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Prevalence of Wasting and Associated Factors among Preschool Children in Gobu Sayo Woreda, East Wollega, Ethiopia

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Abstract

Background: Nutritional status of children is an important indicator for child health and overall wellbeing. Acute malnutrition also known as wasting, it is characterized by a rapid deterioration in nutritional status over a short period. Ethiopia has a high prevalence of acute malnutrition, and one in ten children wasted.

Objective: The study was aimed to assess the prevalence of wasting and related factors among preschool children in Gubo Sayo, East Wollega, and West Ethiopia

Methods: A community based cross-sectional survey was conducted in Gubo Sayo Woreda, East Wollega, Ethiopia. Weight and height of the study children were measured and the socio-demographic characteristics of the subjects were collected using a questionnaire. Bivariate and multivariate logistic regression analysis methods have been used to identify factors of nutritional status preschool children.

Result: Finally, these study result shows 12.5% of preschool children were wasted. Among the socio-economic variables included in the study family income, family size, and family education were significantly associated with acute malnutrition.

Conclusion: The Acute malnutritional status of preschool children particularly in the study area is affected by family income, family size and family education. To intervene and improve this problem, community based nutrition program and Nutrition education should be established.

Keywords Wasting, Preschool, children, Associated factors

Introduction

Wasting (Acute malnutrition) defined as weight for height with Z-score below minus two standard deviations from the median weight for height of the standard reference population. Sever wasting; W/H below -3SD or less than 70% of the median NCHS/WHO reference values. NutStat is a program for recording and evaluating measurements of length, stature, weight, head circumference, and arm circumference for children and adolescents. It can be run as a standalone program or linked to an Epi Info View using make View. NutStat calculates percentiles, number of standard deviations from the mean (Z-scores), and in some cases, percent of median [1].

About two in five children in sub-Saharan Africa 10.5% of the children are wasted [2]. According to Ethiopian Demographic Health survey, 9 % are children are wasting [3]. In Oromia region prevalence of child malnutrition indicated that 9.6% of the children are wasted [4]. Determination of nutritional status of preschool children is important for their well development. However, malnutrition nutrition particularly wasting status and associated factors information is scanty for this study area. Therefore, this study is aim to give the present information on prevalence of wasting and its associated factors among preschool (3-6yrs old) children in the study area.

Material and methods

Study area and period: his study was conducted in Gubo Sayo District East Wollega which is located at about 266 kilometers from Addis Ababa (Capital City of the country) to west and from Nekemte about 66 kilometer to East, from September, 2014 to June2014.

Study Designs: a cross-sectional community based survey design was conducted to assess prevalence of wasting and related factors among preschool children that employs quantitative data collection method.

Source of population: preschool children who have lived in Gubo Sayo District, at least six month during the study period.

Study of population: All randomly selected preschool children were taken as the study population

Inclusion Criteria: All preschool children who are in a range age of 3-6 years who live in the study area at least six month

Exclusion Criteria: Those house hold head(care givers of preschool children) who severely ills the result fail to response the questionnaire

Sample Size Determination: The total sample size of 422 was determined by using single proportion population formula, using single population proportion formula, the prevalence of wasting is 50% (since there were no related studies conducted on preschool children in the Country), with 5% marginal error and 95%CI and a non response rate of 10%.

Sampling Technique: Systematic random sampling was employed. Survey was done prior to data collection to identify the total kebeles in Gubu sayo woreda. Then four kebeles were selected randomly by simple random sampling (lottery method). After the households with the eligible age groups children (between 3-6 years) were identified, a list was prepared that was used as a sampling frame.

Data collection Methods: Pretested and structured questioner was adapted and used from various nutritional status studies to collect the data. The questionnaire was translated from English to Afan Oromo (Local Language) and Afan Oromo questionnaire was used to collect the data using interview method and anthropometric measurements were also taken from study participants. Eight Health extension Workers data collectors and two degree holder health professionals (HO) supervisors were recruited to facilitate data collection. Weight was measured with minimum clothing and no shoes using a Salter spring scale and beam balance in kilogram to the nearest of 0.1 kg. Measurement of height was done children measured in a standing position in centimeters to the nearest of 1cm.   MUAC was measured on left mid upper arm to the nearest 1mm and the result was recorded. Only bilateral edema was considered an indicator of sever acute malnutrition (kwashiorkor). Edema was assessed by applying medium thumb pressure on upper side of both feet for three seconds. It was diagnosed if a bilateral depression (pitting) remained after the pressure was released.

