetables in the form of extract or mashed with other foods compared to 24. 1% in Kondoa, 20. 7% in Chamwino and 13.8 % in Bahi. According to the results, apart from children being fed with carbohydrates, they are also fed with proteins and vitamins from fish, beans and vegetables. After breast feeding, babies can eat the same protein-rich foods as the rest of the family, though such food should be soft and offered in small pieces. Babies should get protein every day because the body doesn't store protein the way it stores fat and carbohydrates (Nyaruhucha *et al.*, 2006).

Conclusion

Most of the mothers in the study area practice early introduction of solids to their children. Majority introduce solids at the age of three to four months for the reasons that; breast milk was not enough. Early introduction of solids have been associated with incidence of diarrhoea and other diseases like upper and lower respiratory tract infections that are likely to impair growth of the child leading to poor health. The solids given to the children consisted of plain thin porridge prepared from available cereals (maize, finger millet, sorghum and pearl millet) which lack other essential components such as protein, fats, vitamins and minerals that are required for optimum growth. Most Children were given complementary foods containing legumes other than groundnuts when they were aged 12 months and above due to the indigestibility problems associated with these legumes. Under the age of 12 months digestibility rate of children is still low so these other legumes are not appropriate for them. Mothers in the study area need to be sensitized and given education on the importance of exclusive breast feeding of their children for six months. Exclusive breastfeeding for the first six months and continued breast feeding during the second year of life has been shown to be effective in reducing the risk of poor growth in children.

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