Food Science and Quality Management
ISSN 2224-6088 (Paper) ISSN 2225-0557 (Online)
Vol.74, 2018

Assessment on Dietary Habit and Nutritional Status of Preschool Children in Horo Guduru Wollega Zone, Oromia Region,Ethiopia

Ebisa Olika Keyata*
Faculty of Agriculture, Department of Food Science and Nutrition, Wollega University, Ethiopia

ABSTRACT
Pre-school children are the most vulnerable group because of their high nutritional needs for growth and development. As a result, if children or infants can not be nourished well at this stage they will be exposed to some problem in their future life. Therefore, this study was designed to assess dietary habit and nutritional status of preschool children aged 4 to 7 years in selected Kindergarten school of Horo Guduru Wollega zone. A community-based cross-sectional study design was conducted on total 440 of preschool children from March to June, 2016. A semi structured interview and questionnaires was used to collect information in the areas of socio-demographic, dietary habit and nutritional status of preschool children. Dietary habit data were gathered by using quantitative food frequency questionnaire and Anthropometric measurements of preschool children were taken and nutritional status was generated using WHO Anthro v.3.2.2. Statistical Package for Social Sciences (SPSS) version 20.0 was used to perform descriptive statistics. This finding showed that 70.9% of preschool children's daily meal frequency, breakfast, midmorning, afternoon and dinner were more among children in study area. In addition to this a high proportion (84.1%) of preschool children had habit of skip meals. The result also showed prevalence of stunting and wasting of preschool children were 30.7% and 20.2% respectively. Therefore, nutrition education should be given for community of preschool children to manage acute malnutrition (wasting) and chronic malnutrition (stunting) and improve dietary habit.
Keywords: Dietary Habit, Nutritional status, Preschool children

INTRODUCTION

Pre-school children are the most vulnerable because of their high nutritional needs for growth and development (Asres and Eidelman, 2011). Appropriate and adequate feeding is a pre-requisite for good nutritional status in any a given time of human life because consumption of nutritionally inadequate diet leads to malnutrition (WHO, 2010).

In many developing countries, poor quality diets are the major reasons attributed to childhood malnutrition (Christina, 2011). Malnutrition is a serious problem because it causing the deaths of 3.5 million children less than 5 years old per- year in the world, as well as it is at third level in the world of the disease burden in this age group (Black *et al*., 2008). Under nutrition among them is one of the greatest public health problems in developing countries (Rao *et al*., 2004).

Ethiopia is the second most populous country in Africa with fast population growth rate (Mohammed *et al*., 2014) and had food deficit (Gebreselassie, 2006). As a result, high malnutrition rates in Ethiopia pose a significant burden in economic and social development (Regassa *et al*., 2015). About 40.2% of the total population was undernourished in the period 2010-2012 (FAO, WFP, & IFAD, 2012). Furthermore, in Ethiopia undernutrition is the major public health problem where 40.4 % of children under the age of five years are stunted, 25 % are underweight, and 9 % are wasted (Gashu *et al*., 2016). Their nutritional status is a sensitive indicator of community health and nutrition. Under nutrition among them is one of the greatest public health problems in developing countries. One best way of studying such problems is through dietary habit assessment of a given target group (Rao, et al., 2004).

Dietary habit is defined as the foods or kind of foods that people habitually and repeatedly eat every day (Birchll, 1998). Preschool children tend to have preferences that include foods with concentration of carbohydrates, sugar, fat and salt, and low in take of foods such as vetetables and fruit if compared to the recommended amounts. This tendenay orginates from children food socilaization and greately depends on the patterns of the food culture to which they belong (Krebs smithsm, 1996). Early childhood is the key stage of life. As a result, if children or infants can not be nourished well at this stage they will be exposed to some problem in their future life such as mental retardation, poor physical growth diseases such as marasmus, kwashikory, night blindness, obesity, cancer, diabetes and etc. Therefore, poor knowledge of nutrition is a key factor involved in the development of malnutrition and it is known that dietary habits in childhood impact on growth, development and the prevalence of disease throughout life(Walsh *et al*. 2003). However, there is no any research done regarding dietary habit and Nutritional status in study area. Hence, the present study was designed to fill this gap. Therefore, the objective of this study was to assess dietary habit and nutritional status among preschool children in selected kindergarten school of Horo Guduru Wollega Zone.