Data processing and Analysis: First, the data checked for completeness and consistency for data entry and cleaning. Then, it

coded and entered in the computer using EPI-6 variables names. It has a program (Epi-Nut) to convert nutritional data into Z-scores of the indices; weight to height into consideration using NCHS reference population standard of WHO, 2011. The data was analyzed by using SPSS version 17.0 programs and strata version eleven (11.0) for analysis to got précised result; descriptive summary using frequencies, proportions, and cross-tabs used to present study results by frequency, tables and ratios. P-value less than 0.05 considered as statistically significant. Odds ratios at 95% confidence interval were used to see the significance of the study and the strength of association between study variables. However, biviarate and multiviarate logistic regression used to assess the association between the study variables and to control the possible confounding.

Ethical Clearance: The study protocol was approved by Ethical Clearance Committee of Wollega University College of Nutrition and Food Sciences. Permission letter was obtained from Gubu sayo district administrative office an. An official letter of co-operation was written to kebele administrative office. Information on the studies was given to the participants, including purpose and procedures, and benefits so encourage provision of accurate and honest responses. Potential participants informed that participation was voluntary and that information was kept confidential and private. For ethical purpose, verbal consent was obtained from the house head of participants. In order to protect confidentiality, names were not included on the written phase to phase questionnaire. Identification of an informant was only possible through numerical codes. The purpose of the study was explained and attached to the cover page of the questionnaires. All collected data were kept confidential and used for the study purpose only.

Result

Socio-demographic characteristics Preschool children in the study area.

From the total of 422 preschool children who were identified for the study from four rural kebeles in Gubu sayo district, 408 participated in the study making the response rate 96.68% and only 14 (3.32%) respondents refused to participate in the study. The majority of the preschool children were from parents living together 389(95.3%) followed by widowed family 10(2.5%).

Disaggregated by sex, about half, 206 (50.50%), of study subjects were females. The majority of the study subjects, 281(68.9%) were from protestant religion follower families followed by orthodox, 70(17.2%). The majority, 356(87.3%), of the respondents were Oromo by the ethnic group followed by Amhara, 45 (11%).

Table 1. Socio-demographic of preschool children in Gubu sayo District, East Wollega, Ethiopia.

Variables	Categories	Frequency(n)	Percentage (%)
Head of household	Male	391	95.8
	Female	17	4.2
Ethnic group	Oromo	356	87.3
	Amhara	45	11.0
	Tigre	7	1.7
Religion	Protestant	281	68.9
	Orthodox	70	17.2
	Muslims and other	57	13.9
Marital status	Married	389	95.3
	Divorced	9	2.2
	Widowed	10	2.5
Family size	1-3	13	3.18
	4-6	184	45.10
	>6	211	51.72

 The majority of the study subjects/ preschool children, 211(51.7%), were from the family having family size of greater than six, followed by family size between four and six, 184(45.1%). The mean age of preschool children was 4.47 ($\pm$ 1.05 SD) years with median age of 4 years. The majority, 389(95.3%) of child mothers and fathers were living together.

