

Associated Factors of Underweight Status of Children in Wolkite Health Care Center

Research Article

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Abstract

Back ground: Underweight is nutritional status indicator of malnutrition (either acute or chronic malnutrition) based on the principle that child as on expected weight for his or her age. The purpose of this study is to investigate disease that affects underweight status of children.

Methods: The total population of this research was 2650 children's of under-five years old in Wolkite town. The study was conducted by using simple random sampling and the total sample size selected was 182 out of the total population. The research was conducted by using secondary data as a source. Which is from statistical document of Wolkite town health center? The data were analyzed by statistical software packages such as SPSS and using these packages descriptive, inferential statistics and binary logistic regression were analyzed.

Result: From the chi-square test, we found that children weight status is significantly associated with diarrhea, pneumonia, respiratory disease, skin infection disease and malaria. From logistic regression model result, children's caught by diarrhea (OR=0.017), children's caught by pneumonia (OR=0.131), children's caught by respiratory disease (OR=0.118), children's caught by skin infection (OR=0.100) and children's caught by malaria (OR=0.122) are significantly contributed to children weight status.

Conclusion: The findings of this study show that the major diseases that affect underweight status of children were diarrhea, pneumonia, respiratory disease, skin infection disease and malaria. We recommended that the health office of Wolkite town to increase the number of clinics which is used to assets the children disease.

Keywords: Children weight status; Chi-square; Logistic regression

Introduction

Underweight (Weight -for -age) is nutritional status indicator of malnutrition (either acute or chronic malnutrition) based on the principle that child as on expected weight for his or her age. And also defined as a well-established child health indicator of chronic malnutrition related to environmental and socio-

economic circumstances [1]. Underweight can be a sign of malnutrition, and can result from poverty and inability to access nutritious food. Children who are malnourished are deprived of essential vitamins, minerals and nutrients that are required for proper early childhood and adolescent cognitive and psychosocial-behavioral development.

Underweight among children remains common in many parts of the world, particularly in developing countries[2]. Globally, the proportion of children under five years old who were underweight declined by 11 percentage points between 1990 and 2015, from 25% to 14%. While Africa has experience the smallest relative decrease, with underweight prevalence of 16% in 2015 down from 23% in 1990, in Asia for the same period it reduced from 32% to 17% and in Latin America and the Caribbean from 8% to 3%.It is the underlying cause of deaths among children under 5 years of age [1,2]. The prevalence of worldwide underweight in children less than 5 years of age was 15.1%. In south East Asia, the prevalence rate of underweight was estimated to be at around 26.6% [2]. It is one of the most serious health and welfare problems among infants and young children. In the developing countries, around 230 million children under the age of five years are chronically malnourished or underweight and responsible for more than half of the child deaths. In Ethiopia, thirty-eight percent of children fewer than five years are underweight for their age, [3-4]. This is 19 times the level expected in a healthy, well-nourished population. Underweight status is indicative of children who suffer from chronic or acute malnutrition or both, and may be influenced by both short- and long-term determinants of malnutrition[5]. Underweight is often used as a general indicator of a population’s health status. The prevalence of underweight children under five years of age is defined as the percentage of children aged 0–59 months, whose weights are less than two standard deviations below the median weight for age groups in the international reference population(An underweight child has a weight-for-age Z-score that is -2 SD below[2]. This condition can result from either chronic or acute malnutrition, or a combination of both.

Ethiopia is the second-most populous country in Africa that inhabits more than 100 million people and of these; around 14% of them were children under five years of age [3-5]. These children and their mothers were suffering disproportionately from poor health and nutrition in the country situation analysis for transform nutrition of Ethiopia [6]. In 2011, 28.7 % of children under the age of five year were underweight. Similarly, 51 % of all causes of death in under five-year children were associated with malnutrition central [6]. In Southern Nations, Nationalities and Peoples Region (SNNPR) of Ethiopia 28.6 of under five children were underweight [6,7]. From this Wolkite is one of zonal town in Southern Nations, Nationalities and

Peoples Region (SNNPR) of Ethiopia. The main purpose of this study is to identify the associated factors that affect underweight status of children in the case of in Wolkite town health center by using data that is measured on under five children weight for their age in Wolkite town health center.

