

Household Food and Nutrition Security: A Case Study of Children on Nutrition Supplementation Program

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KEYWORDS Access. Food diversity. Food Security. Nutrition Security. Malnutrition

ABSTRACT A household food and nutrition security measurement of children on the nutrition supplementation programme is the focus of this study. A sample of 136 children aged 6-72 months and their caregivers were drawn from three Pietermaritzburg healthcare facilities. Face-to-face interviews were conducted, using a questionnaire with: a 24-hour recall; Children Food Insecurity Access Scale; Household Food Insecurity Access Scale; Monthly Adequate Household Food Provision; and Household Dietary Diversity Scale. Focus group discussions probed household perceptions and challenges concerning food access and child malnutrition, while anthropometric measurements were taken to assess the children's nutritional status. Households were food secure by 52 percent and the children by 71 percent. Only 63 percent of the children were healthy; while 29 percent and 8 percent were wasting and obese, respectively. Children were indirectly deprived of the right to food for proper development. The household food basket was limited by food access, affecting child diet quality and food intake, and thus threatening their nutrition status. Food and nutrition security is complex because food security does not directly translate to children nutrition security. Rigorous research is required to investigate the drivers, risks and design practical interventions necessary to successfully alleviate food and nutritional insecurity.

INTRODUCTION

Approximately eighty percent of households are unable to afford basic nutritionally balanced food (Altman et al. 2015). Measurement of household food and nutrition security is important in poverty-stricken South African communities. Household food insecurity occurs when there is limited availability and accessibility to nutritionally adequate and safe foods, which could result in malnutrition to vulnerable groups, especially children (Hasan et al. 2013).

One of the profound children malnutrition results from inadequate intake of nutritious foods is that of protein-energy malnutrition (PEM) (Faber and Wenhold 2007; Shoeman et al. 2010). The South African government implemented a nutrition supplementation programme (NSP) to rehabilitate malnourished children (Hasan et al. 2013). The programme provides supplementary feed at

primary and secondary health facilities on a monthly basis (Iversen et al. 2012). The criteria for entry into the programme include underweight for children less than six years old; body mass index (BMI) of less than 18.5 kg/m²; and poor weight gain for pregnant women and chronically ill patients (Hasan et al. 2013). However, studies conducted on the effectiveness of the NSP showed depletion in the nutritional status of children on the programme (Hendricks et al. 2003; Faber and Wenhold 2007; Iversen et al. 2011).

Several kinds of social infrastructure programmes have influenced the relationship between food insecurity and child health, growth and development by helping to prevent food insecurity from occurring, or by moderating its effects once it occurs (Shinsugi et al. 2015). The main components of the NSP are the provision of nutritional supplements according to age-

specific criteria, including breast milk substitutes, infant porridge, ready-to-use-therapeutic foods (RUTFs), energy drinks and maize meal porridge, together with nutrition education and consultation on long-term solutions for the clients (Hasan et al. 2013). Traditionally, nutritional interventions in South Africa have consisted of feeding schemes based at clinics, crèches, schools or soup kitchens. However, evaluations of these programmes have been disappointing (Iversen et al. 2012). Poor nutrition results from the lack of a well-balanced or diversified diet. According to Altman et al. (2010), few people would be able to afford a food basket that is diverse and high in essential micro- and macronutrients due to low household income.

MATERIAL AND METHODS

The study was conducted at three health institutions in Pietermaritzburg, namely Imbalenhle Health Centre, Northdale Hospital and KwaPata clinic. The study used a probability sampling technique to select 136 children aged 6-72 months and their caregivers. The population of the study consisted of children who were registered on the Nutrition Supplementation Programme (NSP) for more than three months and who had not been discharged from the programme. Caregivers of the children were interviewed individually using a questionnaire. Anthropometric measurements, which recorded weights and heights, were taken using weight scales, length mats and height sticks. The structured questionnaire included a 24-hour recall section, Children Food Insecurity Access Scale (CFIAS) and the Household Food Insecurity Access Scale (HFIAS) were used to assess the quantity and quality of food, food anxiety and coping strategies for both caregivers and children. The Monthly Adequate Household Food Provision (MAHFP), Household Dietary Diversity Scale (HDDS) and focus group discussions investigated the demographics, experiences, perceptions and coping strategies toward food and nutrition insecurity. A statistical analysis was conducted using the Statistical Package for Social Sciences (SPSS), Version 21. A regression (logistic, linear and multinomial) analysis was performed to determine the association between child food intake (CFIAS) and HFIAS, HDDS and MAHFP using Wald's test, a t-test and a Chi-square test respectively. The focus group discussions were conducted and analysed through content analysis by identifying themes

so as to measure the caregiver's perceptions towards the causes of malnutrition.

