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Weaning Practices and Nutritional Status of Infants in Isoko North and South Local Government Areas in Delta State, Nigeria (Pp. 191-207)

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Abstract
The study investigated the weaning practices of mothers and the nutritional status of infants in Isoko North and South Local Government Areas in Delta State, Nigeria. The population consisted of mothers who had up to two children including infants from various occupational groups. A sample of 300 mothers was randomly selected. Questionnaire was used for data collection. The anthropometry used was the height and weight of the infants. The percentage of the responses to each of the questionnaire items was calculated. Findings showed that most of the mothers started weaning their infants in the fourth month. The mothers gave commercial and home made weaning foods to their babies "on demand". Others practised "scheduled feeding". The major weaning foods given to the infants are banana, corn pap, cerelac. It was observed that some of the infants had normal nutritional status. Others were malnourished. It was recommended among others that the mothers should be encouraged to wean their babies with legumes, green leafy vegetables, soymilk, fish and fruits to enhance their nutritional status.

Introduction

The first few years of life of a child are very significant in the laying of a good foundation for good health. In order for an infant to obtain a good health status his nutrition is very important. When a baby is born he depends on milk for survival. This is usually breastmilk or infant milk formula. If an

infant is not adequately fed with the right proportion of nutrients in the diet, malnutrition usually results.

Malnutrition is a serious health problem in Nigeria. This is more severe among infants and children. Malnutrition has led to high morbidity and mortality among the vulnerable group. Infants are the most vulnerable to malnutrition and preventable diseases. The mortality rates are higher in developing countries, e.g. Nigeria.

Baby feeding practices are nutritional behaviours and actions by mothers and childcare providers which have direct implications for the nutritional status of the child (Ogbuji 2005). UNICEF (1994) pointed out that the period between the introduction of mixed feeding and finally stopping breastfeeding, which is commonly referred to as weaning is a time of particular danger to the child. This is because he may not only be in danger of malnutrition but will also have lost immunity obtained from the mother and be very liable to severe and repeated infection.

WHO (1991) noted that bottle and other artificial feeding practices which are introduced due to difficulties in breastfeeding or at weaning period is gaining popularity. During weaning some mothers usually add infant milk formula to babies' food. UNICEF (1995) warned that the major concern has been that heavy bacterial contamination of cow milk has been proved as a prime reason for high incidence of diarrhea in bottlefed babies. Excessively diluted feed with resultant low nutritional intake may lead to marasmus.

UNICEF (1994) found that one of the main problems of infection in infant feeding centre on the danger inherent in the use of feeding bottles and other forms of artificial baby feeding. Another problem is the cost of artificial milk relative to income is high. The time of weaning varies. Ogbuji (2005) found that undergraduate students in the University of Nigeria, Nsukka commenced weaning after the 4^{th} month.

According to Ngwu (2005) complementary feeding is the intake of other foods along with breastmilk (continued breastfeeding) in order to complement nutrients supplied by breastmilk. She noted that complementary feeding period is a transitional phase which calls for supply of nutritionally adequate hygienically safe, easily consumed and digested complementary food.

WHO/UNICEF recommended that complementary feeding of infants should start from the 6th month of age. Gradual increases in provision of complementary feeding cause a simultaneous decrease in the child's dependence on breastmilk. The reduction continues until the child can depend on adult diet for his nutritional requirement. The extent of provision of adult diet to the child depends on his ability to chew and swallow food. Weaning food should be complementary. Ngwu (2005) defined complementary food as any nutrient containing food (solid or liquid) other than breastmilk that is given to young children during the period of complementary feeding (weaning). Complementary foods include transition foods that are prepared especially for the infant and increased as the child becomes older. She advised that complementary foods should be introduced singly and at intervals to permit the detection of adverse reactions (allergies).

Ashworth (2002) outlined some guidelines in the use of complementary foods. Complementary foods should be clean, safe, rich in energy, protein, minerals, vitamins easy to prepare, locally available, affordable, easy and enjoyable for the child, spoonfed and not bottlefed, used within two hours of preparation if not in a refrigerator. FMOH and WHO (1999) advised that a baby should be fed with cup/plate and spoon. Feeding bottles and pacifiers should not be used.

