

Systematic Review and Meta-Analysis on Employment Status of Mothers and Acute Malnutrition Among Under Five Children in Ethiopia

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Keywords:

Acute Malnutrition; Employment of Mothers; Ethiopia; Under Five Children

1. Abstract

The objective of this meta-analysis was to determine the association between Employment status of mothers and acute malnutrition among under five children in Ethiopia. Using data from 11 studies in Ethiopia we performed a meta-analysis with a specific focus on acute malnutrition among under five children. We applied a random effects analytic model and calculated a pooled odds ratio. Electronic databases were searched on reference manager software and quality assessment of the included studies was performed. Using assessment of risk of bias tool. The funnel plot shows that there is no publication bias as Egger Regression p value is 0.882 and Begg & Mazumdar p value is 0.815.

The odds ratios for all studies revealed no statistically significant association of Acute Malnutrition among under five children with employed mothers compared to house wife mothers OR MH, Random, 95% CI, 0.93, (0.66, 1.32) Heterogeneity $\tau^2 = 0.26$; $\chi^2 = 50.14$, DF = 10 ($P < 0.00001$); $I^2 = 80\%$ Test for overall effect: $Z = 0.39$ ($P = 0.70$)

A total of 5301 under five children included in our systematic review and meta-analysis.

The proportion of acute malnutrition among employed mothers is 26.1 % (484) and among house wife mothers is 24% (825). Our findings suggest that employment status of mothers has not statistical significant association with acute malnutrition among under five children in Ethiopia.

2. Introduction

Acute malnutrition is a recent and severe weight loss (wasting) as a result of acute food shortage and/or illness and is measured by weight for height or mid upper arm circumference (MUAC) [1]. Malnutrition is associated with more than half of all child mortality worldwide [2].

Malnutrition is a serious problem in the world; currently, 195 million under-five children are affected by malnutrition globally; 55 million of them suffer from acute malnutrition and around 26 million under-five children are severely acute malnourished. Among the total under-five children suffering from malnutrition, 90% lives in sub-Saharan Africa and South Asia. Every year, 3.5 million children die of malnutrition-related causes in the world [3-4.]. Hence, it is at third level in the world of the disease burden in this age group [5]. In sub-Saharan Africa, the prevalence of stunting is declining but remains over 30% [6]. Among sub-Saharan countries, the prevalence of wasting in Ethiopia is 10%, and the prevalence of stunting is 38 % [7].

Many studies in developing countries including Ethiopia showed that household characteristics like income, [8-12], less access to health service, [9-11], household head [9-11], lack of toilet, [13-14] mother's education, [15-16], paternal education [17], hand washing, [18-20], household food insecurity [21, 20], poor exclusive breast feeding [21- 22] and number of under-five children or family size [23-24.], has explained the occurrence of acute malnutrition.

The Aim of this systematic Review and meta-analysis is to determine the association between Employment status of mothers and acute malnutrition in children in Ethiopia. Thus, this finding will be used as a source of information on the association between employment status of mothers and acute malnutrition among under five children in Ethiopia.

3. Method

Electronic databases were searched. on reference manager software and quality assessment of the included studies was performed. using assessment of risk of bias tool. A meta-analysis was applied to determine the effect of mother's employment status on acute malnutrition among under five children in Ethiopia Words used to search related literatures on the topic were, 'Acute Mal-

nutrition', 'Employment status of mothers in Ethiopia', 'Determinants of Acute Malnutrition in Ethiopia' were used.

4. Study Selection

The PRISMA statement [25] for the reporting of systematic reviews recommended by the Cochrane Collaboration was followed while conducting this meta-analysis (Figure 1). The first searching of databases results in 1008 articles. After removing duplicates, we have got 184 studies on acute malnutrition among under five children in Ethiopia. Forty-five (45) full-text articles assessed for eligibility and 11 studies met the inclusion criteria. The rest were excluded due to studies not assess employment status of mothers and acute malnutrition among under five children in Ethiopia.

