Association of Maternal Dietary Diversity and Nutritional Status with Child's Dietary Diversity and Nutritional Status (2-5 years) in Urban slums of West Delhi, India

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Abstract

Dietary diversity is a measure of the number of individual foods or food groups consumed in a given period of time. Consumption of more diverse diets is one of the many approaches to improve the nutrition situation. Malnutrition is linked with quality and quantity of dietary intake. A higher dietary diversity has been associated with better nutritional status in an individual. The present study was designed to assess the dietary diversity of the mother and her child, their nutritional status, and any association between these. The sample comprised of mothers (n=100) and their children aged, 2-5 years (n=100), residing in Shakurpur, an urban slum of Delhi, India. Data on background information, obstetric history, household characteristics, and hygienic practices followed by the mother for herself and for her child, morbidity profile of mother and child, immunization, child feeding practices, and birth information were collected. Anthropometric measurements were taken for both mother and child and were analysed using WHO- Anthro plus software (2010). Moderate wasting, underweight, and stunting were observed in 5%, 18%, and 20% of children respectively, as compared to severe wasting (4%), severe underweight (4%), and severe stunting (10%). No significant difference was observed in the height and weight of boys and girls. A greater proportion of mothers of pre-schoolers were either pre-obese (20%) or obese (9%) than underweight (3%) as per WHO classification, while a little over half (68%) the mothers were of normal weight. The mother's nutritional status was significantly associated with all the indicators of her child's nutritional status ($p=0.00$). The Minimum Dietary Diversity for Women questionnaire (MDD-W, 2016) was used to assess the diversity of the diets. A slight majority of the population, both mothers and children were consuming food from 5 or more food groups. Nearly half of both groups were not achieving adequate dietary diversity. An association between maternal dietary diversity and child dietary diversity ($\chi^2= 14.577$, $p=0.000$) was observed. However, no association was found between dietary diversity of either the child or the mother and the nutritional status of the children ($p>0.05$). Thus, the present study showed that the diet of the mother and her child as well as the nutritional status of a mother and her child are associated. This re- emphasizes the fact that a mother and child are very closely related.

Introduction

A balanced diet is one which includes a variety of foods from different food groups in adequate amounts and correct proportions to meet the daily requirements of all essential nutrients. Malnutrition arises as a result of deficiencies, excess or imbalance in a person's dietary intake. Micronutrient malnutrition, also known as hidden hunger, has been a persistent concern of many developing countries. The major cause of micronutrient deficiencies is recurring monotonous diets (Arimond and Ruel 2004). The inclusion of a variety of foods in an individual's diet is known as dietary diversity**.** FAO (2016) defines dietary diversity as a measure of the number of individual foods or food groups consumed in a given period of time, usually measured during one to three days. It is a qualitative measure that reflects household access to foods and acts as a proxy of the micronutrient adequacy of the diet for individuals. Poor dietary diversity is a serious problem in the rural community and in poor populations where a diet of staple food is predominant and there is less consumption of animal foods, fresh fruits and vegetables (Murphy et al. 2003). Low dietary diversity may be the primary cause for under-nutrition in growing children and women of reproductive age as they have higher nutritional needs (Nithya 2018; Hooshmand and Udipi 2013). Minimum Dietary Diversity for Women (MDD-W) is often the indicator used for assessing the

gaps in diet quality of women and reflects micronutrient adequacy summarised across 11 micronutrients (FAO 2016).

Diet diversity varies in different parts of India with some states like Kerala, Meghalaya, Assam and Goa having the highest diet diversity scores while others like Rajasthan, Haryana and Himachal Pradesh have the lowest (Borkotoky et al. 2018). A medium level of diversity has been widely reported in the diets of Indian women. A study conducted by Kavita et al (2014) stated that the diets of women in Maharashtra villages were significantly more diverse than women in Telangana and Andhra Pradesh. Conversely, women in rural Karnataka were consuming a diverse diet and had their body mass index more often in the normal range (Shashikantha et al. 2017). Surprisingly, households headed by manual labourers had a higher dietary diversity than farming households. This could be attributed to the autonomy the former households possess to access markets and other sources for food consumption (Kumar et al. 2016).

Research shows that a higher dietary diversity is associated with better nutritional status of children in developing countries (Arimond and Ruel 2004; Sawadogo et al. 2006). Initiation of complementary feeding marks a period of transition where children require extra nutritional care and a lack of diet diversity can be harmful at this age. Commonly, the diets given to young children are rich in energy with consumption of protein and calorie rich foods like pulses and sugars being higher or equal to recommended levels (Nithya 2015). According to data from RSOC (2013-14), in India the total percentage of children (aged 6-23 months) who had a minimum dietary diversity, i.e. four or more food groups, was only 19.9%. A significant relationship between lower dietary diversity scores and higher levels of under nutrition and stunting has been observed in Philippines, Kenya and India (Ocampo-Guirindola et al. 2016; Ogechi and Chilezie 2017; M'Kaibi et al. 2017; Nithya and Bhavani 2017). In consonance, a comparative study between India and Iran showed that children who had normal weight or over weight had higher dietary diversity scores (Hooshmand and Udipi 2013).