RESULTS AND DISCUSSION

Demographic Characteristics of the Households and Children on the NSP

The average family size was three with some households having between two to 16 household members. Literacy levels of the caregivers (67%) was moderate and only 43 percent were employed. The households' income varied as follows: 2 percent had no income; 5% received between R1.00-500.00; 32 percent ranged between R501-1000.00; and 61 percent had more than R1000.00 combined income per month. Most of the household breadwinners had multiple jobs but they were not highly paid.

Most of the children were born to teenage girls between the ages of 16-18 years who were yet to finish school, thus the caregivers were mainly grandmothers from 60 years of age onwards. Forty percent of the children were breast-fed, but not exclusively (*mix feeding*), 32 percent of the children were breast fed only and 28 percent of the children were formula fed only

Children's and Households' Food Access

In this study the children's food access was determined using the Children Food Insecurity Access Scale (CFIAS). A total of 71 percent of the children assessed were food secure, 24 percent were moderately food insecure and 5 percent were severely food insecure (Table 1).

Table 1: Children's food insecurity access scale

Status	%	N
Food secure	10.3	14
Moderately food insecure	37.3	51
Food secure	52.2	71

Key note: Scales of 0-9= food secure, 10-14= moderately food insecure, 15 or more= food insecure

These findings coincide with the Household Food Insecurity Access scale, which showed that 52 percent of households were food secure, 37 percent were moderately food insecure and only 10 percent were food insecure.

Table 2 confirms that the majority of children lived in food secure households. Although

the children were food secure and the households were food secure, the literature warns that food security has more than one parameter which means that food availability, utilisation and stability should also be taken into consideration when examining the status of food security (Hendricks et al. 2003; Hasan et al. 2013). In this instance, the households had access to food; however the access was limited, as they were able to acquire quantities of food but not quality food.

Table 2: Household food insecurity access scale

Status	%	N
Food secure	10.3	14
Moderately food insecure	37.3	51
Food secure	52.2	71

Key note: Scales of 0-11= food secure, 12-16= moderately food insecure, 17 or more= food insecure

The limited access to food is also evident through the coping strategies used by households when there is a shortage of food. In this study, one of the coping strategies used when there were food shortages was to prioritise children and cut meals for adults. Hence the household food access scale showed that only 52 percent of households were food secure as compared to 71 percent of children. In the focus group discussions, the caregivers noted that the household chooses to give children food if there is a shortage:

“We simply cut the size of the meal so that everyone gets an equal share”; “I’d rather go hungry but give my child the food”.

As stated by Shinsugi et al. (2015) at less severe levels of food insecurity, household food managers (usually mothers) trade off food quality for quantity to prevent household members, especially children, from feeling persistently hungry.

Food Intake of Children and Households

The 24h-hour recall for children reflected the HDD and the household food basket (Tables 3 and 4). Statistics showed that 38 percent (n=52) of children ate three times a day, 32 percent (n=44) ate four times a day, while the rest ate once and/or twice a day. The 24-hour recall showed that children consumed more or less the same food at the various time with less protein products,

fruits and vegetables (Table 3). Children not consuming meat, milk, vegetables and fruits are prone to a risk of having deficiency of proteins and vitamins, which could then expose the child to infections, diseases and poor growth.

