



Ethiopia: Are children of employed mothers less stunted than those of unemployed mothers?



A woman working as a paid labourer on a farm to feed her family in Ethiopia

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Kedir Mohammed is the Nutrition Cluster Coordinator of the Sub-National Emergency Nutrition Coordination Unit (ENCU), Semera, Afar Region, Ethiopia.



Ibrahim Mohammed is a lecturer in the Public Health Programme of Samara University, Ethiopia.



Mohammed Hussein is a head of the Afar Disaster Prevention and Food Security Programme Coordination Office, Ethiopia.

KEY MESSAGES

- This survey explores whether an increase in women's employment has impacted the nutrition outcomes of children in Abala Town, Ethiopia.
- The results of this study indicated that the prevalence of stunting and underweight in children 6-59 months of age was higher in those with unemployed mothers compared to children of employed mothers. Wasting levels were however not significantly different.
- Factors found to be significantly associated with stunting were mothers' education status and employment status as well as diarrhoea in the previous two weeks and the sex, age and immunisation status of the child.

Background

In Ethiopia, undernutrition remains a critical issue with current national estimates suggesting that the prevalence of stunting (36.8%), underweight (21.3%) and wasting (7%) in children 6-59 months of age is among the highest in sub-Saharan Africa (EMDHS, 2019). In Afar Regional State, situated in the north-eastern part of the country, undernutrition rates are estimated to be some of the highest in Ethiopia according to the most recent EMDHS (2019), with stunting, underweight and wasting prevalence estimated to be 42.2%, 31.1% and 13.5% respectively.

The prevalence of child undernutrition is not consistently documented at subnational level and the reasons for these high prevalence estimates in Afar have not been explored in recent research. Natural and manmade disasters, including a recurrent drought and ongoing conflict, being faced in the region have been noted as reasons for high food insecurity and child malnutrition rates (DPFSPCO & NDRMC, 2021). Given these factors, Ethiopia has classified the region as a 'hotspot' area, prioritising it for various nutrition-specific and nutrition-sensitive in-

terventions. To offer the most appropriate intervention strategies, it is important to consider the underlying causes and risk factors for malnutrition in this region.

Previous studies in Ethiopia and many other countries have found that maternal characteristics (maternal education, maternal autonomy and maternal height and weight) are important factors that influence a child's nutrition status. However, the influence of maternal employment status is less clear with mixed results previously being reported in the country (Eshete et al, 2017 & Wondafresh et al, 2017). Women entering the workplace has shifted childcare roles and responsibilities with potential impacts on breastfeeding, complementary feeding, food preparation and healthcare seeking behaviours. On the other hand, increased household income is likely to have a positive effect on diet diversity and access to nutritional foods (Wondafresh et al, 2017). Given these mixed results to date, this study wanted to further explore the role of a mother's employment in nutrition status in this hotspot area. Specifically, it aimed to assess the nutrition status and associated factors among children 6-59 months of age of both employed and unemployed mothers in Abala town, Afar Regional State, Northeast Ethiopia.

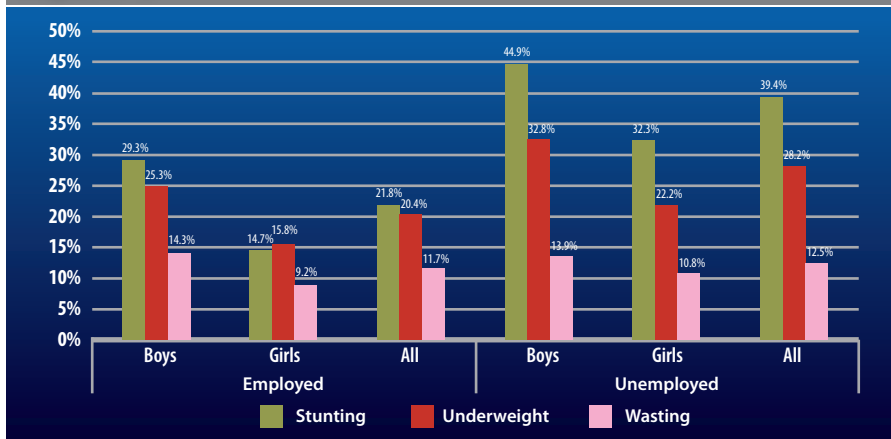
Figure 1 The study town location map



Table 1 Comparison of child nutrition status by mother's employment status in Abala town