MATERIALS AND METHODS

Study area

The study was carried out in selected kindergarten school of Horro Guduru Wollega zone specifically from Shambu town (Abishe Gerba, Catholic & Mati Boru KG School) and from Fincha town (Fayisa & Horo Guduru KG School located to the west from the capital city of Ethiopia (Addis Ababa).

Study design

Community based cross-sectional survey design were conducted to investigate the dietary habit and nutritional status of preschool children

Source population

All preschool children who was learned in Shambu town (Abishe Gerba, Catholic & Mati Boru Kindergarten School) and from Fincha town (Fayisa & Horo Guduru kindergarten School) during March to June 2016.

Study population

Preschool children from 4-7 years old aged who were come to learned Shambu town (Abishe Gerba, Catholic & Mati Boru Kindergarten School) and from Fincha town (Fayisa & Horo Guduru Kindergarten School) during March to June 2016.

Sample Size Determinations

The base sample size was calculated using the StatCALC application of Epi info$^{TM\ 7.0.8.3}$ (2011). The total sample size of 440 was determined by using single proportion population formula According to a study conducted in Tigray, the prevalence of stunting, underweight and wasting of children in food insecure households was 52.1%, 20.5% and 12.6%, respectively (Kahsay *et al*., 2015). With 5% marginal error and 95% CI and a nonresponsive rate of 10% and 1.5 design effect (in order to represent the left kindergarten school in Horo Guduru Wollega zone) used during sample size determination.

Table 1: Summary of Sample Size Determination (March, 2016)

Specific Objectives	P_1 (%)	CI %	NRR (%)	DE	Sample size (n)
prevalence of stunting	52.1	95	10	1.5	440
prevalence of under weight	20.5	95	10	1.5	288
prevalence of wasting	12.6	95	10	1.5	194

DE=Design effects, NRR=Non-response rate, p=percentage of expected outcome of households, respectively n= Sample size, and CI= Confidence level. So, large amount of sample were used to reduce error during study. Therefore, 440 preschool children were selected from study area.

Sampling Techniques

Horro Guduru Wollega Zone has 10 woreda. From 10 woreda, two town was purposively selected based the variety of kindergarten school exist in the town.

Data Collection Procedures

The quantitative data were collected using a structured questionnaire adapted from different relevant studies. The questionnaire was first developed in English and then translated in to Afan Oromo with some modification from the relevant sources. Training had been given for two preschool teachers and one preschool director in each kindergarten school to collect data. Totally, the data were collected by ten preschool teachers and supervised five school director and the researcher. At the end of each day, the completeness of questionnaires was checked by the principal investigator.

Study Variable

Dependent variables:

- Nutritional status such as Stunted and wasted
- Preschool dietary habit

Independent variables;

- The socio-demographic variables such as; age, sex, cycle of the child, ethnicity, religion, education of father, work of father and mother, family size and obtained food were assessed.

Data Analysis

Data were edited, cleaned, coded, entered and analyzed using SPSS for windows version 20.0. After that the data was cleaned and analyzed. The descriptive analysis such as frequency distribution, proportions, percentages, and measures of central tendency was used. Height for age and weight for age of children were generated from WHO growth standards using WHO Anthro program, version 3.2.2. A child was considered as stunted and wasted if Z score was below - 2 for each index.

Ethical Consideration

Ethical clearance and permission were obtained from Wollega University Ethical Review Committee and permission was secured from Horo Guduru Wollega zone education office. The nature of the study was fully explained to the study participants to obtain their oral informed consent prior to participation in the study and data was kept confidential.

Socio Demographic characteristics

The socio-demographic variables such as; age, sex, cycle of the child, ethnicity, religion, , education of father, work of father and mother,, family size and obtained food were assessed.

