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Original research article

Nutritional status of children under five years of age in Shire Indaselassie, North Ethiopia: Examining the prevalence and risk factors

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ABSTRACT

Malnutrition among children under five years of age is a chronic problem in most regions of Ethiopia, including the study region (Tigray). This study estimated the prevalence and identified the key risk factors of malnutrition in children under five years of age in Shire Indaselassie Town, North Ethiopia. Data were collected from 316 children aged under five and their mothers using quantitative survey and standard WHO protocols, and subsequent analysis was made using Emergency Nutrition Assessment (ENA) and SPSS software packages. The study estimated the prevalence of malnutrition and investigated the effects of demographic, socioeconomic, child health and sanitary conditions, feeding and dietary variables on malnutrition: stunting (low height for age), underweight (low weight for age) and wasting (low weight-for-height) among under-five children. Logistic regression was used to identify the determinants of malnutrition in the study area. The result showed that 56.6% of the children under age five have chronic malnutrition, are underweight (20.9%) and wasting (4.1%) with a mean z-score of -2.2 , -1.0 and 0.3 , respectively (i.e. average deviation, from the healthy and well nourished standard reference children of the same age). Children's age, maternal education, maternal employment, child weight at birth, mothers' body mass index and early initiation of breast feeding were the major factors associated with stunting among children. The main contributing factors of underweight among the children were found to be household size, marital status of mothers, decision on income allocation, contracting diarrhea two weeks preceding the survey, early initiation of breast feeding and bottle feeding. The study concluded that chronic malnutrition in the study area is still a major concern that needs timely intervention by governmental and non-governmental organizations.

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Introduction

Malnutrition is one of the most important health and welfare problems among infants and young children in Ethiopia [1]. Even though the prevalence of chronic malnutrition in the last eleven years has decreased significantly, children under five years of age still experience one of the highest rates of malnourishment in the world [1], that is, 44% of the children under age of five were stunted with a greater regional differences ranging from Amhara (52%), Tigray (51%), above the national prevalence to the lowest level in Addis Ababa (22%) and Gambella (27%) [1].

There is a consensus among many researchers that a complex set of factors determine malnutrition among young children while inadequate and inappropriate dietary intake and infectious diseases appear the immediate/direct causes. Also, numerous socioeconomic and demographic factors influence feeding patterns and health of children [2], which in turn results in decreased food intake, poor diet quality, and a high burden of early childhood infections that contribute to significant growth faltering, morbidity and mortality. The factors leading to any Anthropometric deficiency (stunting, wasting, and underweight) differ from one context to the other. For example, according to the recent national report [1], the prevalence of stunting increases as the age of children increases and male children are slightly more likely to be stunted than female children (46% and 43%, respectively). Based on national data, Patricia [3] indicated that environmental factors (access to water and sanitation at the community level) were key predictors of underweight children in Ethiopia. Another study based on a large sample size drawn from five zones of Southern Ethiopia by Gugsu [4] determined that women's education, household economic status, age of the child and infant feeding practice were the significant predictors of stunting.

Despite few studies done at national and regional levels, the prevalence and risk factors at sub-regional or community level have been insufficiently emphasized, which makes interventions difficult in such circumstances. For example, according to the 2011 DHS [1], the prevalence of stunted, wasted and underweight children in the region (Tigray) was 51%, 10.3% and 35%, respectively, indicating that there are several zones and districts with higher prevalence rates than the regional average. Therefore, this study investigated the current prevalence and key risk factors of malnutrition among children under five years of age in Shire Indaselassie District, North West zone of Tigray. This study, thus, posed and addressed the following two questions: (1) What is the prevalence of stunting, wasting and underweight of children 0–59 months of age in the study area? (2) What are the key predictors of stunting and underweight among children 0–59 months of age in the study area?

Conceptual framework

The conceptual framework in this study (Chart 1) was adapted from the United Nations Children's Fund framework [2,5] and the subsequent extended model [6]. The framework is comprehensive, incorporating both biological and socioeconomic

causes, and encompasses causes at both micro and macro levels. It breaks the status and determinants of child malnutrition into three levels of causality: immediate determinants (the most proximate level), underlying determinants, and basic determinants.

The immediate determinants of child nutritional status manifest themselves at the level of the individual human being. They are dietary intake (energy, protein, fat, and micronutrients) and health status. These factors themselves are interdependent. A child with inadequate dietary intake is more susceptible to disease. In turn, disease depresses appetite, inhibits the absorption of nutrients in food, and competes for a child's energy [5].

The immediate determinants of child nutritional status are, in turn, influenced by four underlying determinants manifesting themselves at the household level. These are socioeconomic and demographic characteristics, healthy environment, proper sanitary conditions and infant and young child feeding practices. The underlying factors are also interdependent to each other as depicted in the dashed red arrows which will not be focused in the analysis except their influence on nutritional status of children (Chart 1).

Materials and methods

The study setting

The research was conducted in Shire Indaselassie, North West zone of Tigray Region, Ethiopia. Northwestern (or "Semien Mi'irab") is one of the five zones in Tigray. According to the 2007 Census conducted by the Central Statistical Agency of Ethiopia (CSA), this zone had a total population of 736,805, of which 368,254 were men and 368,551 women. About 15% of the population live in urban areas while the majority live in rural areas. The majority of its habitants are Ethiopian Orthodox Christians (85.1%) while 14.7% are Muslims and 0.2% follow other religions [7]. The study town is 1087 km north of the capital, Addis Ababa and 309 km north west of the regional capital, Mekelle. Shire Indaselassie is an urban area surrounded by Kebeles (villages) of Tahtay Koraro Woreda, and has a rapidly growing population of 47,284, of which 21,867 were men and 25,417 were women. A total of 6144 of the population were children 0–59 months of age [7].

Type and source of data and study design

Data were collected from 325 sample households by interviewing randomly selected mothers/care givers. The study employed cross-sectional descriptive survey (where information was collected at specific point in the lives of the respondent) using qualitative and quantitative approaches.

Sampling design

The sample size computation considered the number of children 0–59 months of age in the area which was 6144 [7], 5% precision level, 51% regional prevalence of malnutrition for children under age 5 [1] and 0.85 design effect for the different

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