Infants in Nigeria are faced with a lot of feeding problems which could lead to malnutrition. In some cases, children are not allowed to take nourishing food such as meat during weaned early (Imonikebe 1993). She also found that most mothers do not know how to prepare weaning foods from locally available foods in nutritionally adequate forms.

Most people in Isoko have large family sizes. In the face of the present high cost of living caused by the global economic melt down, it is not easy to maintain such large families most especially if the family income is low. In such cases, it is the younger children who are mostly malnourished. This is because of ignorance and pattern of sharing of food whereby only adults and male members of the family consume large share of meat, fish and other high protein foods. These foods are needed more by the younger children for growth and development (Imonikebe 1993).

Objectives of the study

The study identified the weaning practices of mothers and the nutritional status of infants in Isoko North and South Local Governments of Delta State, Nigeria.

The specific objectives of the study are as follows;

1. To identify the weaning practices of mothers in Isoko North and South Local Government Areas in Delta State.
2. To assess the nutritional status of the infants in the area.

Methodology

Population: The population of the study comprised of the mothers who have infants from various occupational groups in Isoko North and South Local Government Areas in Delta State, Nigeria. They include farmers, teachers, traders, civil servants, seamstresses and nurses. A sample of 300 hundred mothers was randomly selected from 10 towns and 14 villages. Questionnaire was used for the data collection. It had section A on bio-data. Section B was on the weaning practices. Three hundred copies of the questionnaire were administered to the mothers. The contents of the questionnaire were explained and interpreted to the illiterates by the researcher. Their responses were checked into the questionnaire.

Anthropometric measurement of height / length and weight of the infants were obtained using standard procedures (Jelliffee and Jelliffe 1966). The height / length of each infants was measured using a graduated measuring board while lying on it with legs stretched to the nearest 0.1cm. The weight of each infant who could stand was obtained by allowing each of such infants to stand on a bathroom scale. Other infants were weighed with their mothers carrying them. Each mother was weighed alone. Infant's weight was obtained by subtracting mother's weight from both the weight of mother and infant. The measurement was done to the nearest 0.1kg. Frequency distribution, percentages and mean of the responses were calculated.

Findings

Forty-seven (15.7%) of the mothers had no formal education; 81 (27.0%) had first school leaving certificate. Also (28.7%) had West African School Certificate; 25 (8.37%) had Teachers' Grade II certificate (TTC); 31 (10.3%) had Ordinary Nigerian Diploma certificate; 19 (6.30%) had National

Certificate in Education (NCE). Eleven (3.60%) had Bachelors of Arts or Science (BA/BSc) Degree.

Some (46) (15.3%) of the mothers introduced infant milk formula to their babies at the 3rd month, 72 (24.0%) did so at the 4th month. Forty-seven (15.7%) of them gave such milk to their babies at the 6th month. Many 108 (35.4%) introduced infant milk formula as from the 7th month.
The main reason for introducing infant milk formula to the babies was that breastmilk was insufficient to satisfy baby 90 (30.0%). Some (65) (21.7%) said they did so because of their work and 36 (12.0%) stated it was good for their babies. Thirty (9.10%) said that other mothers usually give infant milk formula to their babies. Twenty five (8.30%) said it was not convenient for them to continue breast feeding. Eighteen (6.00%) said baby rejected breastmilk. Five (1.70%) said breastmilk was bitter/sour.

Findings showed that over half 194 (64.7%) of them introduced semi-solid or solid food to their infants at the 4th month. Ninety (30.0%) of them did so at the 5th month; 19 (4.60%) at the 6th month; (0.70%) did so at the 7th month.

The main reasons for giving semi-solid food to infants were that child was old enough to accept weaning food 162 (54.0%). Other reasons were that child was always too hungry and wanted more food 74 (24.7%). Breastmilk and infant milk formula did not satisfy baby 49 (16.3%) and advice of mother 13 (4.30%). One (0.30%) said semi-solid food makes baby healthier.

The commonest first semi-solid or solid food given by the mothers to their infants was corn pap (Zea mays) 243 (56.6%), Cerelac 68 (22.7%), banana 31 (10.7%) and Nutrend 30 (10.0%).

Some (132) (44.0%) of the mothers fed their infants semi-solid or solid food by hand but 108 (36.3%) of them spoonfed. Twenty eight (9.70%) fed such food with feeding bottle. Thirty (10.0%) of them used cup and spoon to feed their babies.