Method

The study conducted in Wolkite town which is found in southwestern Ethiopia and is the administrative center of Gurage zone for the southern nation nationality and peoples of Ethiopia (SNNPE) region. The target populations of this study are those children of aged 0-4years old who were admitted Wolkite town health center in 2018.

The study was conducted by using secondary data as a source of documented data from Wolkite town health center.

Variables in the study

Dependent variable.

Variable	Category
Children weight status	0=if the child is normal
	1=if the child is underweight

Independent variables.

Variable	Category
Sick of diarrhea	0=absent
	1=present
Sick of respiratory disease	0=absent
	1=present
Sick of malaria	0=absent
	1=present
Skin infection	0=absent
	1=present
Sick of pneumonia	0=absent
	1=present
Eye disease	0=absent
	1=present
Ear disease	0=absent
	1=present
Child sex	1=male
	2=female

Method of data analysis

Descriptive statistics like bar chart and tables were used and from the inferential statistics, the study employed chi-square test of independence and logistic regression model.

Binary logistic regressions model was used to perform logistic regression on a binary response variable. A binary variable has only two possible values, such as presence or absence of a particular event. Models with one or more predictors we fitted using an iterative-reweighed least squares algorithm to obtain maximum likelihood estimates of the parameters. The model with binary response variable in this study was Children weight status 1=if the child is underweight and 0=if the child is normal.

The ratio of probability success to probability of failure is $p/1-p$ is odd.

$\frac{\pi(x)}{1-\pi(x)} = \exp(\beta_1 + \beta_2 X_1 + \beta_3 X_2 + \dots + \beta_k X_k)$ means that $\exp(\beta_j)$ where $(j= 1, 2 \dots k)$ is a factor by which the odds of occurrence of success change by a unit increase in the j^{th} independent variable. If we take the natural logarithm of odd ratio obtain estimated model given by[8,9]

$$\text{Logit}(\pi(x)) = \text{Logit}(p(y=1)) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k$$

Results

The descriptive statistics analysis of this study was summaries as follow. Figure (1) displays,from total population 55% of children had normal weight status and the remaining 45 % children hadfaced a problem of underweight.

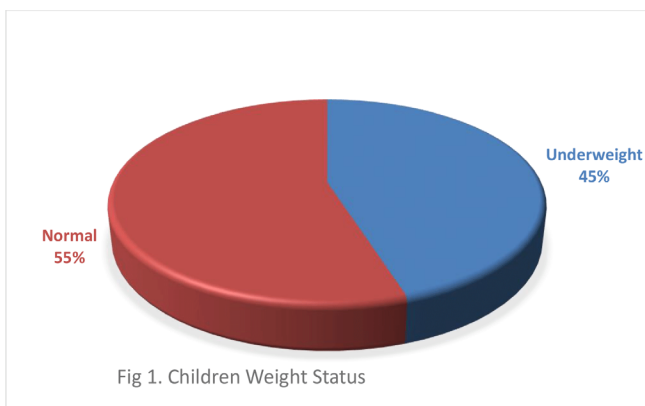


Figure 1: Children weight status

Table 1 revealed children weight status by gender: male children’s 60.8 % normal weight status and the remaining 39.2 % underweight whereas out of 85 female children’s 48.2 % normal and 51.8 % underweight status. This indicates that most of male students have problem of underweight than of female’s children. Children caught by diarrhea, 20.7 % of them normal. Whereas, 79.3 % underweight and 86.3 % of them normal weight status as well as not caught by diarrhea. children caught by respiratory disease, 33.3 % normal weight status. Whereas, 66.7 % is underweight status. Children affected by malaria 32.6 % normal and 67.4 % underweight status.

There were 113 children’s free from pneumonia, 77% of them are normal. Whereas, 23 % of children are underweight. And 69 children are caught by pneumonia, 18.8 % of them are normal. Whereas, 81.2 % are underweight.

