

Trend of Malnutrition in Tigray Region from 2011/12-2014/15

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Abstract

Background: Malnutrition commonly affects all groups in a community, but infants and young children are the most vulnerable because of their high nutritional requirements for growth and development. Every minute, four children in our world die of and 90% of them live in sub-Saharan Africa and South Asia. Of those children that survive, one in four are stunted, their physical and mental growth permanently damaged by the lack of nutritious food.

Objective: To assess the trend of malnutrition in Tigray Region from 2011/12-2014/15.

Method: The main aim of this study was to assess four year trends of malnutrition morbidity and mortality in Tigray region using cross-sectional study design from patients' registration and health management information system data. The data was entered and coded to Epi Info and exported to SPSS version 21 for statistics analysis.

Result: A total of 62,087 malnutrition cases were detected within four year. Of those 54.3% are male. Almost 88.4% are children under 5 years old. The trend of malnutrition Moderate Acute Malnutrition (MAM) morbidity were decreased 55% within four year, but the morbidity of Sever Acute Malnutrition (SAM) is still have no change or stagnant. Further the mortality of SAM was increased by 2 times.

Conclusion and Recommendation: Even though the trend of MAM of the four year is decreasing the morbidity and mortality of SAM is alarming which needs qualified management at respective hospitals and Health centers to decrease the mortality.

Keywords: Malnutrition; Trend; Tigray; Ethiopia

Abbreviation:

SAM: Sever Acute Malnutrition; MAM: Moderate Acute Malnutrition; BMI: Body Mass Index; MUAC: Mid Upper Arm Circumference; SPSS: Statistical Package for Social Sciences; TRHB: Tigray Regional Health Bureau.

Introduction

Background

The term malnutrition generally refers both to under-nutrition and over-nutrition, but this project use the term to refer solely to a deficiency of nutrition. Malnutrition commonly affects all groups in a community, but infants and young children are the most vulnerable because of their high nutritional requirements for growth and development [1].

Every minute, four children in our world die of and 90% of them live in sub-Saharan Africa and South Asia [2,3]. Of those children that survive, one in four are stunted, their physical and mental growth permanently damaged by the lack of nutritious food. But in Ethiopia nearly one in two (44%) of Ethiopian under five children are being

stunted, 10% wasted, and 29% underweight according The Ethiopian Demographic Health Survey report [2,4].

Not only will the goal of the 1996 World Food Summit of halving the number of hungry people by 2015 not be reached, but more alarming, the number of hungry people is in fact increasing by about 4 million every year [2].

Malnourished children do not cry; they will just grow up mentally retarded, stunted or even blind. If occurs in combination with diarrhea and/or malaria, this may lead to high infant mortality rates. It is not only an immediate issue affecting child health It also affects long-term educational achievement and national economic growth [5].

Many factors can cause, most of which relate to poor diet or severe and repeated infections, particularly in underprivileged populations. Inadequate diet and disease, in turn, are closely linked to the general standard of living, the environmental conditions, and whether a population is able to meet its basic needs such as food, housing and health care [1].

Rational and significance of the study

Malnutrition is one of the main public health problems while the service and the attention given its management are very high. Similarly, in the absence of reliable population registration in developing countries, HMIS data is the only available window to

observe the disease trend in the community through all governmental health centers and hospital registration or statistics.

Moreover, there is a debate in trend of malnutrition regarding to its exact magnitude of morbidity and mortality. Due to inconsistencies in both research methods and registries, health professionals and policy makers are challenged in decision making regarding malnutrition hence, this would help as an input so.

Methodology

Study area and period

The study was conducted in Tigray region which covers an area of 54,569.25 km² and its elevation is 600-2700 meters above sea level. The region has 20 public hospitals and 204 health centers and 712 health posts with total population of 6,690,003 [6-10].

Study design

A secondary data analysis from August 2011 up to August 2015 was used to address the trend of malnutrition morbidity and mortality.

Sample size

All the four-year data of public hospitals and health centers of Tigray region were taken.

Data collection procedures and instrument

Data extraction tool was developed to extract data from HMIS registration. Diagnosis have made based on IMNCI guideline by health professionals using anthropometric measurements including MUAC, weight and height of children and history and physical examination including laboratory. Anthropometric indices including stunting, underweight, and wasting are respectively defined as height for age, weight for age, and weight for height at least 2 standard deviations below the mean for children according to reference growth charts from the National Center for Health Statistics (NCHS)/Center for Disease Control and Prevention (CDC, 2000). But for >5 year the diagnosis was made by BMI by excluding pregnant women which is detected by MUAC.

