

CAREGIVERS' PERCEPTIONS OF HOUSEHOLD HUNGER AND ADEQUACY OF DIETARY INTAKE IN A RESOURCE LIMITED COMMUNITY IN THE BRONKHORSTSPRUIT DISTRICT (GAUTENG)

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ABSTRACT

This paper describes households' perceptions of hunger and adequacy of dietary intake by caregivers. A descriptive cross-sectional study in the quantitative research paradigm was conducted to collect data from caregivers (N=50) who were responsible for buying and preparing food for school aged children, residing in different households in Bronkhorstspuit in the Gauteng Province South Africa. Caregivers were individually interviewed using structured questionnaires (socio-demographic, Hunger Scale and the 24 hour-recall questionnaires, respectively). The majority (68%) of the caregivers had good nutrition knowledge but they did not know how to apply the knowledge in their dietary lifestyle. The socio-economic status and nutrition knowledge and attitudes of the caregivers were found to be possible factors that influenced dietary intakes of the households. The mean Household Food Variety Score (FVS) was 4.38 (± 1.0) and the Household Dietary Diversity Score (DDS) was 4.28 (± 1.0). The results indicated an average of eight food items were consumed in the households during the 24-hour period of the maximum of 24 food items, identified by the 24-hour recalls. It was concluded that there is a need to eradicate the problem of low food diversity and there is a need to increase micronutrient intakes of children. The DDS of households showed that the food groups that were consumed by the households were ranging from an average of three (food items which incorporated a number of food groups from one) to seven groups. It can also be concluded that the households had a limited variety and diversity of diet since the food items and food groups were limited. This study showed that there is a limited food access by the households due to low incomes. Caregivers should be encouraged to get involved in food production activities; such as greenery projects, brick making projects, etc. that they can use the money they get from the projects to buy food for their families. This would help the caregivers in improving the dietary diversity and variety of their households.

Key words: Household hunger, dietary adequacy, food accessibility, Hidden hunger, Nutrition education



INTRODUCTION

Household hunger is a problem that is affecting many households in South Africa [1]. The majority of households in South Africa were found to be consuming diets low in dietary diversity and variety, more especially those living in informal and tribal settlements [1]. In South Africa, there are a number of food intake determinants such as the location of the household, the size of the household (number of people living within the household), and the assets of the household (source of income, employment status of the household members) [1].

Households suffering from hunger are most likely to have low nutrient intake where signs of under-nutrition can be visible [2]. Household hunger has been found to be associated with the limited availability and accessibility of food. In South Africa, only 2% of the households get food from their own production and most of the small-scale producers living in rural areas are struggling to feed their families [3].

This descriptive survey sought to assess the perceptions of household hunger and the dietary adequacy regarding dietary diversity and food variety, among caregivers living in a resource limited community in Gauteng. The study deemed it important to assess the socio-demographic backgrounds of the caregivers, thus enabling the researcher to identify the probable causes of households not having enough food. This was considered important because it will enable the policy designers to design policies that are geared to enhance households' access to food.

MATERIALS AND METHODS

The study was conducted by the researcher together with two research assistants and took two weeks to complete (2nd May-14th May 2013). During the interviews, the caregivers (fifty caregivers both male and female) were individually asked to provide answers to all the questionnaires. The sample size was based on the fact that the diets of limited resource communities are homogenous and that a sample size $n=50$ would reveal a trend in food intake in this community. An assistant researcher, who was fluent in the Ndebele language, assisted with the translation of questions to the caregivers' respective language that is Ndebele. Several questionnaires were used for data collection, namely a socio-demographic questionnaire (NFCS, 1999), the Hunger Scale Questionnaire [5], and the 24-hr recall (non-quantified) (adapted from the Food Agricultural Organisation, 2011) were used to collect data that were analysed for dietary adequacy of the households. Ethical approval for the research study was obtained from the Ethics Committee of the Faculty of Natural and Agricultural Sciences, University of Pretoria (Ref EC120807-069). Permission was also obtained from the Department of Basic Education.