Chi-square test of independence shows factors consider in this study, diarrhea, pneumonia, respiratory disease, skin infection, and malaria are significantly associated factors with children weight status at 5% significant level.

Table 2 displays odds of children weight status for children that affected by diarrhea were 60.244 times more likely than children not affected by diarrhea. That means children’s that affected by diarrhea were more underweight than children don’t have diarrhea based on this study by keeping the effect of another variable constant. Odds of children weight status for children that affected by pneumonia were 7.655 times more likely than children not affected by pneumonia by keeping the effect of another variable constant.

Odds of children weight status for children that affected by respiratory disease were 8.472 times more likely than children not affected by respiratory disease keeping the effect of another variable constant. Odds of children weight status for children that affected by skin infection disease were 10.025 times more likely than children not affected by skin infection disease by keeping the effect of another variable constant.

Odds of children weight status for children that affected by malaria disease were 8.222 times more likely than children not affected by malaria disease. That means children’s that affected by malaria disease were more underweight than children don’t have malaria disease based on this study by keeping the effect of another variable constant.

Table 1: Frequency distribution table for children's weight status by different variables

Variables	Category	Weight status		Chi-square
		Underweight	Normal	Total
				p-value
Sex of children	Male	38(39.2)	59(60.8)	97(100) 0.089
	Female	44(51.8)	41(48.2)	85(100)
Sick of diarrhea	Present	69(79.3)	18(20.7)	87(100) <0.000
	Absent	13(13.7)	82(86.3)	95(100)
Sick of respiratory disease	Present	62(66.7)	31(33.3)	93(100) <0.000
	Absent	20(22.5)	69(77.5)	89(100)
Sick of malaria	Present	60(67.4)	29(32.6)	89(100) <0.000
	Absent	22(23.7)	71(76.3)	93(100)
Skin infection	Present	58(66.7)	29(33.3)	87(100) <0.000
	Absent	24(25.3)	71(74.7)	95(100)
Sick of pneumonia	Present	56(81.2)	13(18.8)	69(100) <0.000
	Absent	26(23)	87(77)	113(100)
Eye disease	Present	37(47.4)	41(52.6)	78(100)
	Absent	45(43.3)	59(56.7)	104(100) 0.576
Ear disease	Present	38(45.2)	46(54.8)	84(100)
	Absent	44(44.9)	54(55.1)	98(100) 0.002

Table 2: Binary logistic regression model result

	B	S.E.	Wald	df	Sig.	Exp (B)	95% C.I. for EXP(B)	
							Lower	Upper
Sick of Diarrhea (1)	4.098	.738	30.821	1	.000	60.244	14.175	256.030
Pneumonia (1)	2.035	.595	11.687	1	.001	7.655	2.383	24.587
Malaria (1)	2.107	.633	11.094	1	.001	8.222	2.380	28.405
Skin Infection (1)	2.305	.627	13.499	1	.000	10.025	2.931	34.285
Respiratory disease (1)	2.137	.629	11.557	1	.001	8.472	2.471	29.039
Constant	-6.483	1.089	35.453	1	.000	.002		

Discussion

This study attempted to investigate the factors that affect underweight status of children in Wolkite town health care center.

Accordingly, a total of 182 children were include in this study the descriptive analysis of the study revealed that 45 % of the sample children are underweight and 55% of children were normal. Children health status –under weighting as show in the descriptive analysis from the table

1 of underweight male children are somewhat affected by under weighting than female children. From chi-square test of independence shows that from the risk disease consider in this study, diarrhea, pneumonia, respiratory disease, skin infection, and malaria are significantly associated with children weight status with significant level. And finally, from inferential statistics we concluded that children's expose to underweight because of diarrhea, pneumonia, respiratory disease, skin infection, and malaria that is analyzed by using binary logistic regression.

In this research based on the above binary logistic regression output; diarrhea, pneumonia, respiratory disease, skin infections and malaria are disease that affect underweight status of children job satisfaction, but other variables are not related.

The study result was supported by different literature reviews that showed diarrhea, malaria, skin infections, respiratory disease, helminthiasis, pneumonia, vomiting, etc. are risk disease for underweight of under five years old children [10-14].

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