American Scientific Research Journal for Engineering, Technology, and Sciences (ASRJETS)
ISSN (Print) 2313-4410, ISSN (Online) 2313-4402

http://asrjetsjournal.org/

Children Mortality in Zimbabwe

Aseel M. Almansour*

Department of Statistics, School of Science, King Abdul Aziz University, Jeddah, KSA
Email: Aseel_almansour@yahoo.com

Abstract

The objective of the study was to contribute to the literature of the topic of malnutrition by investigating on the effect of micronutrient deficiencies on mortality for children under age-five in Zimbabwe 2015 dataset. It was also important to recognize the links between child mortality with micronutrient deficiencies and other related factors such as breastfeeding, mother's level of education, area of residence, and wealth index. Malnutrition increases morbidity and mortality and affects physical growth and development. Sub-Saharan Arica is among developing countries were children are more than 14 times more likely to die before age five. Zimbabwe is among the regions of Sub-Saharan Africa that has one of the worst malnutrition rates in 15 years, as nearly 33,000 children are in urgent need of treatment for severe acute malnutrition especially for children under age-five1. A secondary analysis of data was conducted using data collected in a Zimbabwe 2015, Demographic and Health Survey (ZDHS). The surveys provide updated estimates of basic demographic and health indicators. We considered factors that have been reported to be associated with children mortality in the literature. Unadjusted odds ratios (OR) and adjusted odds ratios (AOR) together with their 95 confidence intervals (CI) are reported. The overall proportions of children who were not alive were 25.5% of 10223 from the ZDHS dataset. In bivariate and multivariate models, the risk factors for suicidal ideation were feeling mother breastfeeding, vitamin A deficiency, Iodine deficiency, mother's level of education, area of residence, and wealth index. all the mentioned factors considered risks were significantly associated with children mortality.The rate of children mortality was high among children in Zimbabwe and intervention from national and international agencies is essential to improve the sustainable improvement of nutritional status for children and reduce the number of mortality for children under age-five.

Keywords: malnutrition; Children Mortality; Zimbabwe.

---

* Corresponding author.

1. Introduction

Malnutrition has been shown to be a major problem in various parts of the world, including that of Sub-Saharan Africa, where children are more than 14 times more likely to die before the age of five. Zimbabwe is among the countries of Sub-Saharan Africa that has one of the worst malnutrition rates as determined within the last 15 years, as nearly 33,000 children are in urgent need of treatment for severe acute malnutrition especially for children under age-five1. This has been determined through medical established knowledge.

It is becoming increasingly clear that some of the effects of malnutrition are the result of specific nutrient and micronutrient deficiencies. The World Health Organization "considers that poor nutrition is the single most important threats to the world's health" [3]. The impact of malnutrition and deficiencies in micronutrient usually falls mainly on children under five years of age [1]. 5.9 million children under the age of 5 years died in 2015[1], for example, and an early study showed that malnutrition contributed to approximately 55% of all deaths of children aged 1-4 in developing countries [2]. Among developing countries, children in sub-Saharan Africa are more than 14 times more likely to die before age five [10]. For the countries south of the Sahara, most recent estimates of under-five mortality are about 170 deaths in the first five years of life for every 1000 live births [11,4]. Child malnutrition remains one of the Africa's most fundamental challenges for improved human development [4]. This has been shown repeatedly throughout the accompanying literature [7,8].

Zimbabwe is among the nations that have one of the worst malnutrition rates from data gleaned in the last 15 years, as nearly 33,000 children are in urgent need of treatment for severe acute malnutrition [1,10]. In Zimbabwe, 2.1 percent of children under-five years of age have severe acute malnutrition. This is slightly higher than the international threshold of 2 percent required for an emergency response [11]. More effort must be targeted to improve the conditions for children in Zimbabwe and further research is required to measure the effect of nutrients on child mortality occurrence. The study done by Bain and his colleagues [6] showed that indicators as malnutrition, poverty, lack of education amongst women, non-breastfed children contributed to deaths in children worldwide. The World Health Organization (WHO) in 2016 reported that "children are at greater risk of dying before the age five if they are born in rural areas, poor households, or to a mother denied basic education1". Also, the study done by Shekar and his colleagues[4] presented the statistical significance of children mortality increase with a person's residence type, place of residence (whether is rural or urban) can yield another important indication of children poor nutrition in Africa.