DATA ANALYSIS

Descriptive statistics (SPSS 21 computer software) was used for data analysis. The responses to the questions on the Hunger Scale Questionnaire were categorised into three: a score of five positive (yes) responses or more out of the maximum possible eight



indicates a food shortage problem affecting the entire household. A score of one to four positive (yes) responses indicated that the family was at “risk of hunger” a negative response (no) was assumed to mean a food secure household. Questions were also included to determine the state of individual levels of food security as well as the state of child hunger in the household [5].

The household dietary diversity score (HDDS) is defined as the number of food groups from which foods were consumed over a period of 24-hours, prior to the data collection. The diet was classified according to the 12 food groups recommended by the FAO which included (i) cereals, (ii) white tubers, roots, (iii) vegetables, (iv) fruits, (v) meat, (vi) eggs, (vii) fish and other sea foods, (viii) legumes, nuts and seeds, (ix) milk and milk products, (x) oils and fats, (xi) sweets, (xii) spices, condiments and beverages [6]. The household food variety score (HFVS) is defined as the number of different food items that were consumed by the households during the 24-hour recall period in the study [7].

The HDDS can be calculated by summing up the number of food groups consumed in the household over the 24-hour recall period [7].

The mean HDDS was calculated by the formula (FAO, 2011):

$$\text{Mean household diversity score} = \frac{\text{Sum of individual HDDS}}{\text{Total number of caregivers}}$$

The nutrient rich sources (protein, calcium and iron, zinc, folate, vitamin A and thiamine, riboflavin as well as niacin) consumed within the 24-hour period investigated in the study were analysed using the following formula (FAO, 2011) [6]:

$$\frac{\text{Sum of individuals who consumed nutrient rich foods} \times 100}{\text{Total number of respondents}}$$

RESULTS AND DISCUSSION

Socio-biographic description of participants

The majority (94%) of the caregivers were female (mothers) and majority of them (74%) had received a high school education, none of whom had a tertiary level of education. Over half (54%) of the caregivers were unemployed (Refer to table 1).

Table 1 illustrates a summary of the characteristics of caregivers in the sample.

The study findings indicated that the majority (74%) of the caregivers had high school education and no one had a tertiary level education. The educational status of the caregivers probably determined their employment status. This was verified through the caregivers’ responses when they were asked about their employment status. Fifty four percent of the caregivers’ indicated that they were unemployed. However, it can also be argued that even though they were unemployed, there were other sources of income that



could have been their main financial supply, such as self-employment and social grants. The findings in this study indicated that 20% of the caregivers in the study were self-employed. These results are in line with the results by OXFAM, which indicated that food accessibility in South Africa has been worsened by the lack of employment, and most of the households in rural areas depend on grants for incomes [3].

Hunger perception

An in-depth analysis of the data was done to assess if the hunger situation had occurred recently within the past 30 days and if so, whether it had lasted for five or more days within the 30-day period. The results obtained from the study were categorized according to the household level of food security and child hunger. Majority of the households (82%) indicated that they sometimes ran out of money to buy food, with 74% households having run out of money to buy food sometimes during the past month and of these, 38% of households ran out of money to buy food for five or more days in that month. Individually, 36 caregivers (72%) indicated that they would sometimes reduce the size of the meals or skipped meals because there was not enough money for food. In the past month, 34 caregivers (68%) were affected by this and of these, 21 caregivers (42%) had to reduce the size of their meals or skipped meals because there was not enough money for food for five or more days in the month.

Of the 50 caregivers, 38 indicated that they ate less than they felt they should when they did not have enough money to buy food, and this happened to 35 caregivers (70%) in the past month; only 19 caregivers (38%) having had to eat less than they felt they should for five days or more in that month. When asked about how they fed their children, 36 caregivers (72%) reported that their children ate less than they felt they should eat because they did not have enough money to buy food; 34 caregivers (68%) indicated that sometimes the children would say they were hungry because there was not enough food in the house. A further 30 caregivers (60%) of these indicated that they cut the size (reduced ration) of the children's meals or they skipped meals because there was not enough money to buy food, and 20 caregivers (40%) reported that their children sometimes went to bed hungry because there was not enough money to buy food.