There are various maternal factors that are also associated with the nutritional status of children like maternal dietary diversity, mother's nutritional status, age at her marriage, level of education, economic status, customs and beliefs (Bhavsar et al. 2012). Based on this premise, the present study in an urban slum of West Delhi, India investigated the association of mother's dietary diversity and nutritional status with a 2-5-year-old child's dietary diversity and nutritional status.

Materials and Methods

Study design and area

The present study was conducted in the urban slums of Shakurpur, West Delhi, India from September 2017 to January 2018. For this cross-sectional study, participants were sampled purposively (to ease logistic issues) with the help of health extension workers known as *Anganwadi workers*. The sample consisted of 100 mother-child dyads. Pregnant mothers, mothers and children suffering from TB, cancer, HIV/AIDS or other major diseases were excluded.

Ethical clearance and consent of the subjects

Permission was obtained from Department of Women and Child Development, Government of Delhi to conduct research in this urban slum. The researcher approached the identified mother-

child dyads for the study and explained the study purpose and objectives, before taking their consent. The study was approved by the Institutional Ethical Committee of Lady Irwin College, University of Delhi. The participants were informed by the study protocol using a Study Information Sheet and Consent form, written in Hindi for easy understanding by the participants. In addition, the participants were told they were free to withdraw from the study at any time.

Tools and techniques used for data collection

An interview schedule was used to elicit information on socio-demographic profile, anthropometric measurements, hygienic practices, immunization, morbidity profile and child feeding practices. Mothers were asked about the duration of exclusive breastfeeding after it was carefully defined to them (using the WHO definition). This was validated before use by pre-testing on a smaller sample. The child feeding practices included breastfeeding, complementary feeding, bottle feeding, likes and dislikes of the child, and consumption of snacks outside home. Information on place of delivery, birth weight, and vaccination was obtained from the immunization card. In case of unavailability of the card, this information was obtained from the mother. The weight and height measurements of mothers and children were taken using standardized equipment and techniques (Gibson 2005). The weight was taken using a TANITA weighing balance with an accuracy of 100 g, height was measured using a stadiometer with a sensitivity of 0.1 cm. The data on dietary diversity was collected using a standard questionnaire-MDD-W (FAO 2016). The methodological approach to measure food group diversity suggests the use of the open recall method where the participants are asked to recall all foods and beverages consumed the previous day and night and also probes for main ingredients in mixed dishes. Specifically, the recall period covers the duration from the time the respondent woke-up the previous day, through the day and night for a 24-hour period. The researcher does not read a pre-defined list of foods to the participant. Consumption of at least 5 out of the 10 defined food groups is indicative of adequate diet diversity (FAO2016).

Statistical analysis of the data obtained was done using SPSS version 25. WHO Anthro plus software (2010) was used to obtain weight-for-age, height-for-age and weight-for-height z-score values based on WHO (2006) child growth standards from birth-5 years of age. The maternal and child indices for nutritional status and their diet diversity were compared using chi square test.

Results and Discussion

General profile

In the present study, a majority of subjects (89%) belonged to nuclear families, with the average family size being 4.48±1.01 persons (range- 3 to 7 members). This is comparable to the NFHS-4 (2015-16) survey data on average household size being 4.6 persons.

The maximum number of children belonged to the age group of 36-47 months (n=49), with number of boys being higher (n=57). About half of the children (47%) had only one sibling.

The general profile of the mothers revealed that almost 50% of mothers were aged between 20-25 years. Large proportion of mothers were illiterate (59%) and were housewives (67%). The study population had almost equal percentages of non- pregnant non lactating women (56%) and lactating women (44%). The fathers were in the low-income jobs which led to poor standard of

living. The study population was mainly residing in “semi-mud houses” or “brick houses,” with most in rented houses (62%). Most households had access to electricity (85%); most (53%) used piped water for drinking but none were treating the drinking water prior to drinking. All houses had some form of toilet. The average household monthly income was Rs. 8168±2190 (USD 115±30).

Anthropometric Profile

There was no significant difference ($p > 0.05$) in the means of height and weight between girls and boys (Table 1). The nutritional status classification of children revealed the presence of malnutrition in children as measured through anthropometric indices namely height for age (30%), weight for age (22%) and BMI for age (10%) (Table 2)

Table 3 shows that the nutritional status of the mother is associated with that of her child. Mothers who have low stature often have children with lower z-scores of height-for-age (Negash et al. 2015; Zhang et al. 2016). Additionally, studies have demonstrated that wasting is strongly associated with mothers being underweight, with a lower BMI (Amugsi et al. 2015).