Dietary habit of preschool children

Dietary habit questions of preschool children such as number of meals in per day, Do you skip meals, the reason of skipping meals, how many times you skip meals, Do you eat fruit and vegetables, do you habit of drink beverage like miranda, coca, pepsi, sprit fanta highland water and etc and How you like fruit juice as soft drink

Anthropometric Measurements

The weight of the preschool child was measured using electronic digital weight scale (to the nearest 0.1 kg) with minimum/lightly/clothing and no shoes. Calibration was done before weighing every child by setting it to zero using 5 kg of known iron metal. The height of the child was also measured without shoes (to the nearest 0.1cm) by using a vertical wooden height board. This was done by placing the child on the measuring board, and standing upright in the middle of board, and then the child's head, shoulders, buttocks, knees and heels touching the board. The age of the child was also calculated in months from their birth date to the day of data collection using a local event. Mothers were asked whether the child was born before or after certain major events until accurate age is pinpointed.

Data Analysis

Data were edited, cleaned, coded, entered and analyzed using SPSS for windows version 20.0. A descriptive statistical analysis was conducted for all quantitative variables to check for outliers, consistency of data and missing values. Findings were statistically analyzed for frequency, descriptive statistics, and binary logistic regiration to evaluate associations between dependant and independent variables using the statistical package against the significance level that was set at $p<0.05$.

RESULTS AND DISCUSSION

Socio-demographic Characteristics of preschool children.

A complete set of socio-demographic questionnaires existed for 440 households and were used in the data analyses. The results in Table 1 showed that preschool children in the sample ranged from 4-7 years, with a large percentage 191 (43.4%) in 5 years old. The gender representation of preschool children was 191 (43.4%) for boys and 249(56.6%) for girls. More than half 234(53.2%) of preschool children learn in first cycle.

Majority of respondents were Oromo by ethnicity 234 (90%) and Protestant by religion 249 (56.6%). Educational status of parents, 231(52.5%) of the fathers had diploma and above education while 33 (7.5%) didn't have formal education. With regard to occupational status of parents/care givers, more than half of 275(62.5%) of the father employed in governmental office while 181(41.1%) of mother worked the government office. The majority 294 (66.8%) of household size was between one up to five peoples per household including children. Most of the family 325(73.9%) obtained food from market while115 (26.1%) from farming (Table 1).

Table 2. Socio-demographic characteristic of preschool children in study area

Variables	Category	Frequency (n=440)	Percent
Age of Preschool children (years):	4	40	9.1
	5	191	43.4
	6	152	34.5
	7	57	13.0
Sex of child	Boy	191	43.4
	Girl	249	56.6
Cycle of child	first cycle	234	53.2
	second cycle	206	46.8
Ethnicity	Oromo	426	96.8
	Amahara	14	3.2
Religion	Ortodox	150	34.1
	Catholic/protestant	249	56.6
	Muslim	41	9.3
Educational status of Father	Illiterate	33	7.5
	Primary School	97	22.0
	secondary School	79	18.0
	diploma and above	231	52.5
Occupational status father	Employed	275	62.5
	Farmer	52	11.8
	Self business	113	25.7
Occupation status of mother	Employed	181	41.1
	house wife	165	37.5
	Self business	94	21.4
House hold size	1 up to 5	294	66.8
	greater than 5	146	33.2
Food obtained	Buying	325	73.9
	Farming	115	26.1

Dietary habit of preschool children in study area

As indicated in Table 2, 107(24.3%), 312(70.9%) and 21(4.8%) of preschool children in study area were consumed three, four and greater than four in pre day respectively. Majority 370(84.1%) of preschool children skipped meals due to lack of appetite 137(31.1%), psychological reason, 136(30.9%), carelessness of care takers, 92(20.9%), dislike particular food, 2(0.5%) and unavailable food, 3(0.7%). Majority 367(83.41%) of preschool children habit of eating fruits & vegetables. In addition to these more than half 261(59.82%) of preschool children habit of drinking beverage like Miranda, coca, pepsi, sprit, fanta, bottled water and etc. The recent findings showed that less than half 183(41.6%) of Preschool children very like fruit juice as compared to soft drink.