Table 3: Food types most frequently consumed by children (24-hour recall)

Interval	Food item	N	Percent (%)
<i>First (Morning)</i>	Energy food and/or cereals	54	39.7
	Vegetables	28	20.6
	Milk	13	9.6
<i>Second (Midday)</i>	Meat	31	22.8
	Milk	29	21.3
	Energy food and/or cereals	26	19.1
<i>Third (Evening)</i>	Meat	39	28.7
	Energy food and/or cereals	32	23.5
	Nothing	22	16.2

The majority of children ate more energy-dense foods compared to other types of food. World Health Organisation (WHO) and United Nations Children’s Emergency Fund (UNICEF) recommended that all infants should be breast-fed exclusively from birth to six months of age. In other words, infants should be fed only breast milk during the first six months of life (Faber and Wenhold 2007; Iversen et al. 2012). The Department of Health - Infant and Young Child Feeding Policy 2013 of SA reported that children at the age of 6 months are not satisfied with milk alone, frequent nutritious complementary foods are recommended. Quality diet is more important than the meal intervals and how many times children eat. The policy states that children should receive supplementary feeding in the form of finger foods that are prepared according to the age of the child after six months. The focus group discussions however revealed that the children’s meals were mainly made up of energy due to affordability, longer shelf life and that these types of meals were more filling than other foods. This type of diet aggravates or exposes children to malnutrition, since children have a greater nutrient requirement compared to adults. The proportion of the child’s meal and the nutrients is determined by their age. Hence, correct proportion for each child is important since incorrect quantity could either lead to child obesity or malnutrition. The way children should

eat and the frequency of eating should be guided by the Food Based Dietary Guidelines for children. The children's diet was no different from the adult diet; Table 4 shows the type of foods consumed by the households.

Table 4: Food types consumed by households

<i>Food Item</i>	<i>N</i>	<i>Percent (%)</i>
Cereals	194	98.0
Roots or tubers	85	62.0
Vegetables (<i>mainly spinach</i>)	117	86.0
Fruits	61	44.9
Meat, poultry, offal	65	47.8
Eggs	50	36.8
Fish	16	11.8
Legumes, nuts, pulses	32	23.5
Milk and milk products	80	58.8
Oils or fats	124	91.2
Sugar or sweets	121	89.0
Spices, condiments or drink any beverages	117	86.0

Focus group discussions revealed that fruits, milk and meat were the least often purchased due to limited resources and limited economic power. These findings confirm the research conducted by Naude (2013) which stated that most household were faced with significant suffering from malnutrition due to inadequate access to healthy foods. A typical household food basket contained starch as the main food type procured and consumed, while eggs, legumes and fish were the least food types consumed:

"We buy important foods that last longer like potatoes, maize, rice, flour and sugar... it's better to buy chips and cakes for children to take to school than fruits."

The focus group discussions revealed that there was no special diet for children and the caregivers bought cakes and chips for children instead of fruits. Unfortunately, the caregivers did not realize that they were denying their children the food which they need to grow and de-

velop optimally. According to Kirkpatrick et al. (2010), this is a type of food deprivation as children's access to nutritious food is compromised. It is understood from the findings that this action was not deliberate. It should be noted that the participants had genuine reasons for buying mainly energy foods rather than other types of food. The discussion revealed that the energy foods offered more benefits and suited economic status and lifestyles.

Limited access to resources and economic power influenced the purchasing decisions and the contents of the household food basket; and subsequently indirectly influenced food and nutritional security. The caregivers were well informed about the importance of a balanced diet but they lacked storage facilities to store fruits, meat and vegetables.

Anthropometric Status of Children

According to Faber and Wenhold (2007), Shoeman et al. (2010) and Iversen et al. (2012) South Africa is amongst the countries with the highest incidence of malnutrition. Children's anthropometric status reflects their nutritional status. Nutritional status may be measured either by anthropometry, biochemistry, clinical conditions or by dietary history. Dietary history showed that children on the NSP do not have poor diets, although their diversity is limited. Table 5 shows that about 63 percent of children had normal weight-for-height, 29 percent were severely wasted and 8 percent were overweight and/or obese.

These findings show that children from 7-24 months of age were more severely wasted than the other age groups, but they also formed the majority of those that had normal weight-for-height. These results show that only 63 percent children were healthy.