Table 1: Anthropometric measurements of children (n=100)-gender and age wise

Age (months)	**Boys (n=57)**		**Girls (n=43)**	
	Height (cm)	Weight (kg)	Height(cm)	Weight (kg)
24-35	93.9±6.35	13.5±2.02	93.6±4.55	13.1±1.62
36-47	94.5±5.15	13.1±1.27	95.2±5.94	13±1.58
48-59	99.7±5.22	13.9±1.73	94.9±4.46	12.9±1.4
Range	84.7 to 104.7	9.5 to 16.5	83.2 to 104.7	10.1 to 17.2
Total	95.5±5.87	13.3±1.6	94.6±5.29	13.1±1.5

Hygienic practices

Table 4 shows that the mothers followed good personal hygienic practices. Table 5 shows the somewhat lower standards of hygiene followed by the children. Both tables are based on self-reporting and thus could be biased.

Morbidity profile

Infections and illnesses tend to have an impact on the nutritional status of the children (Kavitha et al. 2014). Figure 1 shows the prevalence of common diseases in both mother and child in past 15 days.

Table 2: Classification of nutritional status of children according to WHO (2006) Z –score system: age and gender wise

	Z-SCORE	AGE			GENDER		
		24-35mo. (32)	36-47 mo. (46)	48-59 mo. (22)	Boys(57)	Girls (43)	Total
Weight-for-height Z-score	<-3SD	2	2	0	1	3	4
	≥ -3SD to < -2SD	0	1	4	4	1	5
	>−2SD to <+2SD	26	45	18	50	39	89
	>+2SD	2	0	0	2	0	2
Height –for-age Z- score	<-3SD	0	4	6	4	6	10
	≥ -3SD to < -2SD	1	14	5	14	6	20
	>−2SD to <+2SD	21	30	11	36	26	62
	>+2SD	8	0	0	3	5	8
Weight -for -Age Z-score	<-3SD	0	1	3	3	1	4
	≥ -3SD to < -2SD	2	10	6	11	7	18
	>−2SD to <+2SD	25	37	13	41	34	75
	>+2SD	3	0	0	2	1	3
BMI -for -age Z-score	<-3SD	2	2	0	1	3	4
	≥ -3SD to < -2SD	1	2	3	5	1	6
	>−2SD to <+2SD	25	44	19	49	39	88
	>+2SD	2	0	0	2	0	2

The most common symptoms both among mothers and children were cough, fever and what mothers interpreted as the common cold. The findings of the present study reporting fever among young children in the past 15 days (35%) are in concurrence with the NFHS-4 data (32.9%).

Immunization status of the children

Universal immunization of children against the seven vaccine-preventable diseases (namely, tuberculosis, diphtheria, hepatitis, whooping cough, tetanus, polio and measles) is crucial to reducing infant and child mortality (WHO 2006). All children in this sample had received some kind of immunization in their first year of life. Among all immunized children, almost half of the children (57%) were fully immunized. These data were comparable with NFHS-4 (66.4% in 2015-16 for children living in Delhi). Many children had been vaccinated in government hospitals (45%).

Table 3: Association between mother's nutritional status and child's nutritional status

	Severity	Mother nutritional status		

Child nutritional status		Under weight (%)	Normal (%)	Obese (%)	Pre-obese (%)	χ^2 value	p-value
Weight-for-age	Severe underweight	2	2	0	0	33.617	0.000
	Moderate underweight	0	12	4	0		
	Normal	1	52	7	15		
	Over weight	0	3	0	0		
Height-for-age	Severe stunting	2	6	0	2	21.547	0.010
	Moderate stunting	0	16	2	2		
	Normal	0	42	5	15		
	Tall	1	5	2	0		
Weight-for-height	Severe wasting	0	4	0	0	28.429	0.001
	Moderate wasting	2	3	0	0		
	Normal	1	60	9	19		
	Over weight	0	2	0	0		
BMI-for-age	Severe	0	4	0	0	24.308	0.004
	Moderate	2	4	0	0		
	Normal	1	59	9	19		
	Over nourished	0	2	0	0		

Table 4: Hygienic practices followed by mothers (n=100)

Hygienic practices	% Mothers
Bathe every day	100
Wear washed clothes	98
Wash hands before preparing food	100
Wash hands before feeding the child	
Yes	98
No	1
Sometimes	1
Wash hands after coughing	66
Wash hands after using the toilet	100
Cut the nails	100
Wash fruits and vegetables before cooking and eating	100

Table 5: Hygienic practices followed by children (n=100)