Nutritional status of preschool children in the study area

According to the NCHS WHO reference standard taking 2.S.D as cutoff point, the study subject who fail below –2 S.D   taken as Underweight, Stunted and wasted. Of the total respondents, 200 preschool children were stunted (72 moderate and 128 sever), 51 children were wasted (16 moderate and 35 sever) and 139 of preschool were under weight (58 moderate and 81 sever). In this study, there were no cases of over Nutrition.
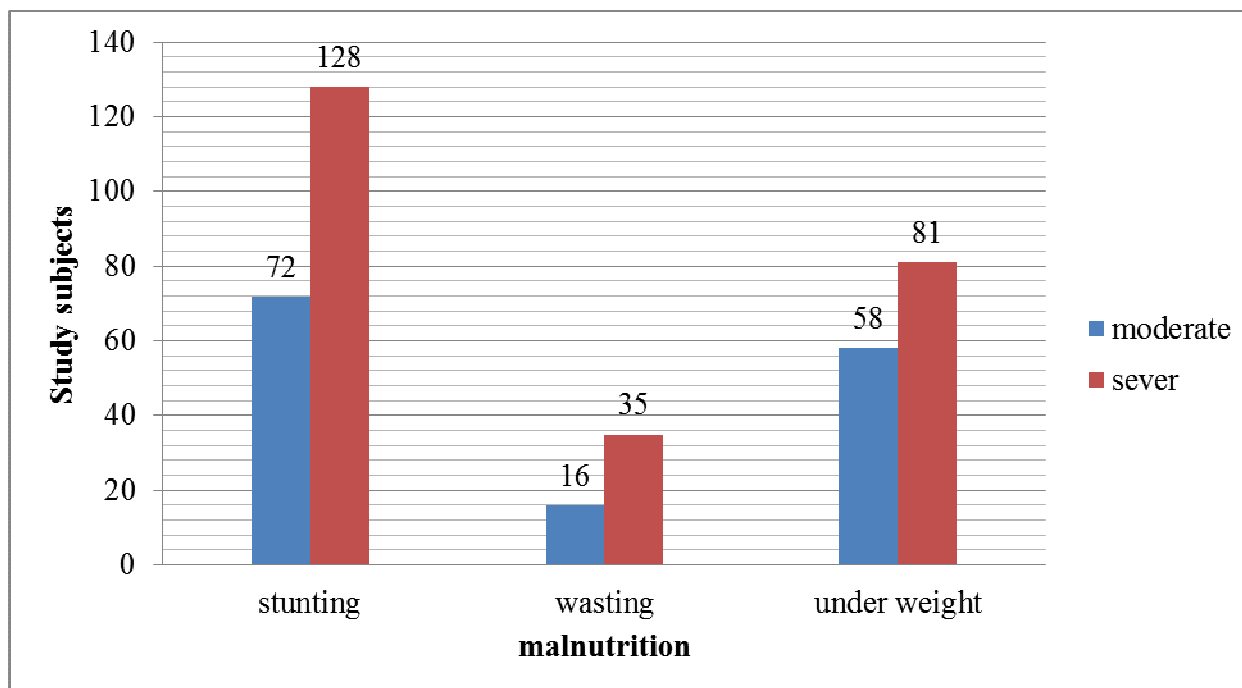
Figure 1. Malnutrition among preschool children in Gobu Seyo Woreda, East Wollega, Ethiopia

Nutritional knowledge of preschool child care givers

Regarding the knowledge of child care givers about the nutritional status the majority, 336(82.4%), of care givers define nutrition while, 212(52.0%), listed that the main source of carbohydrate were fruits and vegetables. One hundred seventy (41.7%) of the care givers answered that potatoes is the main source of protein while 178(43.6%) reported that the main source of vitamins as fruit.About half [191(46.8%)] of the respondents care givers answered as the main nutrient in oil as fat and more than half,241 (59.1%) of the care givers said that eating wide variety of a vegetable was one way of reducing risk of obesity. Furthermore about 270(66.2%) of preschool children care givers perceived carbohydrate as the main nutrient in honey and 240(58.8%) of the respondent care givers t the main nutrient in milk as protein and about 159(39%) said that was the main nutrient in vegetables was carbohydrate.

Factors associated with nutritional status of preschool children in the study area

The majority, 379(92.8) of preschool children cared by both their mothers and fathers. Regarding to occupational and educational status of family, 289(70.8%) of fathers and 294(72.1%) of mothers occupation were farmer where as 146(35.8%) of fathers educational level were junior school and 238(58.3%) of mothers were elementary school in their educational status. The majority, 301(73.8%) of respondents family average monthly income was within the interval of 600 – 1500 ET birr and husband took the predominance over the wife to decided how money earned was used. 375 (91.9%) of HHs had only one preschool children (3-6yrs) prior to the survey.

