Research Article

Stunting and Associated Factors among Children Age between 6-59 Months in Dibate District, Metakal Zone, Benishangul Gumuz Region, Western Ethiopia

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ABSTRACT

Background: Stunting is the major public health concern in Ethiopia and continues as the underlying cause of child mortality. However, there is a scarcity of information on the magnitude and determinant factors of stunting in the study area.

Objective: The study was aimed to assess the prevalence of stunting and its associated factors among children aged between 6–59 months in Debati District, West Ethiopia.

Methods: A community-based cross-section study was conducted from Jan 31 to Feb 20, 2018. A multistage cell anaemia sampling technique was used to select 575 study participants. Data were collected by trained data collectors is through a structured interview-administered questionnaire and by measuring the length or the height of the children to the nearest 0.1 cm. Height/length for age index was used to assess the stunting of children must aged between 6-59 months by using World Health Organization Growth Reference. Bivariable logistic regression analyses were done for seeing the association in between each independent variable and the outcome variable. After selecting candidate they are invariables by bivariable analysis at p-value<0.25, the final multivariable binary logistic regression model was fitted. Adjusted fits odds ratio along with 95%CI were estimated a measure the strength of the association of and identify factors associated with the stunting using Multivariable logistic regression analysis., variables with a value of p-value of <0.05 were considered as statistically significant.

Result: The prevalence of stunting among children aged between 6-59 months in this study area was 32.8% (95% CI (28.9, 36.9). Family size ≥ 5 (AOR 7.15, 95% CI (3.7, 13.9), low household dietary diversity score (AOR: 7.73, 95% CI (3.42, 17.5), duration of breastfeeding of children aged between 6-11 months (AOR: 2.83, 95% CI (1.14, 7.0), children who have no animal source food (AOR: 6.84, 95% CI ((3.73, 12.6), and being male (AOR: 1.88, 95% CI (1.12, 3. 17) were significantly associated with stunting.

Keywords: Stunting; Metekel zone; Ethiopia; Knowledge; Attitude

INTRODUCTION

Malnutrition is a state of which deficiency or excess of energy, protein and micronutrients. In general terminology malnutrition dose not only specific to protein-energy malnutrition but also it includes other nutrients like micronutrients. Malnutrition may classify in to Underweight, stunting, wasting and overweight and also under nutrition categorized in to acute and chronic malnutrition. Stunting is the outcome of inadequate nutrition over long periods. It starts in the womb with poor maternal nutrition, persists as a result of poor food quality and inadequate food intake during infancy and childhood. Also caused by frequent illness, poor care and access to health services which manifests through physical stunting. Globally (2013)

malnutrition was the underline cause of mortality for at least 3.1 million children as worldwide, before 2015 an estimated of 161 million under- five children are stunted as the result of persistent deprivation of the nutrients that are essential for child growth and development. But on the end of (2015) decreased to 156 million when we see as a glob stunting is a little bit decrease but still now it is critical problem in Asia and Africa.

According to report of (2015) more than half (57 percent) of stunted children under-five lived in Asia and more than one-third (37 percent) lived in Africa. In Ethiopia based on 2016 EDHS (Ethiopian demographic and health survey) the magnitude of stunting were 38% over all the country and 42.7 % in Benishangul Gumuz regional states

The causes of under-nutrition are numerous and multifaceted. These causes are link with each other and are hierarchically related. The immediate determinants are poor diet, diarrhea and age of breast feeding child that are themselves caused by a set of underlying factors; household dietary diversity, age of introduction of complementary food for child and access to safe water and healthy environment. These underlying factors themselves are influenced by the basic socioeconomic and political conditions. As part of the efforts to address above problems in Ethiopia the governments sets programs and initiatives targets that directly and indirectly contribute to reduce under-nutrition. These programs include more than 13 governmental sectors and "it increasing agricultural productivity; promoting girls' education; immunization; Integrated Management of Neonatal and Childhood Illnesses (IMNCI); Water, Sanitation and Hygiene (WASH); family planning, Prevention of Mother-To-Child Transmission of HIV (PMTCT), skilled delivery and delaying of pregnancy".

Even though, some studies which were conducted in different parts of Ethiopia indicates the existence of high prevalence of stunting among under five children, but To the knowledge of this researchers there is limited information in the current study area in particular concerning stunting and associated factors among under five children. Therefore, this study was aim to fill this information gap by assessing the magnitude of stunting and associated factors among Children Age between 6-59 Months in Dibate district Metekel zone Benishangul Gumuz western Ethiopia. Stunting may cause impaired neurocognitive development, and non-communicable disease and reduced productivity in later life and it is an important marker of chronic malnutrition. There is a short and long-term consequence of under nutrition in all its forms, during the critical periods of vulnerability like conception and child's second birthday where the consequences are irreversible. Chronic malnutrition during pregnancy and early life hood causes stunting and fail to grow of children.