Data analysis

First the data was entered and coded to Epi info version 3.5.4 and exported to analyses in to SPSS version 21 window7. Data analyses included Descriptive statistics was used to describe participants' demographic characteristics and trend of malnutrition mortality and morbidity.

Data quality management

Data was extracted by statistician from HMIS data of Tigray region with close supervision.

Ethical clearance

Institution Review Board (IRB) of Aksum University, College of Health Science was reviewed the protocol to ensured full protection of the rights of study subjects. Following the approval by IRB of Aksum University, IRB of Tigray Region Health bureau also approved and official letter of co-operation was written to the directorate of health

information system. In order to keep confidentiality of any information obtained, the data collection procedure was treated anonymous.

Availability of data and material

The data and materials used for analysis and draw conclusion are available at the supplementary data.

Result

Scio-demographic

The study was conducted in all public hospitals and Woreda health offices (170 health center). All of the data were complete and readable hence none is rejected. A total of 62,087 malnutrition cases were detected within four year. Of those 54.3% are male. Almost 88.4% are children under 5 years old. (Table 1).

Variables		Age			Total
		<5 Year	5-15 year	≥ 15year	
Sex	Male	29855	2931	899	33685
	Female	25056	2190	1156	28402
Total		54911	5121	2055	62087

Table 1: Socio-Demographic result of Participants.

Trend of malnutrition morbidity in tigray region

The trend of malnutrition (MAM) decreasing 55% within four year, but the morbidity of SAM is still having no change or stagnant. Even with in intra year SAM were increased unlike MAM which shows decreasing every year. The 2014/15 magnitude of MAM is 2 times lower than 2011/12 (Figure 1).

Trend of malnutrition mortality in tigray region

Like morbidity, the mortality of MAM is decreasing every year but, the magnitude of SAM mortality of 2013/14 is 2 times higher than 2011/12. Even though there is intra year variation within four year the mortality of SAM indicates increment. But the mortality of MAM shows Vice versa of SAM (Figure 2).

Discussion

Considering the limitation of data from the HMIS source registry and lack of studies regarding the trend, it is tried to use the all the available data to evaluate the trend of Malnutrition in Tigray region. HMIS registration is one potential source for scientific reports regarding the trends of morbidity and mortality in developing countries like Ethiopia.

In this study the magnitude of MAM is higher than SAM. This may be related with the Ethiopian health policy since health extension workers are engaged in community screening of malnutrition at health post service and through home visit. The age distribution also indicate under-5 year which is the main package of health extension workers. This result is in line with the result of Tanzania Demography and Health Survey of 2010 [11-12].

The study indicates there is good decline in MAM morbidity around two times within four year. This is similar with study conducted by UNICEF which shows general decline in levels of child malnutrition globally [13,14].

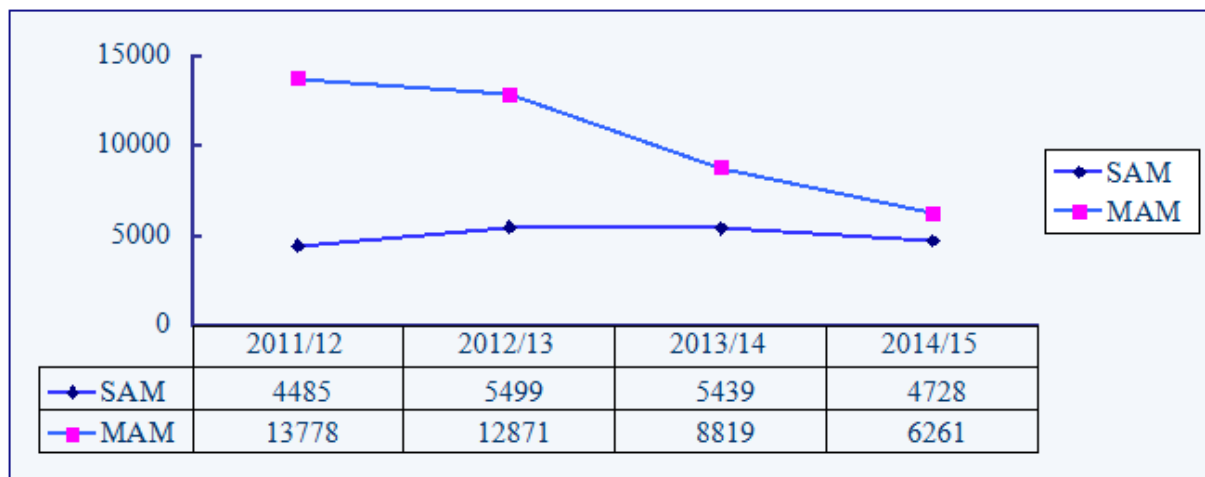


Figure 1: Trend of MAM and SAM Morbidity in Tigray Region from 2011/12-2014/15.