Nutrition Status (Children <5)	Mother Employment Status	Prevalence (%)	95% CI	t-value	Sig.
Height for age (stunting)	Employed	21.8	17.8 – 26.4	4.925	<.001
	Unemployed	39.4	34.4 – 44.6		
Weight for height (wasting)	Employed	11.7	8.8 – 15.4	0.213	.831
	Unemployed	12.5	9.5 – 16.3		
Weight for age (underweight)	Employed	20.4	16.5 – 24.9	2.412	.016
	Unemployed	28.2	23.8 – 33.0		

Figure 2 Nutrition status by sex among under-five children in Abala town (n= 723)*



*Chi-squared testing revealed significant differences in stunting (p<.001) and underweight (p=.001) by child sex but not wasting (p=.091)

Abala is a town in north-eastern Ethiopia bordered on the west by the Tigray Region. Abala is in the administrative centre of Afar, with Abala town having a total population of 56,245.

Women's employment levels have been steadily rising in the town, particularly following Government employment reforms which came into effect in 2019. To understand how this increase in women's employment could impact the nutrition outcomes of children, we conducted a survey in Abala Town. We hoped that the findings of this investigation would potentially provide an important initial step to determining how to mitigate nutrition challenges in the region.

Methodology

The study aimed to:

1. assess the nutrition status of children aged 6-59 months of employed and unemployed mothers in Abala Town, and
2. identify factors associated with the nutrition status of children aged 6-59 months of employed and unemployed mothers in Abala Town.

We used a community-based cross-sectional survey that comprised mother-child pairs from both employed and unemployed mothers. This study was carried out from 29th March to 27th April 2021. The definition of employment was kept broad and included formal, informal, regular and casual employment. A mother was considered as employed if she reported earning income in the previous six months.

Five kebeles (the smallest administrative unit in Ethiopia) out of a total of 11 kebeles in the town were randomly sampled and a study questionnaire

was developed and translated into the local language (Afar-afa) for data collection. The questionnaire explored demographic and socioeconomic factors, maternal employment status, childcare practices, health and food-related characteristics (dietary diversity, child illness, immunisation status) and anthropometric measurements (weight and height, mid upper arm circumference and oedema). Interviews were conducted face-to-face using a structured interview guide and anthropometric measurements were converted into weight-for-age z-scores, height-for-age z-scores and weight-for-height z-scores according to World Health Organization child growth standards (WHO, 2006).

Independent sample t-tests were used to compare the children of employed and unemployed mothers based on the prevalence of wasting, stunting and underweight. Bivariate and multivariable logistic regression analyses were used to predict factors associated with child nutrition status (stunting, underweight and wasting). The strength of statistical association between the outcome and predictor factors was measured by adjusted odds ratio (AOR) with 95% confidence intervals (CI) in the final model. Significance was set at a level of 0.05 (5%).

Findings

A total of 723¹ children aged 6-59 months, from 361 employed and 362 unemployed mothers, were included in the study. Boys (52.6%) and girls (47.4%) were equally represented.²

Comparison of child nutrition status by mother's employment status

The results showed that the difference in the prevalence of stunting and underweight was statistically

significant between the children whose mothers were employed compared to those children whose mothers were unemployed mothers (Table 1). This indicated that children of unemployed mothers were more likely to be stunted or underweight than those of employed mothers. However, no statistically significant differences were seen for wasting.

Chi-squared testing revealed that, overall, the prevalence of male child stunting (37.6%) was significantly higher (p<.001) than female child stunting (22.7%). Additionally, underweight prevalence in males (29.4%) was significantly higher (p=.001) than females (18.7%). This was consistent across both employed and unemployed mother groups, although both male and female children of unemployed mothers had higher stunting and underweight prevalence rates than those of employed mothers (Figure 2).

Factors associated with nutrition status of children

To further examine factors associated with nutrition status, a logistic regression model was used. Factors associated with stunting and underweight were explored separately to understand the potential differences in determinants. Since there were no significant results associated with wasting, this was not analysed further. All factors associated with stunting and underweight were analysed independently of employment status in the study (Tables 2 and 3).