In order to reduce children mortality and explain the prevalence in Zimbabwe region, researchers need to understand the determinants of the increased rate of child mortality [13]. Thus, the current objective of the study was to contribute to the literature by using 2015 Zimbabwe Demographic and Health Survey (ZDHS) data to investigate how mortality of children under age five was affected by breast feeding, Vitamin A, zinc, iodine, mother's level of education, area of residence, and wealth index.

2. Methods

A secondary analysis of data was conducted using data collected in a Zimbabwe 2015, Demographic and Health

Survey (ZDHS). The surveys provided updated estimates of basic demographic and health indicators. The research considered factors that have been reported to be associated with children mortality in the literature. The unadjusted odd ratios (OR), as well as adjusted odd ratios (AOR) combined with 95 confidence intervals (CI) were detailed.

The present study used information from the 2015 Zimbabwe Demographic and Health Survey (ZDHS). This in turned was gleaned from survey information created by Zimbabwe National Statistics Agency (ZIMSTAT), taken from a nationally representative sample of 11,000 households conducted over the course of a few months in 2015. The sample was completed in order to represent data for most indicators for Zimbabwe's ten provinces: Harare, Mashonaland East, Mashonaland West, Matabeleland North, Matabeleland South, Manicaland, Mashonaland Central, Midlands, Masvingo, and Bulawayo. The 2015 ZDHS sample was completed with a stratified, two-stage cluster structure, with EAs as the sampled portion for the first component studied.

The 2015 ZDHS sample included 400 EAs—166 in urban areas and 234 in rural areas. The second stage of sampling included the listing exercises for all households in the survey sample. A complete listing of households was conducted for each of the 400 selected EAs in March 2015. Maps were drawn for each of the clusters and all private households were listed. The discovery did not include living arrangements such as schools, military barracks, hospitals, or police departments. A representative sample of 11,196 households was selected for the 2015 ZDHS that provided a more expansive data sampling for the study.

The 2015 ZDHS was a follow-up survey to the 1988, 1994, 1999, 2005-06, and 2010-11 ZDHS surveys that provided updated estimates of basic demographic and health indicators. This research was therefore interested in the following variables: children under five years of age and their mortality rate, breastfeeding status, Vitamin A supplementation, Iodine deficiency, Zinc supplementation, the mother's level of education, area of residence, and wealth index. The groups in this portion of the research were women from 15 up to 59 years of age. These women were also either permanent residents of the locations or visitors who stayed in the household the prior to the survey and were available to conduct interviews with and had children aged up to five years who were then selected randomly within these homes.

Descriptive statistics for children under age five-year mortality of the sample were conducted through frequencies and cross tabulations using the SPSS statistical package. Based on research that indicated that the relationship between malnutrition and children mortality cannot be attributed to a simple additive model[2][9], the research used the bivariate and multivariate logistic regression models. The study presented the estimate of children mortality associated with some indicators and used bivariate (unadjusted) and multiple (for the effects of the other covariates in the model) logistic regression models. For simplicity in interpretation the coefficients of the covariates were expressed on the odds ratios (ORs) of the logistic regression model with 95% confidence intervals (CIs).

3. Results

A total of 10,223 children under age-five years participated in the Zimbabwe Demographic and Health Survey

(ZDHS) in 2015. Table 1 shows the distributions of child mortality for age under five and the associated risk factors. The percentage of children under age-five were not alive was 25.5%, and the children were alive around 74.5%. Exploring the characteristics of these children we noticed that a very high number of children 42.4% reported that they were not breastfed. Almost all the children had deficiency in Vitamin A supplement represented 91.4% according to the survey. The proportion of children who were taking zinc supplement was only 2.3%, and the percentage of children with iodine deficiency was around 52.2%.