Use of Commercial and Home Prepared Food
It was found that (73.7%) of the respondents fed their infants with home prepared food, 4.60% fed commercially prepared food and 21.7% of them gave their infants a combination of home prepared and commercially prepared food.

The reasons for preference of home prepared food are as follows. They are nutritious 104 (34.7%). They are always available 76 (25.3%). They are safer 31 (10.7%). They are cheaper 30 (10.0%). They taste better 7 (2.30%). The reason for preference of the commercially prepared food for infants are; they save time 21 (7.00%). Other mothers use them to feed their babies 5 (1.70%). They taste better 3 (1.00%).

Persons Who Usually Fed the Babies

A large proportion 230 (76.7%) of the mothers stated that they usually fed their babies by themselves. Thirty (10.0%) of them said, their mothers in-law did so. Fifteen (5.00%) said their mothers assisted them in feeding their infants. Ten (3.3%) indicated that their infants were fed by house helps.

Methods of Feeding Infants

Over half 206 (68.7%) of the mothers fed their babies "on demand" Fifty-six (18.7%) employed "scheduled feeding" method. Thirty-eight (12.7%) used "forced feeding" method. The reasons for "feeding on demand" were: I am always with my baby 60 (30.0%). It is good to feed the baby that way 82 (27.3%). Baby prefers being fed on demand 40 (11.3%). Fifty-six (18.7%) of the mothers used scheduled feeding method so that their babies will not overfeed. Thirty three (11.0%) used the method because they are not always with their babies. Another reason was to make sure the baby is well fed 1 (0.33%). The reasons for forced feeding were: Baby rejected supplementary food 2 (0.70%) and so that the baby can get used to the food given 2 (0.70%).

Handling of Babies' Left Over Food

Left over food by infants were given to older children by 187 (62%) of the mothers. Eighty-four (28.0%) of the mothers reported throwing away such foods. Very few (16) (5.30%) reheated the food before giving it again to the baby. Thirteen (4.30%) of the mothers ate leftover good by their infants.

Person Who Decided When an Infant Should Be Weaned

Most 213 (71%) of the mothers decided when to wean their babies; 63 (21%) said it was their husbands who decided for them; 7 (2.33%) said that the doctors usually made such decisions. In 3 (1%) of the cases did grandmothers make the decision.

Sources of Information on Infant Feeding

Over half 162 (54%) of the mothers got information from nurses. Forty-nine (16.3%) and 8.7% got from their mothers and doctors respectively. Few (8.3%) got from relatives. Other sources of information were books and magazines, 4.3%, radio 1%, and friends, (0.3%).

Table 1 showed the distribution of the respondents according to the ages at which they introduced the listed food items to their infants. No infant was fed any solid food within the first three months of life. Foods given to the infants at the 4th month were corn pap (55.7%) and pawpaw (5.3%). Most of the foods were fed to the infants as from the 5th to the 12th month.

Frequency of Food Preparation for Baby

Table 2 showed the frequency of food preparation and storage time.
For infants who started eating solid/semi-solid food at the 4th month, 93.5% of them were moderately malnourished, and 2.9% were severely malnourished. Those who started at the 5th month, 72.2% of them were normal, 27.8% were moderately malnourished and 11% were severely malnourished. Those infants who started taking solid food at the 6^{th} month, 7.1% were normal, and 92.9% were severely malnourished. All (100%) the infant who started taking solid food at the 6^{th} month, 7^{th} month only a few were severely malnourished.

For the infants who were fed home prepared food, 84.6% of them were normal and 15.4% were moderately malnourished. None was severely malnourished. For those who were fed on commercially prepared food, 7.7% were normal and 92.3% were severely malnourished. Infants who were fed on both homes prepared and commercially prepared food, 55.4% were normal, 16.9% were moderately malnourished and 27.7% were severely malnourished.

For the infants who were fed on demand, 274 (91.3%) of them were normal, 22 (7.3%) of them were moderately malnourished and 27 (0.9%) of them were severely. Out of the infants who were fed on schedule, 150 (50%) were normal, 107 (35.7%) were moderately malnourished and 43 (14.3%) were severely malnourished. For infants who were force fed 63 (21.1%) of them were normal 78 (26.3%) of them were moderately and 77 (52.6%) were severely malnourished.