As shown in Table 6, 18 percent of girls were wasted compared to 11 percent of the boys. The

Table 5: Anthropometric status of children on the NSP

<i>Status</i>	<i>Age</i>				<i>Total</i>	
	<i>6 months</i>	<i>7-24 months</i>	<i>25-48 months</i>	<i>49-72 months</i>	<i>N</i>	<i>%</i>
Wasted/malnourished	5	22	8	5	40	29
Normal/healthy	2	46	23	15	86	63
Overweight/Obese	1	5	2	2	10	8
Total	8	73	33	22	136	100

Table 6: Anthropometric status by gender

Gender	Boys (Months)				Girls (Months)			
Months	6	7-24	24-48	49-72	6	7-24	25-48	49-72
Wasted	2	10	2	1	3	12	6	4
Normal/Healthy	1	27	10	5	1	19	13	10
Overweight/obese	0	1	0	1	1	4	2	1
Total	3	38	12	7	5	35	21	15

similar pattern was noted in overweight and obesity; girls were unhealthier than boys in terms of wasting and overweight.

These findings differ from those of previous studies regarding children's anthropometric status. The latest major study (SANHNES-1) performed in South Africa in 2012 found that 3.3 percent of 1-3 year old children showed wasting while the NFCS 2005; found that there was 6 percent wasting in children 1-3 years old (Shisana et al. 2015). The findings of this study show that wasting has increased as compared to these two studies. The above findings may differ from those of studies carried out in the past due to various factors such as time, type of population and number of participants. Even though the majority of children were healthy or had a normal weight-for-height, 8 percent were overweight and/or obese. Obesity could have resulted from their high intake of fat, sugar and energy foods and increased positive energy balance. These findings also concur with the findings of several researchers that have reported on the complexities of measuring food security (Altman et al. 2010; Hasan et al. 2013). Even though the households managed to buy food, but the food daily intake and the diet diversity of food were not satisfied for nutrition security.

Perceived Causes of Malnutrition

None-nutrition factors primarily affected the child nutrition status. Grandmothers and crèches carried the responsibility to look after the children. Teenage parenthood and time burdens experienced by the grandmothers resulted in neglect and carelessness:

“Neglect and poor care from the caregiver and the crèches; nowadays teenagers get pregnant so they do not take good care of their children because they are also children; children are not given food at the crèche or they give them one and the same food every day”.

Poor and late reaction of parents when children were sick was perceived to be one of the causes.

Table 7: Perceived causes of child malnutrition

<i>Problem</i>	○ Poor child care (deprivation) ○ Limited dietary diversity ○ Poor feeding practices ○ Poor hygiene (clean and safe water)
<i>Causes</i>	○ Teenage pregnancy ○ Child neglect ○ Lack of proper time to care for children ○ Poor support system
<i>Implications</i>	○ Primary ▪ Inadequate access to food quantity and quality ▪ Poor health status ○ Secondary ▪ Malnutrition ▪ Illnesses

Child malnutrition as illustrated in Table 7 was due to poor food intake, poor hygiene, negligence and poor care. These findings confirm the United Nations Children's Emergency Fund 1991 (UNICEF) Framework showing child malnutrition as caused by various factors. External and internal factors that affect the nutrition status should inform the malnutrition interventions.

CONCLUSION

The fact that household food security did not directly translate to child nutrition security was poignant. Limited household economic power and lack of access to acquire resources, indirectly influences food purchasing decisions; household food baskets; and consumption patterns. Children were indirectly deprived of the basic human right to food for normal development, regardless of caregiver efforts to buffer and protect children from food insecurity. Energy-dense diets offer greater benefits to suit most

household lifestyles, due to affordability, longer shelf life and satiation.

RECOMMENDATIONS

The nutrition education and food supplements were ineffective in changing the nutritional status of children. Wasting and obesity was still a problem amongst the children despite the nutrition rehabilitation programme. Emerging overweight malnutrition trends are a challenge to food and nutrition security because traditionally, obesity was a nutrition clinical symptom in wealthy households. New measurements, innovations and interventions to combat this malnutrition must be interrogated by food and nutrition experts, researchers, and practitioners.

ACKNOWLEDGEMENTS

We hereby acknowledge the following for their co-operation in the project: the Department of Health in UMgungundlovu District, as well as the University of KwaZulu-Natal for funding this project. We furthermore wish to acknowledge Oliver Bodhlyera (statistician) for valuable assistance, as well as the field workers who assisted with the data collection.

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Paper received for publication on April 2015

Paper accepted for publication on November 2016