For the household background characteristics, the percentage of mothers with secondary level of education was about 56% and a percentage around 5.4% had a higher level of education. Most of the households studied had the poorest wealth index ratio at around 23.5%, with the percentage for the middle and richest wealth index at 17.7% and 17.1% respectively. The area of residence for most of the households in the survey was in rural areas 71.4%, with 28.6% living in urban areas.

Table 1: Distribution of associated factors for children mortality Zimbabwe, 2015

Factor	Total n[1] (%)[2]
Children under five mortality rate	
Still Alive	7617 (74.5)
Not Alive	2606 (25.5)
Child ever been Breastfed	
Yes	5884 (57.6)
No	4339 (42.4)
Vitamin A Deficiency	
Yes	9339 (91.4)
No	884 (8.6)
Iodine Deficiency	
Yes	5342 (52.2)
No	4878 (47.8)
Zinc Supplementation	
Yes	235 (2.3)
No	9988 (97.7)
Mother's Level of Education	
Not Educated	334 (3.3)
Primary Level	3612 (35.3)
Secondary Level	5722 (56.0)
Higher Level	555 (5.4)
Area of Residence	
Urban	2923 (28.6)
Rural	7300 (71.4)
Wealth Index	
Poorest	2402 (23.5)
Second	2098 (20.6)
Middle	1809 (17.7)
Fourth	2161 (21.1)
Richest	1753 (17.1)

[1] unweighted frequency [2] weighted percent

All that factors considered in the analysis were significantly associated with the outcome for children under age-five mortality in the bivariate (unadjusted) analyses found in Table 2. However, in the multivariate (adjusted)

analysis, having secondary and higher educational level were no longer significant factors for children mortality. Children who were breastfed were 15% less likely (AOR=0.85, 95% CI [0.78, 0.95]) to die under age of five compared to children who were not breastfed by their mothers. Children who had deficiency in vitamin A were considered 41% more likely (AOR=1.41, 95% CI [1.18, 1.68]) to die under the age of five than children who did not have a vitamin A deficiency. Also, the study reported that children with iodine deficiency were 10% more likely (AOR=1.10, 95% CI [1.00, 1.20]) to die under five years of age than children who did not have iodine deficiency. In addition, children who have taken zinc supplementation were 39% less likely (AOR=0.61, 95% CI [0.45, 0.82] to be affected by child mortality possibilities at age five or under.

The mothers' level of education, wealth index, and area of residence, were all factors associated with children mortality under the age of five. Children whose mother's level of education was determined to be at the zero education or at primary level were between 90% to 85% more likely (AOR=1.90, 95% CI [1.37, 2.76]), (AOR=1.85, 95% CI [1.45, 2.37]) respectively to be impacted by the potential for child mortality at under five years of age when compared to the children whose mother has a higher level of education.

For children who lived in the urban areas, they were 52% more likely (AOR=1.52, 95% CI [1.28, 1.86]) to die under five compared to the children who lived in the rural areas tested. Similarly, children mortality varied within the wealth index and the study discovered that children whose household wealth index was in the poorest category were 34% more likely (AOR=1.34, 95% CI [1.07, 1.69]) to die at an early age (under five) compared with other children whose household wealth index is higher.