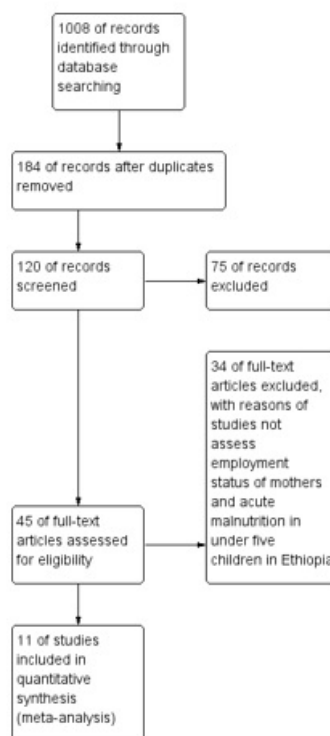


Figure 1: Study flow diagram.

5. Results

Using data from 11 studies [26- 36] in Ethiopia we performed a meta-analysis with a specific focus on acute malnutrition among under five children. We applied a random effects analytic model and calculated a pooled odds ratio. The meta-analysis is done using RevMan software version 5.3 and Meta essential software. A total of 5301 under five children included in our systematic review and meta-analysis. When we see the employment status of mothers, 35% (1857) employed mothers and 65 % (3444) house wife mothers were included in this study. The proportion of acute

malnutrition among employed mothers is 26.1 % (484) and among house wife mothers is 24% (825).

6. Meta-Analysis

The odds ratios for all studies revealed no statistically significant association of Acute Malnutrition among under five children with employed mothers compared to house wife mothers.

OR MH, Random, 95% CI, 0.93, (0.66, 1.32)

Heterogeneity $\tau^2 = 0.26$; $\chi^2 = 50.14$, $DF = 10$ ($P < 0.00001$); $I^2 = 80\%$

Test for overall effect: $Z = 0.39$ ($P = 0.70$) (Figure 2).

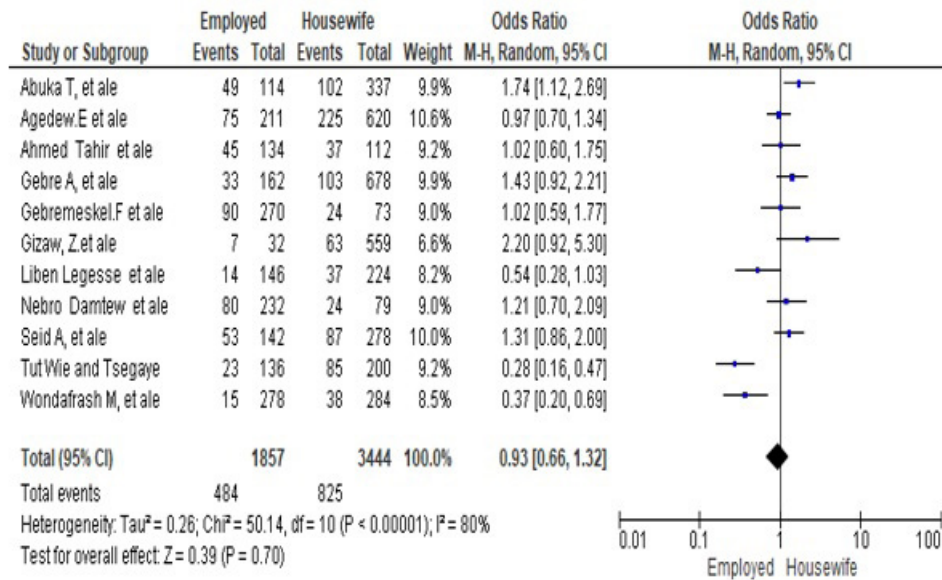


Figure 2: The association between employment status of mothers and acute malnutrition among under five children in Ethiopia