Foods consumed by the households

All of the households in the study had eaten food made of cereals, mainly maize and wheat with all caregivers having used cooking oil to prepare their dishes. Other food items that were eaten by more than half of the households were proteinous (chicken, fish and beef). These results are in agreement with those reported by the National Food Consumption Survey [1], which indicated that most of the protein intake was from animal source food such as eggs. In total, 40% of the households had consumed at least one item from the dairy food products, and 4% from the legumes, seeds and nuts food group, while 40% of the households had consumed at least one item from the vegetable food group. Thirty percent of the households had included an egg in their daily diets; while 30% of the households had consumed fruits from the other food groups (for example, apple, banana and orange) in the 24 hours prior to the study. Only 30% of the caregivers said they consumed fruits in their diets.



Table 3 Summarises the food groups and food items consumed by the caregivers during the 24-hour period (N=50)

Household dietary diversity and variety

In this study, it was found that the mean HDDS was 4.28 (± 1). Households in the study were found to be consuming a minimum of two to eight food items a day. The HDDS of households showed that on average, each household consumed food items from between three and seven food groups. The total number of food items included in the HFVS was 24 food items, irrespective of the frequency consumed by the households. Thirty-four percent of the caregivers indicated that in their households they consumed two to three different food items in the 24 hours prior to the study, four to five different food items were consumed by 34% of the households during the 24 hours prior to the study; while 32% of the caregivers indicated that they had consumed more than six food groups. The households had a mean dietary diversity score of 4.28(± 1) and food variety score of 4.38(± 1).

The study also revealed that cereals were consumed by all the caregivers in the study during the 24-hour recall period. Additionally, the study findings indicated that the majority of the households (80%) had consumed foods rich in protein during the 24-hour recall period. Thirty-eight percent of the caregivers indicated that they had consumed vitamin A and vitamin C rich foods, respectively. The data also revealed a lower number of caregivers (30%) had consumed diets rich in iron. The results indicated that 80% of the caregivers were getting the nutrient thiamine from the meat food group, and 100% of the caregivers were getting the riboflavin nutrient from the cereal food group. The results showed that all of the caregivers (100%) were getting niacin from the cereal group, while 50% of the caregivers were getting niacin from the meat food group (*refer to table 3*).

Food insecurity has been deemed as the uncertain or limited access to safe and nutritionally adequate food [7]. Low income, unemployment as well as limited household food production are some of the factors leading to food insecurity in most South African households [8]. Though employment status might not be the only factor that influenced the hunger situation in the study group, it was regarded as one of the leading factors contributing to the food uncertainty in the households. There are a number of factors contributing to household food insecurity, such as financial constraint and household assets, loss of jobs, gender of the household head access to credit as well as education and more [8]. These results are in agreement with the findings that indicated that households in Nqushwa Local Municipality were food insecure and they were surviving on fewer than three meals per day and some would experience two to three days per month without food [9].

The majority of the households in this study reported food uncertainty, 82% of the households reported that they sometimes ran out of money to buy food, with 74% of the households reporting that they sometimes ran out of money to buy food during the past month. These results are in agreement with findings reported in the StatsSA report [10], which indicated that poverty is on the rise in South Africa. The report indicated that more than half of South Africans were found to be living in poverty, with the number



increasing to 55.5% from that of 2011, which was reported to be 53, 2%. Over 13, 8 million South African children were reported to be facing poverty in the year 2017[10]. It can be reasoned that food uncertainty in this study group was due to poverty which was represented by low incomes as well as low levels of education. Food insecurity was found to be affecting both formal and informal settlements [6]. These findings are similar to those reported in 2014, which indicated that 83% of rural households were suffering from food insecurity due to poverty [10]. Oxfam reported that almost 23% of South Africa's population has at some point run out of money to buy food and 21% have skipped meals or reduced the size of their meals [11]. A large number of South African rural households were dependent on government grants for income in 2011. This resulted in them not being able to afford sufficient food to support themselves [10]. The findings in this study indicated that the majority (74%) of the caregivers were in possession of only high school education. It could be reasoned that the households in this study ran on a limited number of food sources to support their children, because the caregivers could not secure stable jobs (*refer to table 1*).