For infants who started eating solid/semi-solid food at the 4th month 281 (93.5%) of them were normal 10 (3.5%) were moderately malnourished, and 8 (2.9%) were severely malnourished. Those who started at the 5th month, 216 (72.2%) of them were normal, 27.8% were moderately malnourished and 11% were severely malnourished. Those infants started taking solid food at the 6th month, (7.1%) were normal and 92.9% were severely malnourished. All 2 (100%) of the infant who started taking food at the 7th month were severely malnourished.
The infants who were fed home prepared food, 84.6% of them were normal, and 15.4% were moderately malnourished. None was severely malnourished. For those who were fed on commercially prepared food, 7.7% were normal and 92.3% were malnourished. Infants who were fed on both home prepared and commercially prepared food, 55.4% were normal, 16.9% were moderately malnourished and 27.7% were severely malnourished.

Discussion of Findings

"Feeding on demand" was the most prevalent method employed by 68.7% of the mothers. Forced feeding was also practised by some of the mothers. This could lead to the risk of infection and the possibility of a child chocking to death in the process of such feeding. Very few (18.7%) of the mothers employed "scheduled feeding method" for their babies. "Scheduled feeding" is common in urban areas. It could be as a result of the type of work they engage in which do not allow for feeding their babies "on demand" (Imonikebe 1993).

Food was prepared as soon as baby wanted to eat 1-2 hours by 48.7% of the mothers. Some prepared food once a day and stored in flask; 4% did so once a day and stored in bowl. It is more desirable to prepare the baby food as soon as baby wants to eat. This will prevent the food going bad which usually occurs due to long storage of such food e.g. infant milk formula and other proteinous food items. Leftover food was usually given to older children while others threw them away. Some mothers later warmed food before feeding it to baby.

Decision on when to wean baby was taken by 71% of the mothers; 21% of them said their husbands, 7% stated that doctors made such decisions for them.

The first semi-solid food which was given to the infants by some of the mothers was corn pap. (Imonikebe, 1993). Other foods given to infants were cerelac by 22.7% of the mothers, banana and Nutrend. The main reason given by mothers for giving the semi-solid food was that the food was in the form the baby can take it. The fact that most mothers gave pap to their babies as first semi-solid could also be that it is cheaper than the commercial weaning foods. It is readily available and easily digestible unlike other weaning foods. The most frequently occurring age at introducing semi-solid or solid food was at the 4^{th} month (Ogbuji 2005). At 5^{th} month 30% of them did so. The main reason for giving semi-solid food to the infant was that baby was old enough. Other reasons were: Breastmilk was insufficient. Semi-solid food makes baby to be healthy, baby was always too hungry and wanted more food. Food such as mashed yam was given to the infants by 87.3% of the mothers, and 93.3% gave it with palm oil while some gave it with fish; 8.7% of them prechewed it. Fish and meat were prechewed by few of the mothers before feeding such food to their babies. Cocoyam was also mashed and given with fish and palm oil. Some fed it with fish. Rice was mashed, fed with fish and palm oil by all mothers. Cassava foofoo and banana were given whole to infants by majority of the mothers. The idea of mashing food could be as a way of rendering the food easy for the baby to take and to enhance easy digestibility. Preshewing of food before feeding the baby was done by few of the mothers. This could serve as a potential source of infection to their babies. Palm oil and fish were added to the food given to the babies probably to improve flavour and nourishment of the food.

Most weaning foods are soft boiled ripe plantain, rice, coconut rice, beans, yam, corn pap, agidi, garri, starch, akara, moinmoin, fish, meat, agidi jollof, custard, nutrend, oranges, pawpaw. These were given mainly from 4^{th}-6^{th} months and some 3^{rd}-7^{th} months. Omotola (1980) listed some weaning foods given to infants in Ibadan which are maize pap, guinea corn.

Solid foods were fed to infants mainly by hand by 44% of the mothers, 36.6% of them spoonfed their babies. Very few fed semi-solid food using feeding bottle while 10% used cup. Feeding the infant by spoon or cup is better and more hygienic since they are easier to wash than feeding bottles and teats, and so possible contamination of baby food is minimized. The use of feeding bottles could lead to the weaning food being contaminated due to inability to sterilize the bottle after use. Mba (2000) noted that some weaning

foods are usually contaminated with pathogens which cause diarrhea leading to malnutrition.