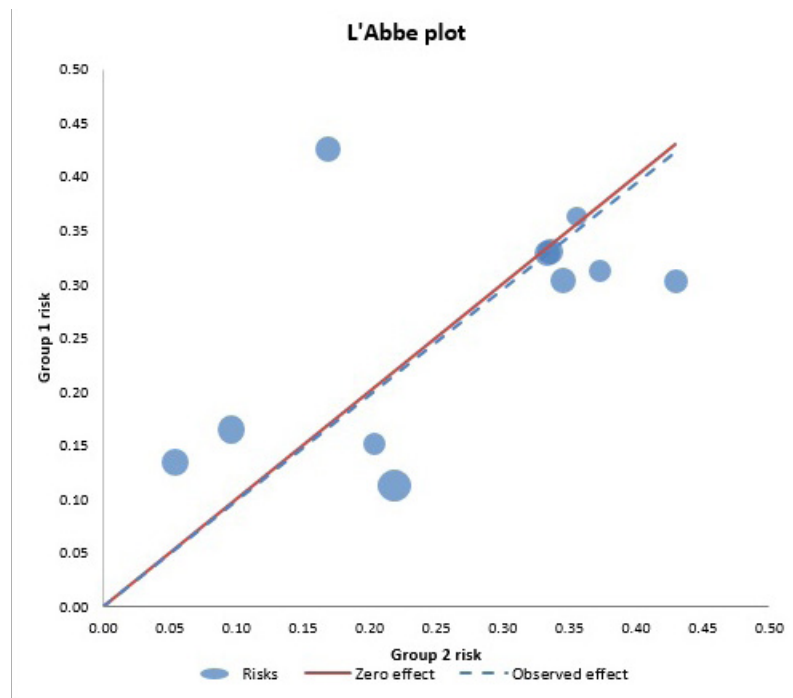


Figure 3: Abbe plot for the association between employment status of mothers and acute malnutrition among under five children in Ethiopia. The Abbe plot shows that 3 studies are above zero effect and the rest below zero effect.

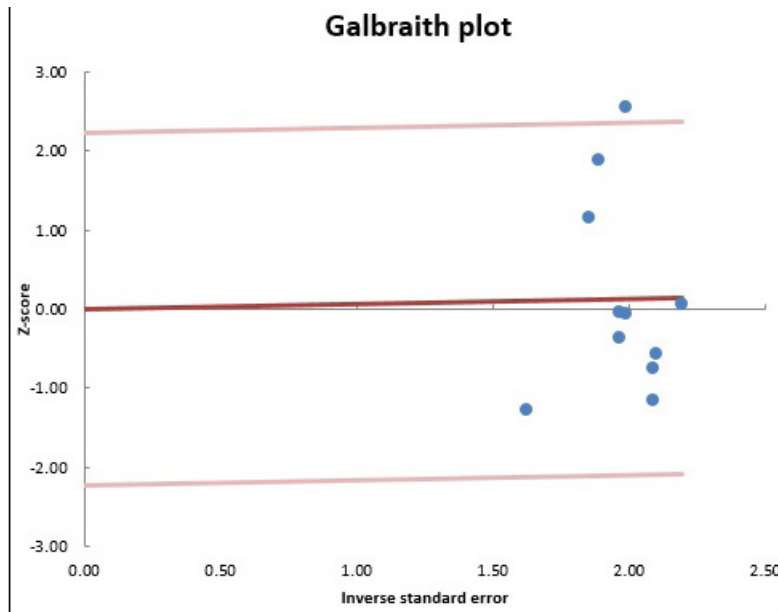
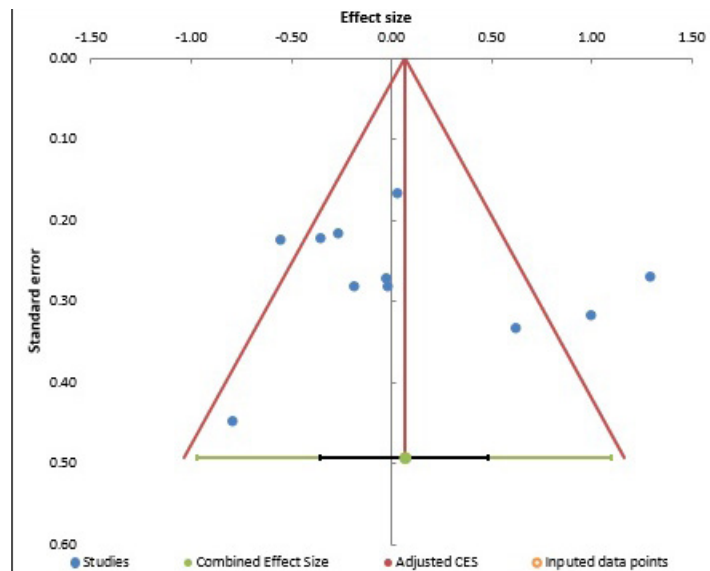