This study indicated a problem of food shortages in the households of the caregivers and also assessed the dietary diversity and variety of households. The sum of the food items consumed by the households was 219. These results were also similar to the study done by Labadarios, which indicated that a DDS of less than four was regarded as poor dietary diversity and poor food security [12]. It can be concluded that the limited variety and lack in diversity of diets in these households were a result of caregivers not being able to buy food to feed their households. These results are also supported by a study done on the determinants of rural household dietary diversity in South Africa which pointed to a strong correlation between education and dietary diversity [9].

The researchers also indicated that households that were found to be more educated were more likely able to attain higher dietary diversity scores than households with low or no education at all [9]. This is also in agreement with the findings of a study done by MacIntyre in the year 2000 that indicated that fruit and vegetable consumption were found to be low in rural areas and only a bit higher in the urban areas [12]. This also is in line with the results stipulated in the OXFAM report which indicated that 19% of South African children have no access to food [7]. Sixty percent of the caregivers in this study indicated that they reduce the size of their children's meals because they did not have enough money to buy food. These results are in agreement with those which indicated that 23% of the households in South Africa run out of money to buy food and 21% of the households reduced the size of their children's meals because there was not enough money to buy food [7].

This study reported that some of the households were headed by single parents; this resulted in them not being able to buy enough food to support their families. These findings are in agreement with those reported by the StatsSA which indicated that the majority of single-headed households were found to be most likely to suffer from food shortage [10]. The findings reported by The State of Food and Agriculture 2011 [4], which revealed that the economic status of female-headed households presented stark consequences for household food security, as studies had shown that women's income was positively associated with greater food, health, education, and nutritional outcomes.



The StatsSA also indicated that more than half (55.7%) of all female-headed households in South Africa were living below the poverty line [10].

The results on foods consumed by the households are summarized in table 3.

CONCLUSION

The socio-economic status of the households most likely contributed to food uncertainty in majority (82%) of the households. They were found to be consuming diets low in certain nutrients. The study revealed that cereals were consumed by all the caregivers in the study during the 24-hour recall period. Additionally, the study findings indicated that the majority of the households consumed foods rich in protein during the 24-hour recall period. Thirty-eight percent of the caregivers indicated that they had vitamin A and vitamin C rich foods. The study also revealed a lower number of caregivers were consuming diets rich in iron. The households were consuming more of the cereal food group compared to rest of the food groups. It was concluded that the diets of the households were not diverse and they lacked variety in the foods they were consuming.

The income levels contributed to the limited dietary diversity of the households. Socio-economic status was found to be a probable constraint for the caregivers to be able to buy a variety and enough foods for their households. This impacted on the dietary diversity and variety of the households. It can also be concluded that the socio-economic status of the households probably resulted in food uncertainty in some households. They were found to be consuming diets low in certain nutrients such as folate, calcium and vitamins.

It is recommended that a nutrition education for parents is offered to show them how to improvise on available resources to improve their food accessibility, thus improving the variety and diversity of their diets. Caregivers should be encouraged to get involved in food production activities, such as greenery projects, brick making projects, and others for sustainable income to buy food for their families. A nutrition education programme can also be used to educate caregivers who get social grants on how to practise good nutrition.

Table 1: Biographic characteristics of the caregiver (N=50)

Variable	n	%
Gender		
Male	3	6
Female	47	94
Marital status		
Unmarried	19	38
Married	19	38
Separated	2	4
Traditional	5	10
Widowed	4	8
Other	1	2
Educational level		
Lower primary	4	8
Upper primary	9	18
High school	37	74
Tertiary	0	0
Type of house		
Brick	37	74
Tin	9	18
Wood	2	4
Person responsible for buying food		
Father	2	4
Mother	46	92
Grandma	2	4
Type of toilet		
Flush	32	64
Pit	12	24
Bucket	4	8
VIP (Ventilated Improved Pit)	2	4
Source of water		
Own Tap	40	80
Communal Tap	9	18
River dam	1	2

Table 2: Responses and frequency of the occurrence of positive responses on the hunger scale in the study (N=50)