Table 3.Dietary Habit of Preschool Children in Study Area

Variables	Category	Frequency (n=440)	Percent
number of meals in per day	Three	107	24.3
	Four	312	70.9
	four and above	21	4.8
Do you skip meals	Yes	370	84.1
	No	70	15.9
reason of skip meals	lack of appetite	137	31.1
	Psychological	136	30.9
	carelessness of care takers	92	20.9
	dislike particular food	2	0.5
	unavailable food	3	0.7
	No	70	15.9
how many times you skip meals	one in week	132	30.0
	2 or 3 in a week	67	15.2
	feels like skipping	171	38.9
	no skipping	70	15.9
Do you eat fruit and vegetables	No	73	16.59
	Yes	367	83.41
Do you drink beverage	`Yes	261	59.82
	No	179	40.7
How you like fruit juice as soft drink	Not likely	155	35.2
	Like	102	23.2
	Very like	183	41.6

Nutritional Status of preschool children in study area

Anthropometric data is most commonly used as an indication of dietary practices, despite it being seen as an indicator of various factors such as neglect and disease (Walsh *et al.* 2003), The current study indicates the prevalence of stunting, and wasting among preschool children in aged from 4 years to 7 years in Horo Guduru Wollega Zone was investigated in Table 3. This study revealed that, the prevalence of stunting was 30.7% and 20.2% among preschool children aged 4–7 years.

Table 3. Nutritional Status of Preschool Children in study area

Categories	Frequency	%(percentage)	Mean ±SD
Stunted(HAZ)	135	30.7	0.69±0.462
Wasted(WAZ)	89	20.2	0.80 ±0.402

DISCUSSIONS

The study revealed that majority of preschool children who attended in study kindergarten school children had four meals in day. This could be due to an indication that being food secure is a way to increase child's daily meal frequencies. The current findings comparable the studies conducted in Ethiopia and Zambia showed that the proportion of daily meal ≥4 among children during the survey was high (Disha *et al*., 2012). On contrary, a study done in Ethiopia (Ghate, 2014) reported that proportion of daily meals ≥4 among children during survey was lower. This might be due to the present survey was conducted in the season of post harvest that may increase food availability, accessibility and utilization by communities at household level.

In the present study, high proportion of skips to eat meal was also reported among preschool children in study area. Similarly, Ventura and Birch, (2008); Jansen *et al*, (2010) reported that high proportion of restriction access to certain foods were observed among children in house households. This might be due to the lack of appetite, psychological reason, carelessness of care takers, dislike particular food and unavailable food limited in households.

Stunting or height-for-age of below -2SD usually occurs after a period of chronic malnutrition (Lee & Nieman, 2003). In this study, 30.7% were stunted, indicating chronic malnutrition leading to failure of linear

growth. The current result were lower in more half of magnitude of stunting as compared to the study reported in Central Africa Republic (61.5%) (Wanga et al., 2009) and Kenya (51%) (Adeladza, 2009). However, the finding was higher than the study conducted in Egypt (20.3%) (Seedhom *et al*., 2014) and studies between 1976 and 1996 of the nutritional status of children in South Africa found that 20 to 25 percent of preschool were stunted (Vorster *et al*. 1997). This finding also slightly higher than the stunting rates reported at national prevalence rates of 20 percent (Labadarios *et al*. 2005). The discrepancy might be related to variations in residence and level of income between the study participants. Therefore, stunting is a serious condition as it often has irreversible consequences, with stunted children usually growing up as stunted adults (United State Agency for International (USAID 2013), and at an increased risk of becoming obese and developing chronic diseases of lifestyle.