Figure 4: Galbraith plot for the association between employment status of mothers and acute malnutrition among under five children in Ethiopia. Galbraith plot shows that 95% of the studies are within the range of two color lines and there is no outlier of effect size.



Egger Regression				
	Estimate	SE	CI LL	CI UL
Intercept	0.81	5.28	-10.97	12.58
Slope	-0.34	2.67	-6.28	5.60

t test	0.15
p-value	0.882

Begg & Mazumdar	
Δ_{x-y}	3.00
Kendall's Tau a	0.05
Z	0.23
P	0.815

Figure 5: Funnel plot for the association between employment status of mothers and acute malnutrition among under five children in Ethiopia. The funnel plot shows that there is no publication bias as Egger Regression p value is 0.882 and Begg & Mazumdar p value is 0.815.

Table 1: Employment status of mothers and acute malnutrition among under five children in Ethiopia

S no	Article	Mother occupation / employment status	Acute Malnutrition	
			Yes	No
1	Tut Wie and Tsegaye (26)	housewife/unemployed	85	115
		employed /others	23	113
2	Gebremeskel.F et ale (27)	housewife/unemployed	24	49
		employed /others	90	180
3	Gizaw, Z.et ale (28)	housewife/unemployed	63	496
		employed /others	7	25
4	Ahmed Tahir et ale (29)	housewife/unemployed	37	75
		employed /others	45	89
5	Nebro Damtew et ale)30)	housewife/unemployed	24	55
		employed /others	80	152
6	Abuka T, et ale (31)	housewife/unemployed	102	235
		employed /others	49	65
7	Liben Legesse et ale (32)	housewife/unemployed	37	187
		employed /others	14	132
8	Wondafrash M, et ale (33)	housewife/unemployed	38	246
		employed /others	15	263
9	Gebre A, et ale (34)	housewife/unemployed	103	575
		employed /others	33	129
10	Seid A, et ale (35)	housewife/unemployed	87	191
		employed /others	53	89
11	Agedew.E et ale (36)	housewife/unemployed	225	395
		employed /others	75	136

7. Discussion

This systematic review and meta-analysis show that there is no statistical significant association between employment status of mothers and acute malnutrition among under five children in Ethiopia and this finding is similar with previous studies Wolayta Sodo Town [37], Konso, Southern Ethiopia, [38], Afar Region, North-east Ethiopia[39], Karat Town Public Health Facilities, Southern Ethiopia [40], Hadaleala district, Afar region, northeast Ethiopia. [41], analysis of the 2016 Ethiopia demographic and health survey [42], Two Public Hospitals, North West Ethiopia[43].

The explanation for our finding may be majority of mothers have maternal leave and children get the same care by employed and house wife mothers

This finding is not similar with previous studies Gedeo Zone, Ethiopia [44] Ethiopia [45]. Ekpoma, Edo-Nigeria [46], Mazowe District of Zimbabwe [47], Adama Town, Central Ethiopia [48], in Tanzania [49], in Addis Ababa [50], Chapel Hilly, Job Arket Paper [51], in Nghean Vietnam [52], in Aydyn, a western city of Turkey [53]. The explanation for the observed differences in the findings of our study and other previous studies may be difference in sample size and geographic variations.

8. Conclusion

Our findings suggest that employment status of mothers has not statistical significant association with acute malnutrition among under five children in Ethiopia.

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