Table 2: Factors associated with mortality among children in Zimbabwe, 2015

Risk Factors	Unadjusted OR (95% CI)	Adjusted OR (95% CI)
Child ever been Breastfed		
Yes	0.89 (0.82, 0.97)	0.85 (0.78, 0.946)
No	1	1
Vitamin A Deficiency		
Yes	1.30 (1.10, 1.54)	1.41 (1.18, 1.68)
No	1	1
Iodine Deficiency		
Yes	1.10 (1.01, 1.21)	1.10 (1.00, 1.20)
No	1	1
Zinc Supplementation		
Yes	0.58 (0.44, 0.76)	0.61 (0.45, 0.82)
No	1	1
Mother's Level of Education		
Not Educated	1.09 (1.04, 1.14)	1.90 (1.37, 2.76)
Primary Level	1.02 (0.98, 1.07)	1.85 (1.45, 2.37)
Secondary Level	1.22 (1.17, 1.27)	2.25 (1.79, 2.82)
Higher Level	1	1
Area of Residence		
Urban	1.23 (1.11, 1.36)	1.52 (1.28, 1.86)
Rural	1	1
Wealth Index		
Poorest	1.47 (1.27, 1.70)	1.34 (1.07, 1.69)
Second	1.60 (1.38, 1.86)	2.06 (1.62, 2.60)
Middle	0.83 (0.71, 0.98)	*1.02 (0.81, 1.26)
Fourth	1.19 (0.91, 1.56)	*0.89 (0.74, 1.06)
Richest	1	1

4. Conclusion

The rate of children mortality was found to be high among children in Zimbabwe and intervention from national and international agencies is essential to improve the sustainable improvement of nutritional status for children and reduce the number of mortality for children under the age of five. The prevalence of child mortality in Zimbabwe found in the study highlighted the necessity and importance of sustainable improvement of nutritional status for children. In addition, an improvement for women to achieve the various micronutrition goals was also determined to be needed. Partnerships among international program in public health and education are essential in order to help curtail the intergenerational cycle of malnutrition and reduce the cost of micronutrient deficiencies. One solution might be to establish a national coalition agency to oversee the nutritional status of people living in this area.

References

[1]. Children: Reducing Mortality. The Fact Sheet. 2016.

[2]. Soumya A., Eckhard K., Kathy R., Charles T. “Malnutrition and Child Mortality in Sub-Saharan Africa: A Growing Gap?” NLM classification: WS 115. Isbn9241591870. 2005.

[3]. ACP-EU Joint Parliamentary Assembly. “The Social and Economic Consequences of Malnutrition in ACP Countries” ACP-EU/101.717/14/fin, December 2014, RF\1042734EN.doc

[4]. Todd B., Meera S. “Trends and Issues in Child Undernutrition” PMID: 21290662 ID: NBK2301. 2006.

[5]. Maharaj K., Halvor S., Tor S. “Micronutrition Deficiency Children” British Journal of Nutrition (2001), 85, Suppl. 2, S199±S203. DOI: 10.1079/BJN2001315

[6]. Luchuo E., Paschal A., Nagia G., Njem P., Yelena S. “Malnutrition in Sub-Saharan Africa: burden, Causes and Prospects” PanAfrican Medical Journal- ISSN:1937-8688, 2013.

[7]. Zulfa A., Zandile M., Nelia S. “Diet and Mortality Rates in Sub-Saharan Africa: Stages in the Nutrition Transition” BMC Public Health 2011, 11:801.

[8]. Ian D., Patrick W., Josheph H., Nita D. “Micronutrient Deficiencies and Gender: Social and Economic Coasts” Am J Clin Nute 2005;81(suppl):1198S-1205S.

[9]. De Onis. “Measuring Nutritional Status in Relation to Mortality” Bulletin of the World Health Organization 78910):1271-1274.

[10]. UNICEF 2015 “Malnutrition on the Rise in Zimbabwe as EI Nino Takes its Toll” ISBN: 978-92-806-4843-0. 2015.

[11]. Brown JL., Pollit E. “Malnutrition, Poverty, and Intellectual Development” Scientific American. February 1996;274(2):38-43. PubMed.

[12]. Masuy G., Gourin C. “Infant Health and Mortality Indicates: Their Accuracy for Monitoring the Socio-economic Development in the Europe”. Eur J Popul 1995, 11(1):63-84.