Wasting is defined as low BMI-for-age (below-2 z-score/SD) (WHO 2007a), and is an indicator of acute malnutrition which results from recent food deprivation or illness (Khan & Azid 2011). In the current finding, 20.2% of preschool children who aged between 4-7 years were wasted. The finding was the same with reports of developing countries such as Central Africa Republic (20.2%) (Wanga *et al*., 2009). However, higher than the study reported in Sri Lanka (17.1%) (Ubeysekara *et al.,* 2015) and rural Cambodia (10%) (Reinbott *et al., 2015*). These results were disturbing, as children who are wasted usually have a significantly increased risk of death (UNICEF 2009). Wasting typically reflects the inadequacy of the diet and these findings thus reflect the poor nutrient intakes of the children in this study. But, lower than the study conducted in Limpopo's Ellisras rural area found to be 41.8 percent children aged 3-10 were wasted (Monyeki *et al*. 2000).

Generally, both acute and chronic malnutrition are thus prevalent in study area of preschool children who aged between 4 up to 7 years old.

CONCLUSION AND RECOMMENDATION

Majority of preschool children habit of skipped meals due to lack of appetite, psychological reason, carelessness of care takers, dislike particular food and unavailable food. The assessment of nutritional status using indicator such as stunting and wasting for preschool children showed that 30.7% and 20.2% were stunted and wasted respectively and this may be as a result of poor dietary diversity score, dietary habit practices, lack of education and poor economic status of the parents. Therefore, managing acute malnutrition (wasting) and chronic malnutrition (stunting) through community mobilization to improve access to safe and adequate preschool child nutrition, adopting American food pyramid and mothers care practices were advisable

ACKNOWLEDGMENTS

The authors are grateful to Wollega University for the support and funding of the research work. The author also thanks all the respondents, data collectors, supervisor of the study area

REFERENCES

Adeladza A, 2009. The influence of socio-economic and nutritional characteristics on child growth in Kwale District of Kenya. Afr J Food Agr Nutr Dev.;9(7):570–90

Asres G and Eidelman A, 2011.'Évaluation nutritionnelle des enfants Ethiopiens bêta-Israël : une enquête transversale. Col. Med. Heal. Sci. 6(4):171-6.

Baye, K, 2014. Teff nutrient composition and health benefits. *Intl Food Policy Res Inst.* (Vol.67).

Black R, Allen I, Bhutta Z, Caulfield EL, de Onis M, et al., 2008. Maternal and child under nutrition: global and regional exposures and health consequences 371: 243-260.

Christina A. 2011. Dietary Diversity is Associated with Nutrient Intakes and Nutritional Status of Children in Ghana. *Asian Journal of Medical Sciences*.Vol 2: 105-109.

Disha AD, Rawat R, Subandoro A & Menon P, 2012. Infant And Young Child Feeding Practices In Ethiopia And Zambia And Their Association With Child Nutrition:Analysis of Demographic and Health Survey Data. *African Journal of Food Agriculture, Nutrition and Development.* Volume 12 (2): 589-5914.

FAO, W. I., WFP, & IFAD, 2012. The State of Food Insecurity in the World 2012: Economic growth isnecessary but not sufficient to accelerate reduction of hunger and malnutrition. *FAO, Rome. doi*,*10*.

Gashu, D., Stoecker, B. J., Bougma, K., Adish, A., Haki, G. D., & Marquis, G. S, 2016. Stunting, selenium deficiency and anemia are associated with poor cognitive performance in preschool children from rural Ethiopia.*Nutrition journal*, *15*(1), 38.

Gebreselassie, S, 2006. Food Aid and Small-holder Agriculture in Ethiopia: Options and Scenarios. A Paper for the Future Agricultures Consortium Workshop, Institute of Development Studies 20-22 March Sussex, UK: Future Agricultures Consortium.

Ghate P. (2014). Food Consumption Patterns and Malnourished Ethiopian Children: Is There a Link? *Expo International Multidisciplinary Research Journal.* 4(2) Section 1,ISSN: 2250 - 1630. available at .http:// www.Research journals.