Factors associated with stunting

Among the variables explored in the bivariate logistic regression analysis, mother's employment status, mother's education status, sex and age of child, child immunisation status, diarrhoea in the last two weeks, family size, place of delivery, presence of latrine and timely complementary feeding were associated with stunting (p value<0.25). However, after controlling for potential confounders (as outlined in Table 2), the final multivariable logistic regression analysis revealed that mother's employment (AOR=2.24, 95% CI: 1.61-3.10), mother's education (AOR=2.11, 95% CI: 1.53-2.92), sex of child (AOR=1.97, 95% CI: 1.43-2.79), child immunisation (AOR =2.34, 95% CI: 1.53-3.58) and presence of diarrhoea in the past two weeks prior to the study (AOR=1.69, 95% CI: 1.12-2.53) were independent predictors of child stunting (Table 2).

Therefore, children who had unemployed mothers had 2.24 greater odds of becoming stunted as compared to children whose mothers were employed (AOR=2.24, 95% CI:1.61-3.10). Children whose mothers had no education were 2.11 times more likely to be stunted as compared to children of a mother who had education (AOR=2.11, 95%CI: 1.53-2.92). Male children had 1.97 times higher odds of becoming stunted compared to female children (AOR=1.97, 95% CI: 1.43-2.79). Finally, the likelihood of being stunted was 1.69 times higher among children who had diarrhoea in the past two weeks compared to those children with no diarrhoea symptoms (AOR=1.69, 95% CI: 1.12-2.53).

¹ Of the total 723, 12 children were excluded from the study due to SMART flags for height-for-age z score.

² Chi-squared testing revealed that there was no statistically significance difference between girls and boys in the sample. Boys (52.6%) and girls (47.4%) equally represented (p= 0.169).

Factors associated with underweight

The bivariate logistic regression analysis showed that mother's employment, mother's education, sex of child, dietary diversity and initiation of breastfeeding, family size, postnatal service utilisation, maternal age and prelacteal feeding were associated with underweight (p -value<0.05). However, after controlling for potential confounders, the final multivariable logistic regression model analysis showed that mother's employment (AOR=1.35, 95% CI: 0.84–2.12), mother's education (AOR=1.56, 95% CI: 1.12–2.29), sex of child (AOR=1.78, 95% CI: 1.25–2.53) and dietary diversity (AOR=2.65, 95% CI: 1.61–4.39) were independent predictors of underweight (Table 3).

Therefore, children who had unemployed mothers were at 1.35 times higher odds of being underweight than children of employed mothers (AOR=1.35, 95% CI:0.84–2.12). Children whose mothers had no education were 1.56 times more likely to be underweight as compared to children of mothers who had education (AOR=1.56, 95% CI: 1.12–2.29). Male children were 1.78 times more likely to be underweight than female children (AOR=1.78, 95% CI:1.25–2.53). It was also observed that children who consumed dietary diversity of less than four food groups were 2.65 times more likely to be underweight than those children who consumed dietary diversity of four and more food groups (AOR=2.65, 95% CI: 1.61–4.39).

Discussion

The overall nutrition status (stunting, wasting and underweight) of children aged 6–59 months of employed and unemployed mothers was found to be 39.5%, 12.1% and 24.3%, respectively, which is comparable to findings from the most recent EMDHS 2019 for the region.

The results of this study showed that a higher prevalence of stunting and underweight were observed among children of unemployed mothers compared to employed mothers. However, maternal employment did not seem to have an impact on the risk of becoming wasted. The association between maternal employment and stunting and underweight is likely explained through economic gain having a positive impact on children's dietary intake over the longer term. Similar findings were noted in a study exploring the topic although interestingly are in contrast with a study from Central Ethiopia where unemployment was found to impact wasting as well as stunting and underweight prevalence (Wondafrash et al, 2017).