QUESTIONS	Has it happened?		In the past 30 days		5 or more days in the past 30	
	n	%	n	%	n	%
Does your household ever run out of money to buy food?	41	82	37	74	19	38
Do you ever rely on a limited number of foods to feed your children because you are running out of money to buy food?	39	78	34	68	18	36
Do you ever cut the size of meals or skip because there is not enough money for food?	36	72	34	68	21	42
Do you ever eat less than they should because there is not enough money for food?	38	76	35	70	19	38
Do your children ever eat less than you feel they should because there is not enough money for food?	36	72	33	66	20	40
Do your children ever say they are hungry because there is not enough food in the house?	34	68	31	62	23	46
Do you ever cut the size of your children's meals or do they skip meals because there is not enough money to buy food?	30	60	30	60	18	36
Do any of your children ever go to bed hungry?	21	42	19	38	11	22



Table 3a: Food groups and food items consumed by the caregivers during the 24-hour recall period (N=50)

Food groups	Frequency (%)	Food items	Food items by consumers	
			n	%
Cereals	100	Stiff porridge (maize meal)	50	100
		Soft porridge (maize meal)	50	100
		Wheat (brown and white bread)	50	100
		Rice	50	100
		Spaghetti	12	24
Tubers and roots	23	Potatoes	24	48
		Sweet potatoes	2	4
Vitamin A rich vegetables and tubers and vitamin A rich fruits	10	Carrots	6	12
Other vegetables	38	Cabbage	9	18
		Tomatoes	50	100
		Spinach	6	12
		Onions	6	12
Other fruits	30	Apple	7	14
		Banana	9	18
		Orange	3	6
Meat and poultry	80	Chicken	40	80
		Beef	20	40
Fish	15	Fish	15	30
Eggs	30	Eggs	15	30
Legumes, nuts and seeds	2	Beans	2	4
Dairy	40	Fresh milk	10	20
		Sour cream (Amasi)	1	2
		Cheese	1	2
Oils and fats	100	Cooking oil	50	100

Table 3b: Food groups and food items consumed by the caregivers during the 24-hour recall period (N=50)

Nutrient rich foods	Food items	n	%
Protein rich foods	Meat (red meat)	25	50
	Chicken	40	80
	Eggs	20	40
	Milk and milk products	22	44
	Legumes	4	8
Calcium rich foods	Milk and milk products	22	44
	spinach	12	24
Iron rich foods	Meat	25	50
	Legumes, nuts and seeds	4	8
	Eggs	20	40
Zinc rich foods	From legumes, nuts and seeds	4	8
	From animal source	25	50
	From cereal	50	100
Folate rich foods	From legumes, seeds and nuts	4	8
	From animal source	20	40
	Eggs	25	50
	Meat	15	30
	Fish	50	100
Vitamin A rich foods	Spinach	12	24
	Carrots	6	12
Vitamin A rich vegetables	Eggs	20	40
	Milk	22	44
Thiamine (Vitamin B1) rich foods	Legumes	4	8
	Fish	15	30
	Eggs	40	80
Riboflavin (Vitamin B2) rich foods	Milk and milk products	22	44
	Meat	25	50
	Fish	15	30
	Cereals	50	100