Jansen WP, Sabine J Roza JS, Jaddoe WV, Mackenbach DJ, Raat H, Hofman A, Frank C Verhulst CF &

Tiemeier H (2012). Children's eating behavior, feeding practices of parents and weight problems in early childhood: *International Journal of Behavioral Nutrition and Physical Activity. 9:30;* doi:10.1186/1479-5868-9-130

Kahsay A, Mulugeta A & Seid O. **(**2015). Nutritional Status of Children aged 6-59 months from Food Secure and Food Insecure Households in Rural Communities of Saesie Tsaeda-Emba District, Tigray, and North Ethiopia: Comparative Study. *Clinical Medicine Research*. Vol 4(1): pp.51-65.

KHAN, R.E.A. & AZID, T. 2011. Malnutrition in primary school-age children: A case of urban and slum area of Bahawalspur, Pakistan. *International Journal of Social Economics*, 38(9): 748-766.

Krebs smithsm, 1996. Fruit and vegetable in takes of children and adole scence in the united state. *The Lancet*, 371(9610)**:**417-440.

LABADARIOS, D. & STEYN, N.P. 2001. South Africa-based dietary guidelines – guidelines for who? *South African Journal of Clinical Nutrition,* 13(1): 5-6.

LEE, R. D. & NIEMAN, D. C. 2003. *Nutritional assessment.* 3rd ed. Boston: McGraw Hill.

MONYEKI, K.D., & CAMERON, N. & GETZ, B. 2000. Growth and nutrition status of rural South Africa 3-10 years old: The Ellisras Growth Study. *American Journal of Human Biology,* (12): 42-49.

Neme K and Olika E 2017) Knowledge and Practices of Complementary Feeding Among Mothers/Caregivers of Children Age 6 to 23 Months in Horo Woreda, Horo GuduruWollega Zone, Oromia Region, Ethiopia. J Biomed Res Rev 1: 1 (01-10).

Reinbott A, Kuchenbecker J, Herrmann J, Jordan I, Muehlhoff E, Kevanna O, Krawinkel M. A child feeding index is superior to WHO IYCF indicators in explaining length-for-age Z- scores of young children in rural Cambodia. Paediatr Int Child Health. 2015;35(2):124–34

Regassa, T., Ensermu, K., and Zemede, A, 2015. Ethnobotany of wild and semi-wild edible plants of Chelia District, West-Central Ethiopia. *Science, Technology and Arts Research Journal* 3 (4):122-134.

USAID. 2013. *Health education in Malawi: Helping create safer advancing behaviors.* [Online]. Available at <www.blog.usaid.gov/category/health/page/3>.

USAID, 2014. Investing in people: empowering new generations to improve nutrition and economic opportunities engine challenges in Ethiopia.

Ubeysekara NH, Jayathissa R, Wijesinghe CJ, 2015. Nutritional status and associated feeding practices among children aged 6-24 months in a selected community in Sri Lanka: a cross sectional study. Eur J Prev Med; 3(2–1):15–23. 55.

Ventura KA & Birch L, 2008. Does parenting affect children's eating and weight status? *International Journal of Behavioral Nutrition and Physical Activity. 5:15* doi:10.1186/1479- 5868-5-15

VORSTER, H.H., OOSTHUIZEN, W., VELDMAN, F.J. & BURGER, H.M. 1997. *The nutritional status of South Africans: A review of the literature from 1976-1996*. Durban. Health System Trust.

Wanga Y, Tokunaga M, Ikuta S,2009. Factors associated with nutritional status in children aged 6–24 months in Central African Republic-An anthropometric study at health centers in Bangui. J Int Health.; 24(4):289–98.

WHO. 2007a. WHO *Child Growth Standards: Length / Height -For – Age, Weight-For-Age, Weight-For-Length, Weight-For-Height and Body Mass Index-For-Age: Methods and Development.* Geneva: WHO.

WHO, 2010. Indicators for assessing infant and young child feeding practices part 3- country profiles. Geneva, Switzerland. Available at http://whqlibdoc. Who.int/publications.