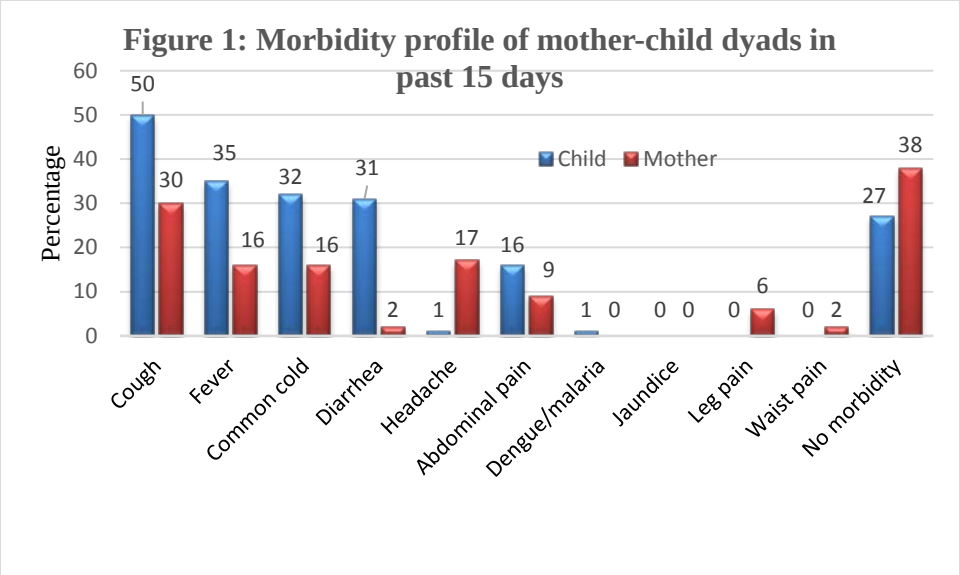
Activity	**% Children**
Bathe daily	70

Frequency of bathing	
Twice a day	1
Daily	69
Five times a week	10
Thrice a week	19
Bathe after outside play	**9**
Frequency of handwashing in a day	
1 to 3 times	77
4 to 7 times	23
Frequency of changing clothes in a day	
Once in a day	45
Twice a day	51
Thrice a day	4
Cut the nails	95
Wash hands before eating meals	
Yes	81
No	11
No, but fed by mother	8
Children who eat mud	14
Mothers who try to stop them from eating mud	100
Wash hands after coughing	35

Feeding practices

Breastfeeding practices

Breast milk provides immunological protection against death from infectious diseases such as diarrhoea, respiratory infections, pneumonia etc. Exclusive breastfeeding is recommended for the first 6 months of life for healthy infants. In this study, 98% of children were ever breastfed (compared to 95% in NFHS-4) and 96% had received colostrum. Most (62%) had received breastmilk more than 9 times a day as a young infant. About 15% of the children had received prelacteal feeds, honey being the most common (9%) followed by other milks (5%) and sugar-salt solution (1%). This



compares with 21.1% receiving prelacteal feeds in NFHS-4 data. Most children were exclusively breastfed (60%) for 6 months and continued breastfeeding for more than 2 years (65%).

Bottle feeding practices

Other milk is a bottle given at some point to 22 % of these children. Mothers were using toned (19%), full cream (2%) and formula milk (1%) for this feeding. Out of the 22 mothers who bottle feed their children, majority of mothers (n=20 reported boiling of bottles before using. However, it should be noted that the responses are self-reported and hence could be biased.

Complementary feeding practices

Over half of these children (62%) were introduced complementary foods at the age of six months. However, 25% were introduced complementary foods later than six months and 16% before six months. National data (NFHS-4, 2015-16) reveals that only 42.7% were given complementary foods at 6 months, owing to the various associated myths and beliefs (Mehnaz et al. 2015).

The most commonly consumed Indian foods were being fed as complementary foods. Most (62%) were given *khichdi* (pulse--rice preparation) followed by biscuits (30%), *dal* (pulse preparation*)* with rice/*roti (*flat Indian bread) (28%), *halwa (*sweet dish containing cereal, fat and sugar) (19%), and *Dalia* (porridge) (18%). Food from the family pot was given fed to most at the age of 1-2 yrs (53%).

Young child eating behaviour

The main snack foods each child was given included chips (29%), biscuits (26%), Indian sweets (2%), *samosa* (fried dish with a savoury filling) (1%). Homemade food was the main snack food for 41% of children. Biscuits were the most liked snack (24%) followed by toffee/sweets (20%), and chips/chocolate (9%). Many children (45%) showed a dislike towards vegetables, while many (35%) did not have a dislike for any specific food. Children were consuming foods provided by the *anganwadi* centres (government run preschools) and snacking outside home was an everyday practice for 37% children from 5-6 times (22%) and 3-4 times (25%) in a day. Amongst the snacks

consumed outside the home, biscuit/*mathri* (flaky, crisp and spiced flour crackers) cookies/ buns were the most consumed (33%) followed by *kurkure* (fried snack made of rice and corn)/ puffs/ chips (29%) and toffee (21%). Most children (55%) were said to often not be able finish the food on their plate.