MATERIALS AND METHODS

Study design, setting and period

A community-based cross-sectional study was conducted at Dibate district Metekel Zone Benishangul Gumuz Region, Western Ethiopia. Metekel Zone is one of the three Zones in the Benishangul-Gumuz Region and the administrative center is Gilgil Beles. Dibatea district is one of the 7 districts in in the Metekel Zone. This district bordered by Mandura Zone on the north, by Amhara Region on east, by Kamashi Zone on the south, by Bulen Zone on the west and on north western by Welega Oromia reign.The 2007 national census reported a total population for this district of 66,654, of whom 33,452 were men and 33,202 were women; 7,399 or 11.1% of its population were urban dwellers. The expected number of under-five children is 14,819 (Dibate district health office 2016). This study was conducting from January 31 to February 20, 2018 at Dibate District, Metekel Zone, Benishangul Gumuz Region, Western Ethiopia [1].

Data collection instruments

The questionnaire was adapted from different literatures and guideline. Data were collected by anthropometric measurement and face to face interviewing eligible subjects using a structured questionnaire. The questionnaire includes questions about socio-demographic, economic variables, Household Dietary Diversity Score (HDDS), IDDs (children dietary diversity score), wealth index and nutritional status of the children. The questionnaire was initially developed in English and translated into Afaan Oromo and Amharic which is spoken by the majority of population in the study area by language expert and then the questionnaires was translated back to English language by individual who was blind to the original version and fluent in English and local languages. Data on date of birth of children was taken from written evidence on birth certificate or immunization card and if not available, data given by mothers or caregivers was used for those who have no document and crosschecked from family folder. The household dietary diversity was measured by a qualitative recall of all foods consumed by household during the previous 24 hours. Before interview the interviewer should first determine whether the previous 24 hour period was "mean special event " or "normal" for the household. If it was a special occasion, such as a funeral or feast, or if most household members were absent, another day should be selected for the interview and also fasting days and months should be avoid. The information will be obtained from mother or care giver or who prepared foods for family on previous day. Thus, certain food groups was aggregated to calculate Household Dietary Diversity Score (HDDS) and the mean HDDS was used to classify household food intake as adequate or not [2].

The data on dietary diversity was adapted from FANTA 2006 standardized questionnaire for children. This was based on the mother's recall of foods and given to her child in the past twenty-four hours (24 hrs) before the survey. The mean IDDs was used to classify children food intake as adequate or not. To measure the outcome variable height or length was measured to the nearest 0.1 centimeters. Length will measured by using horizontal wooden length board with movable wooden base and headpiece and height was measured by using vertical wooden length board. The heels, buttocks, scapulae, and head are positioned in contact with the vertical backboard [3].

Data quality control

To assure the quality of the data the following measures were taken pretesting of questionnaire was employed on 5% of the study sample among not selected kebele in to study. This was help for further clarification of instruments and to help data collectors to familiarize with the instrument and to estimate the time needing, the structured questionnaire was first be preparing in English and then translating into the local language of the respondents Afaan Oromo and Amhara and again translating back to English to increase the questionnaire consistency. Both the data collectors and facilitators should be able to speak the local languages.

Four days training was giving for data collectors and supervisors by Principal Investigator (PI) on the instruments, method of data collection, how to take anthropometric measurements, ethical issues and the purpose of the study. The data was collecting by health extension worker this may reduce social desirability bias regarding the wealth index category because the health extension worker know most information of the household. To minimize the intra and inter- observer's variability of the data collector's relative Technical Error of Measurement (%TEM) was calculated during training among 10 Children Age between 6-59 Months to minimize random anthropometric measurement error. The accepted relative technical measurement errors for intra-observers were less than 1.5% and while for inter- observers were less than 2%. Data collectors' accuracy of anthropometric measurements was standardized with their trainer during training and pretesting. Data collectors were measuring at least two separate anthropometric measurement, supervision was done by principal investigator and supervisor [4].

Statistical analysis

The collected data were checked for its completeness and consistence. Then each completed questioner was assigned a unique code and double entered on to Epi Data 3.1 software and cleaned for implausible and missed values accordingly. The nutritional status of children was generated by using WHO Anthro version 3.1.0 software [5]. For further analysis the data were exported to SPSS version 22 software. Descriptive analyses were carried out to explore the socio-Demographic characteristics of the respondents by using frequency tables. The outcome variable was recoded to dichotomous outcomes as stunted or not. Stunted Children Age between 6-59 Months Z score < 2SD was coded as '1' and those with normal Z score was coded '0'. The independent variables were coded based on previous related studies and distribution of responses in the data (Figure 1).