Logistical regression analysis further highlighted factors associated with stunting and underweight and analysis of this study indicated that mothers' education status, the employment status of mothers, diarrhoea in the previous two weeks, sex of child, age of child and child immunisation status were factors significantly associated with stunting. Similar factors were associated with underweight although dietary diversity was also noted as an associated factor and immunisation status and diarrhoea in the previous two weeks were not significantly associated. Mother's educational status was significantly associated with stunting and underweight children. This finding is consistent with the EDHS (2011) and other studies (Wondafrash et al, 2017). Possible explanations could

Table 2 Logistic regression analysis of factors associated with stunting

Variables	Categories	Stunting			
		Yes (%)	No (%)	COR (95% CI)	AOR (95% CI)
Mother's employment status	Unemployed	139 (39.4)	214 (60.6)	2.33 (1.67-3.24)	2.24 (1.61-3.10) *
	Employed	78 (21.8)	280 (78.2%)	1	1
Child's sex	Male	140 (37.6)	232 (62.4)	2.05 (1.48-2.85)	1.97 (1.43-2.79) *
	Female	77 (22.7)	262 (77.3)	1	1
Child age in months	6-17	52 (38.0)	85 (62.0)	2.86 (1.65-4.98)	2.67 (1.75-3.79) *
	18-29	78 (37.0)	133 (63.0)	2.74 (1.64-4.59)	2.20 (1.57-3.08) *
	30-41	50 (31.8)	107 (68.2)	2.19 (1.27 -3.78)	2.45 (1.5-3.61) *
	42-53	25 (17.6)	117 (82.4)	1	1
	54-59	12 (18.8)	52 (81.2)	1.08 (0.50- 2.31)	0.92 (0.48-1.76)
Mother's education	No education	126 (40.5)	185 (59.5)	2.31(1.67-3.20)	2.11 (1.53-2.92) *
	Educated	91 (22.8)	309 (77.2)	1	1
Child immunisation	No	160 (34.5)	304 (65.5)	1.75 (1.23-2.49)	2.34 (1.53-3.58) *
	Yes	57 (30.1)	190 (76.9)	1	1
Diarrhoea in the last two weeks	Yes	119 (38.5)	190 (61.5)	1.94 (1.41-2.68)	1.69 (1.12-2.53) *
	No	98 (24.4)	304 (75.6)	1	1

*Significant at $p < 0.05$; COR = crude odds ratio; AOR = adjusted odds ratio; CI = confidence interval
Confounders (confounding factors) that were considered and input into the logistic regression model for **stunting**: family size, presence of latrine, place of delivery, timely introduction of complementary feeding.

Table 3 Logistic regression analysis of factors associated with underweight

Variables	Categories	Underweight			
		Yes (%)	No (%)	COR (95% CI)	AOR (95% CI)
Mother's employment status	Unemployed	102 (28.2)	260 (71.8)	1.53 (1.08-2.16)	1.35 (0.84-2.12) *
	Employed	73 (20.4)	285 (79.6%)	1	1
Child's sex	Male	111 (29.4)	267 (70.6)	1.81 (1.27-2.56)	1.78 (1.25-2.53) *
	Female	64 (18.7)	278 (81.3)	1	1
Mother's education	Not educated	72(29.0)	176 (71.0)	1.46 (1.03-2.08)	1.56 (1.12-2.29) *
	Educated	103 (21.8)	369 (78.2)	1	1
Dietary diversity (Food Groups)	<4	132 (29.7)	312 (70.3)	2.29 (1.56-3.36)	2.65(1.61-4.39) **
	≥ 4	43 (15.6)	233 (84.4)	1	1

*Significant at $p < 0.05$; COR = crude odds ratio; AOR = adjusted odds ratio; CI = confidence interval
 **P-value <0.01
Confounders (confounding factors) that were considered and input into the logistic regression model for **underweight**: early initiation of breastfeeding; family size; maternal age; prelacteal feeding

be that educated mothers may be more aware of their child's health and have more knowledge of optimal child feeding practices.

Limitations of the study

As the study involved a single cross-sectional design, the factors explored cannot be attributed to causing undernutrition in this study population. There might be the possibility of recall and reporting bias in some infant and young child feeding indicators such as breastfeeding patterns, dietary diversity scores and a child's history of illness.

Conclusion

This study indicated that the employment status of mothers has an association with nutrition status (particularly stunting and underweight) among children aged 5-69 in Abala town. Thus, improving mothers' opportunities for employment appears to be an important intervention to improving the nutrition status of children aged 6-59 months in this study region, while at the same time ensuring flexible workplace conditions that preserve optimum infant and young child feeding practices.

For more information, please contact Kedir Mohammed at afarencu@gmail.com

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