Dietary diversity

Percentage of mothers consuming nutrient-rich foods in past 24 hours

Figure 2 depicts the consumption pattern of nutrient rich foods by the mothers. Consumption of pulses was found to be the highest (82%) followed by vegetables (69%). However, dark GLV's were consumed by only 37%. These results are in consonance with another study done on Indian women by Shashikantha et al. (2017) where pulse consumption was 82% and dark GLV's (39%). Among the animal foods, dairy was the most consumed (30%), followed by meat, poultry and fish (15%) and eggs (13%). This could be due to the low affordability and vegetarian dietary practices of the families. Similar finding on diary consumption was reported by women of reproductive age in another study (Shashikantha et al. 2017). This may be ascribed to a higher acceptability and availability of milk in Indian households.

Percentage of mothers consuming low nutrient density food groups in past 24 hours

Figure 3 shows that consumption of fats, savoury and fried snacks, sweets, and sugar-sweetened beverages was quite high. Tea was the main contributor to the high sugar consumption. High consumption of fats and oils have also been reported by others (Shashikantha et al. 2016).

Percentage of children consuming nutrient-rich foods in last 24 hours

The high intake of pulses and dairy in children indicate the similarity of food pattern in the mother-child dyad. Again, amongst the vegetables, dark GLV's were being eaten less. This reiterates the findings by earlier studies which show that children tend to consume dairy and pulses the most and fruits the least (Hooshmand 2013; Sealey-Potts and Potts 2014).

Percentage of children consuming low nutrient density food groups

Among the low nutrient density foods consumed by the children, the greatest was sugary beverages, as shown in Figure 5. This is a reflection of the global nutrition transition. Children, especially in lower income groups, often derive most of their calories from processed foods high in sugar, fat and sodium (UNICEF, 2019).

Figure 2: Consumption of Nutrient-Rich foods in the past 24 hours by the mothers (n=100)