Variables		Nutritional status of preschool children		95%CI		
		Normal [n (%)]	Not normal [n (%)]	COR	AOR	P- value
Family size	**1-3**	3 (23.1)	10 (76.9)	2.78(.75-10.4)		.128
	4-6	66 (33.2)	123 (66.8)	1.68(1.12-2.54)		0.063
	>6	96 (45.5)	115 (54.5)	1.00		
Age of children				0.83(.69-1.01)		0.061
Vit. A	yes	148(4.5%)	217(59.5%)	1.00		
Supplementation	no	12(27.9%)	31(72.1%)	1.76[.88-3.54]		0.112
Exclusively breast	< 6 month	9(23.15)	30(76.9%)	.432(.199-.936)	1.12(.614-8.73)	.032
Feeding for	6 – 12 months	150(41.0%)	216(59.0%)	.600(.49-7.408)	.600(.49-7.408)	.690
	13-24 month	1(33.3%)	2(66.7%)	1.00	1.00	
A child feed	6 month	1(50%)	1(50%)	1.37(0.12-12.31)		.72
on breast for	7-12 month	4(15.4%)	22(84.6%)	1.833(.424-7.920)		.417
	13-24 month	150(43.2%)	196(56.8%)	.328(.142-.772)		.011
	25-36 month	6(17.6%)	28(82.4%)	1.00		
Frequency of	2 times	1(5.3%)	18(94.7%)	13.17(1.74-15.12	7.26(.83-63.39)	.073
Child's meal	3time	6(22.2%)	21(77.8%)	2.56[1.01-6.50]	2.94(1.01-8.60)	.049
Per day	>4 times	153(42.3%)	205(56.63)	1.000	1.00	
Nutrients mean	Vitamins	1(8.3%)	11(91.7%)	7.23(.92-56.48)		.060
	Carbohydrate	2(18.2%)	9(81.80%)	2.95(.63-13.86)		.171
	Protein	24(49.0%)	25(51.0%)	.682(.37-1.25)		.213
	Fruit and Vegetables	133(39.2%)	248(60.8%)	1.00		

Table 2: Relation between selected variable and nutritional status of pre-school children(n=408) in Gobu Sayo District East Wollega, Oromia Regional State, West Ethiopia June 2014.

In bivariate binary logistic regression analysis, it was found that from socio demographic factors the total family size was identified variable for multivariate analysis. From the dimension of the child characteristics age of the child was selected variable for further analysis. In addition to this, from child immunization and breast feeding history: Vit.A supplementation, for what months the child exclusively breast feed, For what months the child breast feed and For how many times the child get food per day were identified as the candidates for multivariate analysis and from enabling factors knowledge of child care givers about nutrition and family income per month also selected as the candidates of multivariable analysis at p-value less than 0.25[p<0.25] and those variables whose p- value less than 0.05 was significantly associated with nutritional status of preschool children.

In bivariate binary logistic regression analysis, months that the child did breast feed were significantly associated and number of months that the child breast feed increased was protective factor for malnutrition i.e. those

preschool children who did breast feed for 6-12 months were 5.58 times more likely at risk of malnutrition when compared with those preschool children breast feeding for 12-24 months [COR, 95%CI 5.58(1.64-19.01)].

In multivariate logistic regression, for how many months did the child breast feed and for how many times the child get food per day were significantly associated and independent predictors of nutritional status preschool children. Regarding to breast feeding, those preschool children who feed breast for 12-24 months were not at risk for malnutrition when comparing with those preschool children breast feed for 6-12 months i.e. preschool children who feed breast for 6-12 months were 1.833 at risk of malnutrition when compared with preschool children breast feed for 12-24 months [AOR, 95%CI 1.8331.(.424-7.920)].
Regarding to the frequency of food that the child get per day, those preschool children who get food two times per day were at risk of malnutrition when comparing with children who get food more than three times per day i.e. Preschool children who get food two times per day were 13.7 times more likely at risk of malnutrition when compared with preschool children who feed food more than four times per day [AOR, 95%CI 13.7([1.74-15.12)].

Discussion

This study indicated that malnutrition was a problem in Gobu Seyo Woreda Distract whereby it affects children among 36-72 months age specially preschool children as measured by the three indicators (underweight, Stunting, and wasting). The prevalence of stunting, underweight and wasting were about 49.0 %), 34.1% and 12.5%, respectively.

 The result of this study indicated that, the prevalence of stunting was a little higher as compared with a community cross-sectional study conducted in rural kebeles of Haramaya district, 42.2% stunted and prevalence of wasting was a little lower as compared with a community cross-sectional study conducted in rural kebeles of Haramaya district 14.1% were wasted [5].
This study shows that stunting among preschool children is 49.0%. This finding is higher than the study conducted on the prevalence of malnutrition of children age 6-59 months in Gimbi district which was 32.4% stunted [6]. This difference might be due to study period, study area, age difference of study subject and sample size. In this study, data was collected in September when most rural areas have shortage of food; this could probably one of the reasons for high prevalence of wasting in the area.