Most mothers (73.7%) fed their babies with home prepared food. This could be because most of the mothers knew how to prepare weaning foods from locally available food items. Only 4.3% of them preferred commercial food in feeding their babies while 21.7% of them used both commercially prepared and home prepared food. The fact that only few mothers fed their babies with commercial food could be due to their scarcity and high cost. The reasons mothers gave for preference of homemade food was because they were more nutritious. They were cheaper, safer and available. Availability of a particular food is important because it encourages the use of such food item.

Most (76.7%) of the mothers fed their babies by themselves while house help, grand mother, mother-in-law, other family members helped in feeding the infants. Over half 54% of the mothers got their information on infant feeding form nurses. This could be that such mothers attended clinic very often. Some got their information from magazines, relatives, friends, medical doctors, and mass media.

Conclusion

Adequate nutrition and health care are fundamental to a child's positive development. They make children to be valuable future contributors to the nation's wealth and security. In Nigeria, inadequate feeding e.g. during weaning is among the major contributors to malnutrition especially protein energy malnutrition (PEM). This has led to high rates of mobility and mortability especially among infants and young children. Much care and attention needs to be given to young child nutrition especially during weaning to ensure good health status and development.

Recommendations

Nutritionists, dieticians, Home Economics extension workers, nurses and doctors need to work together to give the mothers both in the rural and urban areas adequate Nutrition Education.

Nutrition Education is needed in the area of complementation of food, e.g. rice and beans. The correct use of soybeans involving the processing should be taught to the mothers. The mothers should be encouraged to judiciously

feed their babies with legumes, green leafy vegetables and fruits. The preparation of these foods and other nourishing foods should be the focal point of their education.

Mothers should also be told and made to see the need why they should give their babies eggs, fish and meat whenever such foods are available. These foods are nourishing.
Mothers should be advised to feed themselves and their babies with foods in season since they are at their best and so are usually more nourishing. Mothers should be taught how to wean and also the preparation of weaning foods from locally available food items.

They should be taught that there is need for the introduction of semi-solid/ solid foods to babies not later than the 4^{th}-6^{th} month. Mothers should be encouraged to continue breastfeeding their babies during the period of weaning until their infants can eat weaning foods conveniently. This will reduce the problems experienced by babies during weaning such as malnutrition.

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Table 1 Weaning Foods Given to Infants at Various Ages

	4		5		6		7		8		9		10		11		12	
Food	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%
Cereal group																		
Corn pap	170	57	42	14	42	14	10	3.3	10	3.3	5	1.7	10	3.3				
Agidi					36	12	3	1	6	2	125	41.7						
Custard																		
Agidi jollof					30	10			2	0.7	12	4			92	30.7		
Cerelac			7	2.7	13	4.3	4	1.3										
Nutrend			13	4.3	13	4.3	4	1.3										
Kwoka											22	7.3	15	5				
Rice							64	21.3							74	20.7		
Cononut rice	48	15																
Roots and tubers																		
Yam			48	15	16	5.3	2	0.7	2	0.7	1	0.3	45	17.3	10	3.3		
Cocoyam											5	1.7	8	2.7	24	8		
Garri							8	2.7	16	5.3								
Cassava foofoo							49	16.3	9	3	6	2	5	1.7				
Starch											16	3.3	2	0.7	7	2.3		
Meat and fish group																		
fish			97	3 2.5	41	13.7	9	3	101	33.7	10	3.3						
Meat									2	0.7	12	4	52	30.7				
Egg									2	0.7	7	2.3						

Snail								2 0.7	93 31
Legumes									
Beans				16 5.3					
Akara		29 9.2	19 6.3	11 3.6					
Moinmoin (Stearned beans pudding		37 12.3	44 14.7	8 2.7	39 13				
Fruits and vegetable Oranges				68 22.7				7 2.3	
Pawpaw						5 1.7	21 7	13 4.3	
Banana					100 33.3				
Garden egg									
Dodo fried ripe plantain						2 2.7			93 31
Soft boiled ripe plantain				39 13	74 24.7	2 2.7			

Table 2: Frequency of food preparation for baby

Frequency of food preparation	Length of storage	Frequency	%
As soon as baby wants to eat	1-2hours	146	48.7
Once a day and food is stored in a flask	3-4 hours	118	39.3
Once a day and food is stored in a bowl	5-6 hours	12	4
Other members of the family wanted to eat.		31	10

Table 3: Some foods which are avoided and their reasons for avoidance.