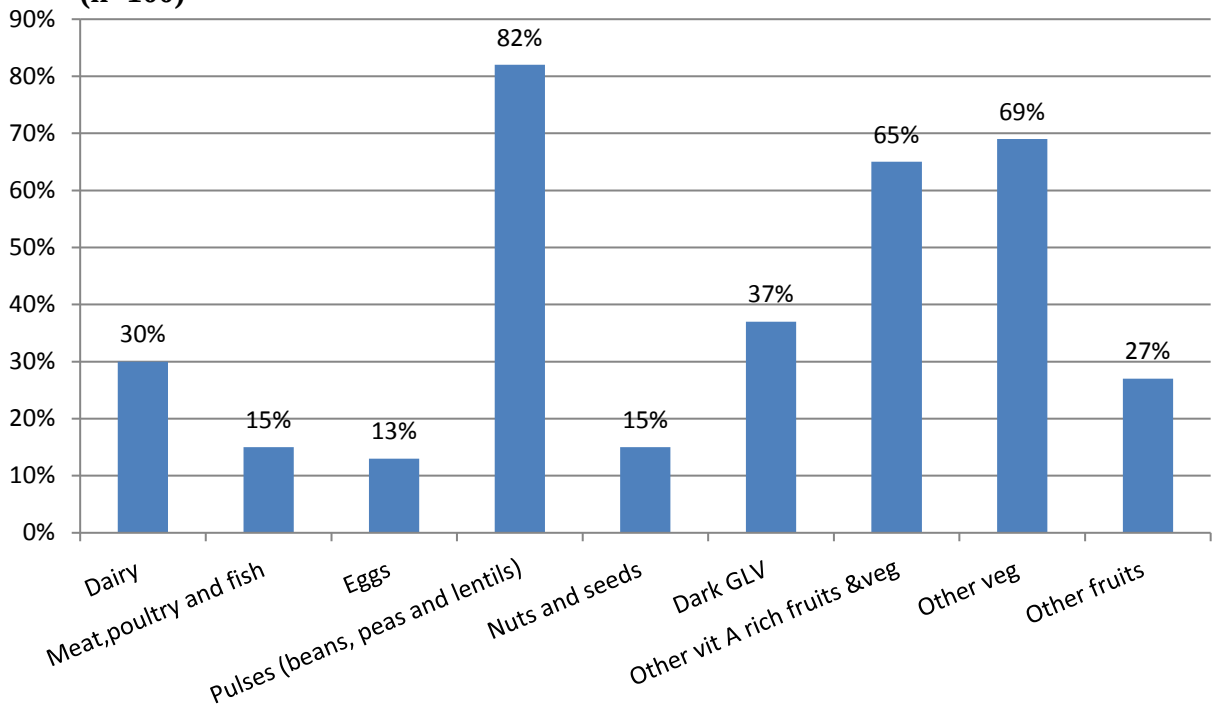
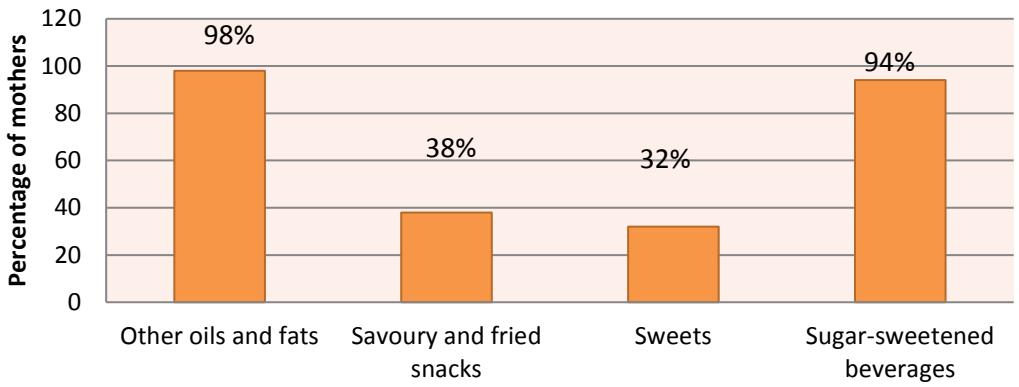
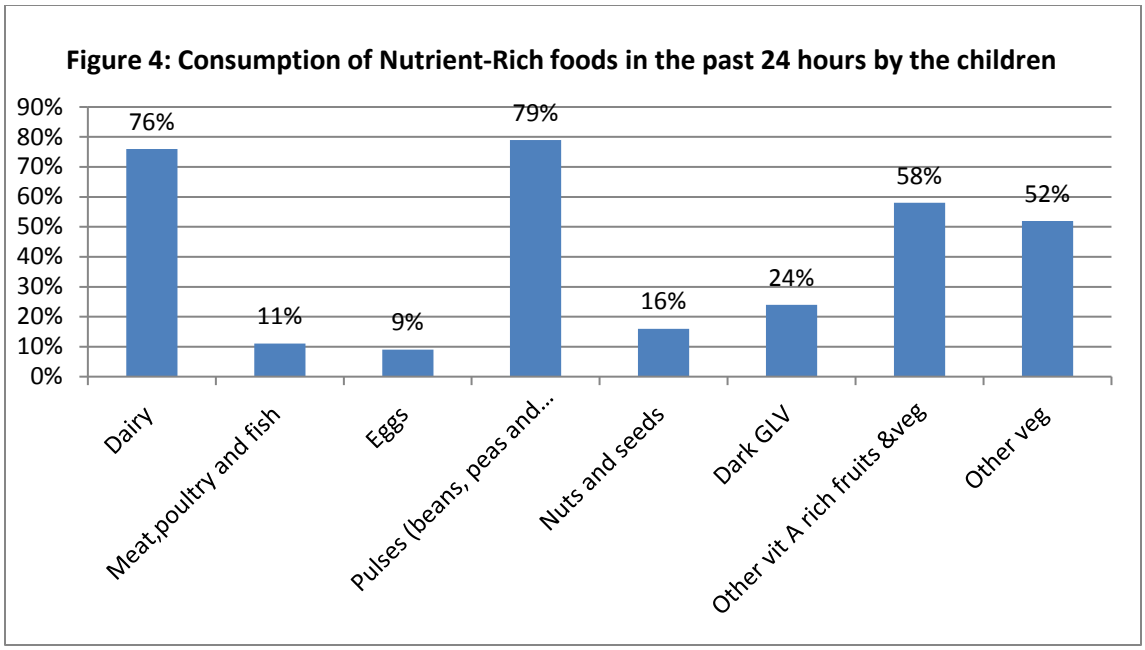
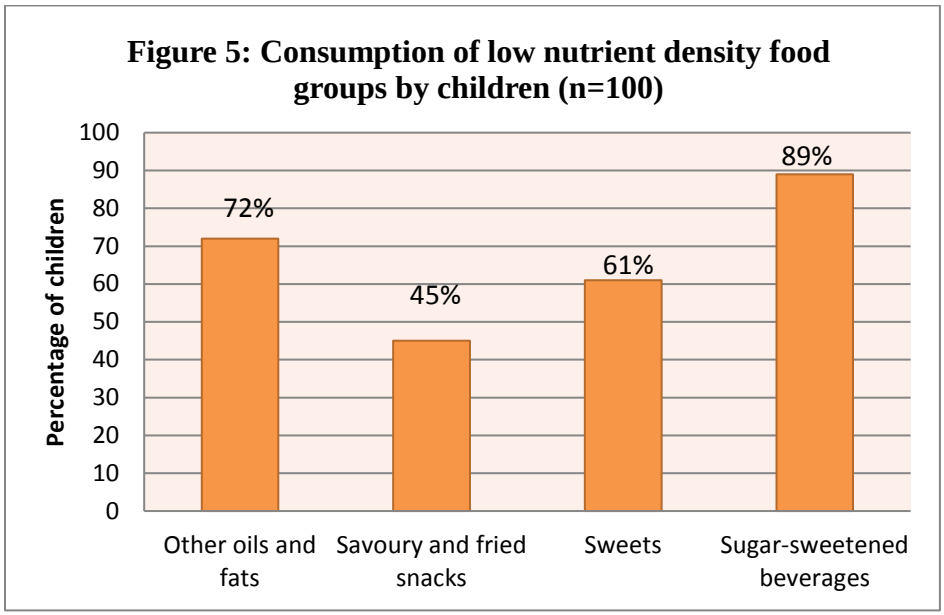