As compared to the national nutrition program of the country which indicated that under weight is 27%, this study finding a little bit higher. This discrepancy might be due the sample size difference, study areas, scope of the study, period of data collection and might be also characteristics and back ground of the care givers of the study subjects but this finding was much lower than the study done in west Gojam zone, 49.2% under weighted even though prevalence of stunting and wasting were higher than this study area [7]. This difference might be occurred due to socioeconomic status, sample size, study subjects and periods of data collection. EDHS 2011 indicated that the prevalence of stunting, underweight and wasted were 44%, 29% and 10% among children age 6-59 months respectively. The finding of this survey is almost comparable with these study findings which means 49%, 34.1% and 12.5 % respectively [8].

Regarding to pre-lacteal feeding, this study showed that 402(98.5%) of mothers did not gave the child pre-lacteal food/fluid immediately after delivery .i.e. only 1.5% of children care givers give pre-lacteal food immediately after delivery. This finding is very much lower than the survey conducted at western Gojam Zone, which revealed that proportion of children who were received pre-lacteal feeding were 48.3% [9] and the study conducted in Northern part of Tigray region reveled that, the commonly used pre-lacteal foods were butter (46.7%), sugar dissolved in water (15.1%) and plain water (14.5%) [10]. This discrepancy might be occurred due to the difference of study period i.e. now day children care givers should have good information about the disadvantage of pre-lacteal foods immediately after delivery.

Regarding to the first milk, 85.5% of care givers of study subjects gave their first milk within the hour of their birthday for their children and care givers study subjects did not squeeze out and throw the first milk from study participants. This result indicated that most of the study subjects got the first milk (colostrum) which contains all nutrients, use to build/ strengthen the immunity system of the child to protect them from diseases. This finding is higher than the survey conducted on prevalence of malnutrition and associated factors among children aged 6-59 months at Hidabu Abote District, in which 66.6% of children were initiated breastfeeding practice immediately after birth. Furthermore this study also revealed that, (89.7%) mothers of the respondents did exclusively breast feed their child for 6 months and majority of the mothers did breast feed their child up to in between 12months and 24 months. This result also almost comparable with survey conducted on prevalence of malnutrition and associated factors among children aged 6-59 months at Hidabu Abote District [11].

In this study, 0.5% of study participants MUAC measured were <11cm. From this finding we can conclude that most of the study subjects were not in severe malnutrition. This finding is lower than the study conducted on prevalence and determinants of child malnutrition in Gimbi district (4.8%) [12]. Regarding to the associated factors for nutritional status of preschool children, for how many months the child breast feed and how many times the child gets food per day were statistically significant association with nutritional status of preschool children.

These study findings indicated that preschool children who feed breast for 24-36 months were 0.272 times less likely at risk of malnutrition when compared with preschool children breast feed for 12-24 months. This finding in Prevalence   and Determinants of Child Malnutrition   In Gimbi district, who feed breast for >24 months were 68.5 more likely at risk of malnutrition when compared with preschool children breast feed for 12-24. Month [13].

Regarding to the frequency of food that the child get per day, those preschool children who get food three times per day were at risk of malnutrition when comparing with children who get food 4 times per day i.e. Preschool children who get food three times per day were 2.56 % more likely at risk of malnutrition when compared with preschool children who feed food four times per day. This finding in Prevalence of Malnutrition and Associated Factors Among Children Aged 6-59 Months at Hidabu Abote District,27.7% of children were get food three times per day were at risk of malnutrition [14].

Conclusion
Nutritional status of children is an important indicator for child health and overall wellbeing. It is well known that nutritional status in early life has severe consequences until adult stage. Investments in child health and in particular child nutrition have a potentially high pay-off for the long-run development of the individual and of the society Knowing prevalence of malnutrition and identify factors associate with malnutrition is a basic component in the intervention of malnutrition related health problem among preschool children. This study was aimed to assess prevalence of wasting and related factors among preschool children in Gobu Sayo Woreda, East Wollega, Western Ethiopia. This study indicates that 12.5% of preschool children were wasted. Among the socio-economic variables included in the study family income, family size, and family education were significantly associated with acute malnutrition. The Acute malnutritional status of preschool children particularly in the study area is affected by family income, family size and family education. To intervene and improve this problem, community based nutrition program and Nutrition education should be established. Regular follow up for severely mulnutritioned children should be strengthened and supplementary support from community is mandatory, to assist daily intake of pre-school children especially wasting.

Acknowledgement

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