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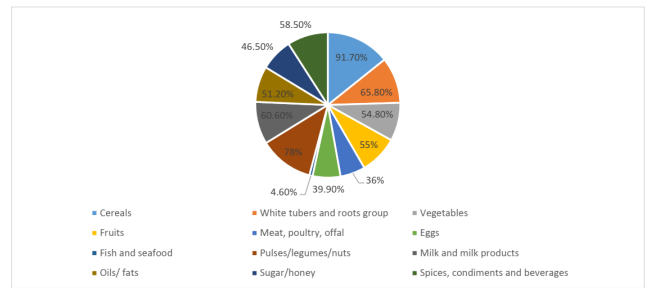

Figure 1: Proportion of household who consumed different food groups in last 24 hrs. preceding the date of survey in Dibate district Metekel zone Benishangul Gumuz region 2018.

RESULTS

Socio-demographic characteristics

In this study, the data were collected from 564 under-five children and their mother or child caregivers who are responsible for food preparation making a response rate of 98%. The mean (± SD) age of the mothers was 30.4 ± 5.76 years- old. Five hundred forty nine (97.3%) of the mothers were currently married, and 36.7% (207) attended formal education [6-9]. The majority of 96.1% (542) of households were headed by a male. On environmental health information majority of the households have latrine (97.5%) and uses safe water 98.9 % (Table 1).

Dietary diversity scored by children

The minimum and maximum children's dietary diversity scores of the past twenty-four hours of the study were 1 and 7 with the mean (± SD) score 3.4 ± 1.79. More than half of children, 54.6% had a Dietary Diversity Score (IDDS) less than four.

Table 1: Sample size determination for the study on prevalence of stunting and associated factors among under five children in Dibate District, Metakal Zone, Benishangul Gumuz region, Western Ethiopia, 2018.

S.No	Factors	Non-Exposed %	Exposed %	Cl %	Power	Ratio	AOR	Calculated sample size
1	Good Child	43.33	26.2	95	80	1	0.96	435
2	Mothers educational states	61.2	27.7	95	80	1	0.74	132
3	Child diarrhea in the past two week	83.25	16.75	95	80	1	1.36	36

In this study, factors that are associated with stunting in bivariable analyses were paternal education level, family size, 6-59 months in the study area were: Family size ≥ 5, male children in sex, low household dietary diversity, duration of breastfeeding and no consuming animal food source. Dibate district health office with collaboration of any NGO should work on any of Children Age between 6-59 Months stunting prevention strategies should provide training for any community

Factors associated with stunting among children aged between 6-59 month

In this study, factors that are associated with stunting in bivariable analyses were paternal education level, family size, household head, and age of breastfeeding child, child sex, IDDs (children dietary diversity score), HDDs, household wealth index, and animal source food (Table 2).

All variables which had an association in the bivariable analyses with a P-value of less than 0.25 were included in multivariable analysis [12].

Table 2: Proportion of children age between 6-59 months who consumed different food groups in the last 24 hrs preceding the date of the survey in Dibate district Metakal zone Benishangul Gumuz Region 2018.

Food group	Frequency	Percent
Grains, roots or tubers	561	99.5
VitaminA-rich plant foods	224	39.7
Other fruits or vegetables	215	38.1
Meat, poultry, fish, seafood	99	17.6
Eggs	196	34.8
Pulses/legumes/nuts	301	53.4
Milk and milk products	323	57.3

CONCLUSION

Based on the WHO cut off point, stunting was highly prevalent and public health important among children age between 6-59 months in Dibate district, Metekel zone, Benishangul Gumuz region. The predictors of stunting among children age between 6-59 months in the study area were: Family size ≥ 5, male children in sex, low household dietary diversity, duration of breastfeeding and no consuming animal food source. Dibate district health office with collaboration of any NGO should work on any of Children Age between 6-59 Months stunting prevention strategies should provide training for any community

health workers and create awareness on the Children Age between 6-59 Months stunting. Particularly health extension worker with collaboration of other community: should conduct continuous nutritional assessments of Children Age between 6-59 Months and counselling or nutritional education to their mother or care giver regarding to Children Age between 6-59 Months feeding.

ETHICAL ISSUE

A permission latter obtained from Haramaya University was submitted to Dibate District health office. Informed voluntary written and signed consent was obtained from each child's mother or care giver after explaining the study, purpose, procedure and duration, possible risks and benefits of the study. And then confidentiality of responses was maintained throughout the research process by giving code for participant and Personal privacy and cultural norms was respected. If severely ill children were during data collection the researcher was link them to responsible body.

COMPETING INTERESTS

The author declares that there is no competing interest.

ACKNOWLEDGMENTS

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