Food avoided	Reasons for avoidance	Frequency	%
Bony fish (Tilapia sp)	Child may sustain injuries from the bone	93	31
Cassava foofoo (Manihot utilisima foofoo)	It causes constipation. It is too heavy for a baby	72	24
Beans (Cowpea sp)	Not easy to digest by a baby's stomach	53	17.7
Groundnut	Baby may swallow them	49	16.3
Maize	Baby may swallow the grains	45	15
Food with much sugar (Sweet foods) e.g. sweet potato	They make a child to get worms	42	14
Fish, egg and meat	If given to young children, they will learn to steal such food because of their good taste	25	8.3
Unripe plantain	Not easy to digest. Too hard and makes baby find it difficult to empty his bowel	22	7.3
Snail	It is believed to be unclean for human consumption and that it defiles the body	103	34.3
(Manihot utilisima) mould	Dedicated to idol. If eaten, it causes a peculiar rash. It makes the person to swell up	95	31.7
Cocoyam (Cocos Nucifera)	Forbidden. It is dedicated to an idol. It is believed that if eaten, it causes skin rashes or diseases.	63	21

Table 4: The ways infants were fed and nutritional status

How infants were fed	Total	Level of nutritional status of the infants					
		Normal		Moderately mal-Nourished		Severely mal-nourished	
Feeding methods		Frequency	%	Frequency	%	F	%
Feeding on demand	206	189	91.8	15	7.3	2	0.9
Scheduled feeding	56	28	50	20	35.7	8	14.3
Forced feeding	38	8	21.1	10	26.3	20	52.6

Table 5: Relationship between age of introduction of solid/semi-solid and the nutritional status of the infants using weight by age

Age	Total	Nutritional status of the infants					
		Normal		Moderately malnourished		Severely mal-nourished	
		Frequency	%	Frequency	%	F	%
1st month							
2nd month							
3rd month							
4th month	170	159	93.5	6	3.5	5	2.9
5th month	90	65	72.2	25	27.8	10	11
6th month	14	1	7.1			13	92.9
7th month	2					2	100

Table 6: Relationship between type of food given to the infants and their nutritional status using weight by age.

How infant were fed	Total	Nutritional status of the infants					
		Normal		Moderately mal-nourished		Severely mal-nourished	
		Frequency	%	Frequency	%	F	%
Home prepared food	222	188	84.6	34	15.4		
Commercially prepared food	13	1	7.7			12	92.3
A combination of home prepared and commercially prepared food	65	36	55.4	11	16.9	18	27.7

Table 7: Feeding methods and their relationship with the nutritional status of the infants using weight by age

Nutritional Status of the Infants							
Feeding methods	Total	Normal	%	Moderately Mal-nourished	%	Severely Mal-nourished	
Feeding on Demand	206	189	91.8	15	7.3	2	0.9
Scheduled Feeding	56	28	50	20	35.7	8	34.3
Forced Feeding	38	8	21.1	10	26.3	20	52.6

Table 8: Relationship between age of introduction of solid/semi-solid food and the nutritional status of the infants using weight by age

Nutritional Status of the Infants							
Age at Introduction of Solid/Semi-solid (in months)	Total	Normal	%	Moderately Mal-nourished	%	Severely Mal-nourished	
	170	159	93.5	6	3.5	5	2.9
	90	65	72.2	25	27.8	10	11
	14	1	7.1			13	92.9
	2					2	100

Table 9: Relationship between type of food given to the infants and their nutritional status using weight by age.

Nutritional Status of the Infants							
Type of Food	Total	Normal	%	Moderately Mal-nourished	%	Severely Mal-nourished	
Home Prepared Food	222	188	84.6	34	15.4		
Commercially Prepared Food	13	1	7.7			12	92.3
A Combination of Home and Commercially Prepared food	65	36	55.4	11	16.9	18	27.3