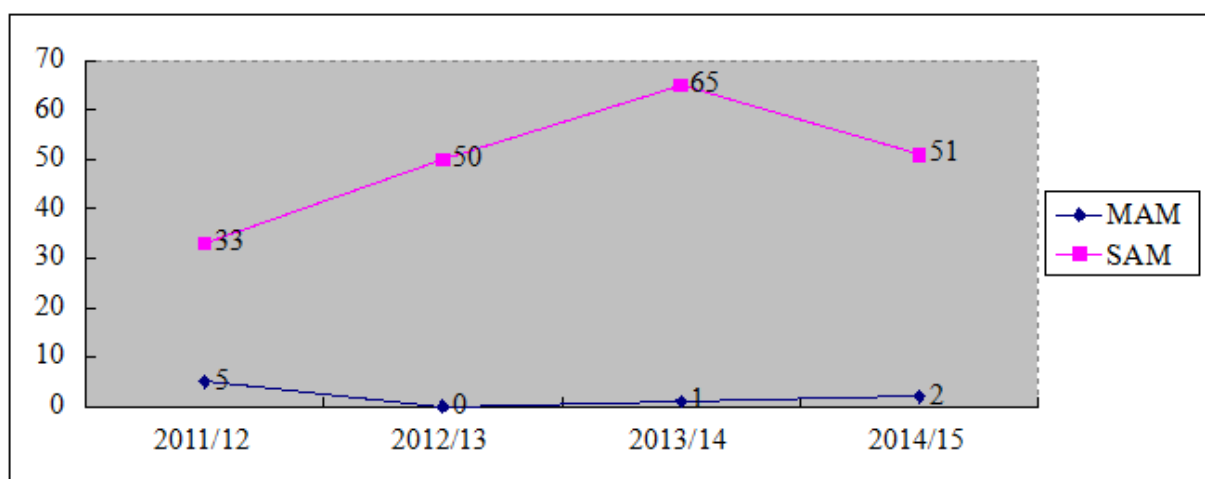


Figure 2: Trend of MAM and SAM mortality in Tigray region from 2011/12-2014/15.

Furthermore, other study from analysis of global trends in the prevalence of showed a decline from 34% to 27% [13]. This decline is comparable with this finding. More over study from China also shows decreased prevalence from 1989 to 2000 [15].

But in Some Africa stunted and underweight children were increased from 40 million to 45 million, and from 25 million to 31 million in the same period respectively [14]. Similarly, Study in Kenya also show slow progression of under-5 mortality [16].

The trend of SAM mortality in this study indicates increased every year. This may be related with quality of SAM management or poor registration system. More or less, it may be related with NGO involvement on management of SAM on previous years may contribute for decreasing mortality.

Conclusion and Recommendation

Even though the trend of MAM of the four year is decreasing the morbidity and mortality of SAM is alarming which needs qualified management at respective hospitals and Health centers to decrease the mortality. Similarly, community screening and appropriate referral is mandatory for effective management and plan for decreasing mortality.

Limitation of the Study

Data from health facilities are potentially useful for monitoring time trends in the number of malaria cases and deaths but have severe limitations. Analysis was based on routinely collected malnutrition data from public health institution. There is a possibility of both under and over reporting of malnutrition cases due to other disease which mimic with malnutrition. Since retrospective data were used its

accuracy and completeness could not be fully verified. Reporting from facilities to districts and from districts to the ministry of health varies in its completeness and timeliness from institution to institution and often does not include non-government facilities.

Competing Interests

In this manuscript, there is no any competing interest declaration from anybody or organization about finance, and non-financial competing interests such as political, personal, religious, ideological, academic, intellectual, commercial or any other.

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Authors Contribution

Hadgu Gerensea was involved in Title selection, Data Entry and analysis, drafting of the manuscript, approved the final manuscript.

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