Figure 3: Consumption of low nutrient density food groups in the past 24 hours by the mothers (n=100)





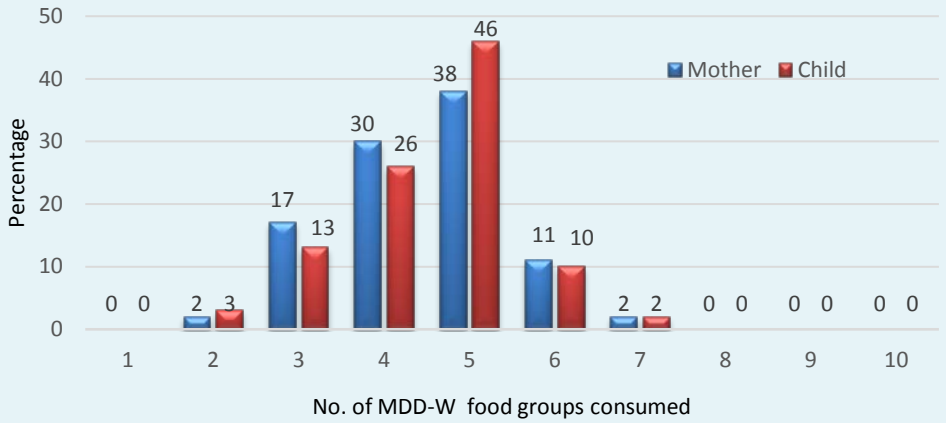


Comparison and association of dietary diversity in mothers and children

The 10 MDD-W groups are added up to a score ranging from 0-10. An individual consuming ≥ 5 food groups is considered to have adequate diet diversity. Figure 6 shows that a slight majority of the population--both mothers and children--were consuming food from 5 or more food groups. Nearly half of both groups were not achieving adequate dietary diversity. Studies in other countries have also found greater dietary diversity for children than mothers (Sagaro and Alemaheyu 2017; Sealey-Potts and Potts 2014).

The food group intake data shown in Figure 7 reveal that "starchy staples" had the highest consumption in both mother and child. This is a typical trend in populations belonging to lower income groups. Mothers were consuming much less dairy than their children, thus obtaining a lot of calories from oils, fats and sugar sweetened beverages which might suggest that mothers possess good knowledge and recognize the importance of milk in a child's diet. Poor consumption of fruits and vegetables, nuts and legumes, egg and meat also may cause a low micronutrient intake in these diets.

Figure 6: Food group diversity scores of mothers and children- as per MDD-W food group classification

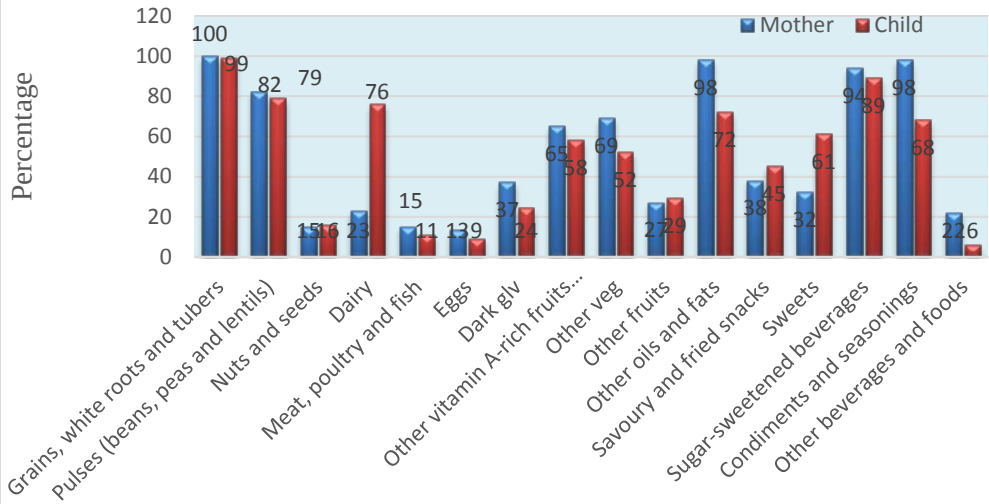


The data in Table 6 and Table 7 depict the significant association between the diets of the mothers and children other than dairy. The MDD-W scores that signify the adequacy of the diets also validated this finding (χ^2= 14.577, p=0.000). A mother's decisions regarding food related practices and choices for her child may largely be influenced by choices for her own diet (Birch, 2007). Emerging evidence shows similar findings in other countries like Ghana, Ethiopia, Vietnam, Bangladesh (Amugsi 2015) and the USA (Hart et al. 2010). Given that mothers and children are consuming from the same family pot, successful behaviour change communication to the mothers could definitely enhance the diversity in diets of children as well.