REFERENCES

1. **Labadarios D, Steyn N and Maunder E, MacIntyre U, Gericke G, Swart R, Huskisson J, Dannhauser A, Vorster HH, Nesamvuni AE and JH Nel** The National Food Consumption Survey (NFCS). *Public Health Nutrition*, 2005; **8(5)**: 533-543.
2. **Kennedy G, Pedro MR, Seghieri C, Nantel G and I Brouwer** Dietary diversity score is a useful indicator of micronutrient intake in non-breastfeeding Filipino children. *Nutrition Journal*, 2007: **137**:1-6.
3. **Oxford Committee for Famine Relief (OXFAM)** *Promoting local food reserves in the Sahel*. Retrieved March 10, 2014: from www.OXFAM.org.com Accessed June 2015.
4. **United Nations, Food and Agriculture Organization & The State of Food and Agriculture** *Women in Agriculture: Closing the Gender Gap for Development*, Rome: United Nations. United Nations, Food and Agriculture Organization, FAO Women, Population Division & Sustainable Development Department, 2011: Rome. *The right to Food in Theory and Practice: Rural Women and the right to Food*, Rome: FAO. 2011.
5. **Gericke G, Labadarios D and J Nel** *Hunger scale questionnaire: A measure of Hunger*. Cape Town: University of Stellenbosch. 2000.
6. **Food and Agricultural Organisation (FAO)** *Gender Equality and Food Security; Empowerment as a tool against hunger*. ISBN. Asian Development Bank, 2013.
7. **Ongosi A** *Nutrient intake and Nutrition Knowledge of lactating women (0-6 months postpartum) in low socio-economic area in Nairobi*, 2010: Kenya. Pretoria: University of Pretoria.
8. **Shalmani A, Zhou D, Shah T, Ali S, Ahmad W, Ud Din A I and A Ilyas** Factors affecting household food security in rural northern hinterland of Pakistan. *Journal of the Saudi Society of Agricultural Science*, 2017.
9. **Taruvunga A, Muchenje V and A Mushunje** *Determinants of rural household dietary diversity: The case of Amatole and Nyandeni districts*. South Africa, 2013.
10. **Statistics South Africa (STATSSA)** *Measuring poverty in South Africa*, Pretoria. *Statistics South Africa*, 20 April, 2017 p. 107.
11. **Ndhleve S, Musemwa L and L Zhou** How severe hunger is amongst rural households of the Eastern Cape Province of South Africa. *Journal of Economics and Sustainable Development*, 2013; **4(3)**: 15-3333333333330.
12. **MacIntyre U, Venter C and H Vorster** A culture-sensitive quantitative food frequency questionnaire used in an urban African. *African Journal of Biotechnology*, 2000; **4(1)**: 63-71.

13. **The South African National Health and Nutrition Examination Survey (SANHANES-1)** *Aspects of the health and nutritional status of South Africans with respect to the prevalence of NCDs and their risk factors*, Pretoria, South Africa: Human Science Research Council, 2013.
14. **Labadarios D, Swart R, and Maunder E, Kruger H, Gericke G and P Kuzwayo** Executive summary of the National Food Consumption Survey Fortification (NFCS-FBI). *Journal of Clinical Nutrition*, 2008; **21(13)**.
15. **Ajani S** An assessment of dietary diversity in six Nigerian states. *African Journal of Biomedicine*, 2010; **13(10)**: 161-167.
16. **Alderman H** Linkages between poverty reduction strategies and child nutrition: An Asian Perspective. *Economic and Political weekly*, 2005; **40(46)**: 48-42.
17. **Aliber M** Exploring statistics South Africa's national household surveys as sources of information about household-level food security. *Human Science Research council*, 2009; **48(4)**.
18. **Altman T** Household food security status in South Africa. *Human Research Council*, **48(4)**: 2009 :1-20.
19. **Evans A** *The feeding of the nine billion: Global food security for the 21st century*. London: Chatham House Report: The Royal Institute for International Affairs, 2009.
20. **Human Sciences Research Council** *Achieving Food Security in South Africa: Characteristics, Stressors and Recommendations to 2019. Report to the Office of Presidency*. Pretoria: Human Sciences Research Council, 2007.
21. **Kupolati D, Gericke G and U MacIntyre** Teachers' Perceptions of school nutrition education's influence on eating behaviours of learners in Bronkhorstspuit District. *South African Journal of Education*, 2015; **35(2)**: May 2015.90.
22. **Ladzani R** The impact of HIV and AIDS on food security and nutrition in South Africa. Pretoria: Human Science Research Council, 2009.
23. **Oxford Committee for Famine Relief (OXFAM)** *Hidden Hunger in South Africa*. Retrieved March 10: 2015: from www.oxfam.org/grow
24. **Statistics South Africa (STATSSA)** *Poverty trends in South Africa*. Retrieved April 20, 2015, from <http://beta2.statssa.gov.za/publications/report-03-10-06-March>.
25. **Statistics South Africa (STATSSA)** *Poverty trends in South Africa*. [Online] Available at: <http://beta2.statssa.gov.za/publications/report-03-10-06-March> [Accessed 20 April 2015].