Association between dietary diversity and nutritional status

Sealey-Potts and Potts (2014) stated that diet quality is better predicted by dietary diversity than by nutritional status. It is noteworthy that a direct association was found in the diet diversity of the mother-child dyad. Although, mother's nutritional status is linked to the child's nutritional status, neither the child's nor the mother's dietary diversity had any association with the child's nutritional status (Table 8, Table 9). The MDD-W indicator was developed as a proxy to reflect micronutrient adequacy but does not take into account the amount of food consumed. Owing to the day to day variations, insufficiency in the food intake or occurrence of various infections and illnesses (Kavitha et al. 2014), an association between current diet and nutritional status may not have occurred in the present study. As far as we know, no other studies have reported that the diversity in mother's current diet was linked to the child's nutritional status.

Figure 7 : Consumption of food groups by mother (n=100) and child (n=100)



Maternal and child health outcomes are to a large extent dependent on the interrelationship between maternal and child nutritional status. The cross-sectional design of the study prevents us from drawing conclusions about the cause and effect. A larger probability sample with a more accurate dietary assessment method such as repeat quantitative 24 hr recalls could have improved its power to find reliable associations. Nevertheless, the study has been able to establish associations between the dietary diversity of the mother and her child.

Table 6: Association of mother and child dietary diversity based on food group consumption (n=100)

Food groups	**Consumption of food groups by mothers**	**Consumption of food groups by child**		**χ^2 value**	**p-value**
Beans, peas and lentils		**Yes (%)**	**No (%)**		
	Yes	76	6	51.411	0.000
	No	3	15		
Nuts and seeds	Yes	10	5	33.707	0.000
	No	6	79		
Dairy	Yes	20	3	1.966	0.161
	No	56	21		
Meat, poultry and fish	Yes	10	6	51.603	0.000
	No	1	83		
Eggs	Yes	8	5	50.361	0.000
	No	1	86		
Dark GLV	Yes	24	13	53.770	0.000
	No	0	63		
Other Vitamin A rich fruits and vegetables	Yes	54	11	47.942	0.000
	No	4	31		
Other vegetables	Yes	50	20	35.287	0.000
	No	2	28		
Other fruits	Yes	22	6	46.412	0.000
	No	7	65		

Table 7: Association of maternal and child dietary diversity based on M-DDW scores (n=100)

PARAMETER		**Mother dietary diversity**		**χ^2 value**	**p-value**
		Adequate (%)	**Inadequate (%)**		
Child dietary diversity	**Adequate**	39	19	14.577	0.000
	Inadequate	12	30		

Table 8: Association between child's dietary diversity and child' nutritional status

Child nutritional status	Severity	Child dietary diversity		χ^2 value	p-value
		Adequate (%)	Inadequate (%)		
Weight-for-age	Severe underweight	3	1	0.762	0.859
	Moderate underweight	11	7		
	Normal	42	33		
	Over weight	2	1		
Height-for-age	Severe stunting	7	3	0.875	0.831
	Moderate stunting	11	9		
	Normal	36	26		
	Tall	4	4		
Weight-for-height	Severe wasting	1	3	1.937	0.586
	Moderate wasting	3	2		
	Normal	53	36		
	Over weight	1	1		
BMI-for-age	Severe	1	3	3.422	0.331
	Moderate	5	1		
	Normal	51	37		
	Over nourished	1	1		
MUAC-for-age	Severe	0	1	1.737	0.420
	Moderate	10	9		
	Normal	48	32		
	Over nourished	0	0		

Table 9: Association between maternal dietary diversity and child's nutritional status

Child's nutritional status	**Severity**	**Maternal dietary diversity**		**χ^2 value**	**p-value**
		Adequate (%)	**Inadequate (%)**		
Weight-for-age	Severe underweight	2	2	1.196	0.754
	Moderate underweight	11	7		
	Normal	37	38		
	Over weight	1	2		
Height-for-age	Severe stunting	6	4	3.161	0.367
	Moderate stunting	8	12		
	Normal	31	31		
	Tall	6	2		
Weight-for-height	Severe wasting	4	0	6.174	0.103
	Moderate wasting	2	3		
	Normal	45	44		
	Over weight	0	2		
BMI-for-age	Severe	4	0	5.962	0.113
	Moderate	3	3		
	Normal	44	44		
	Over nourished	0	2		
MUAC-for-age	Severe	0	1	1.434	0.488
	Moderate	11	8		
	Normal	40	40		
	Over nourished	0	0		

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