

Original article

Effect of maternal employment on the nutritional status of infants and children 6 to 23 months of age in Kolfe-Keraniyo Sub-city, Addis Ababa, Ethiopia

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Abstract

Introduction: As in many developing countries, malnutrition is one of the most important health problems among infants and young children in Ethiopia. Inadequate and/or inappropriate dietary intake and infectious diseases are the immediate/direct causes. This is in turn related to several socio-economic, demographic, child-care, and environmental factors.

Objectives: To determine the effect of maternal employment on the nutritional status of infants and children 6-23 months-old age in Kolfe-keraniyo sub-city, Addis Ababa, Ethiopia, 2019.

Methods: Facility-based cross-sectional study was conducted from July 1 to 30 in Kolfe-keraniyo sub-city selected four health centers. A simple random sampling technique was used to select 207 employed and 210 unemployed mothers. A structured questionnaire was used to gather quantitative data from the participants. Anthropometric measurements were taken from infants and young children. A 24-hours recall was used to collect dietary information on what the children had eaten for the 24-hours preceding the interview. Data were entered and analyzed using SPSS software version 24. Variables that had P-value of 0.2 or less on binary logistic regression were entered into multiple logistic regression to assess the association between dependent and independent variables and to control the effect of cofounders. P-value of ≤ 0.05 was taken as statistically significant.

Result: In this study, the prevalence of stunting, under-weight, and low weight for height in children of employed mothers were 6.8%, 7.2%, and 5.8% whereas in the children of unemployed mothers were 12.9%, 13.8%, and 8.1%, respectively. There was no statistically significant association between the maternal employment and nutritional status of their children. However, children from family size of four and above [AOR 3.45, 95%CI: (1.58, 7.52)] and, children who were not met minimum dietary diversity score [AOR 16.84, 95%CI: (5, 56.75)] were more likely to be stunted.

Conclusion: Family size, dietary diversity scores and vaccination status of children were prominent factors related to child malnutrition. Therefore, improve dietary diversity score of children by promoting good child feeding practices during postnatal follow up, educating mothers about family planning and importance of children vaccination are the best options to reduce malnutrition.

Keywords: Maternal employment, nutritional status, complementary feeding, minimum dietary diversity

Introduction

Child malnutrition and ill health are of utmost concern since deprivation in early childhood often causes irreversible damage to physical and mental health, reduces learning at school, and leads to lower incomes on adults (Habtamu 2014). Child malnutrition is the underlying cause of death in an estimated 45% of all deaths among children under-five years old (EDHS 2011). The magnitudes of stunting, underweight, and wasting in children under five years of age worldwide were 24.7%, 15.1 %, and 7.8%, respectively (WHO 2014). More than 150 million (39.9%) children under the age of five years in African countries are malnourished (Michael 2012). Ethiopia is one of the countries in sub-Saharan Africa with the highest rate of malnutrition.

According to the 2016 Ethiopian Demographic Health Survey report, 38% of children under age 5 are stunted or too short for their age, and 18% severely stunted. Ten percent are wasted or too thin for their height, including 3% who are severely wasted. Twenty-four percent of children under age 5 are underweight or too thin for their age, with 7% severely underweight (EDHS 2016).

Even though its patterns and prevalence vary significantly, malnutrition is a global issue (Hailu and Ababa 2015). Currently, 195 million under-five children are affected by malnutrition. Of this 90% of them live in sub-Saharan Africa and South Asia (Black et al. 2008). Ethiopia is among the nations with the highest under-five mortality rates in the

world and at least 53% of mortality can be attributed directly or indirectly to malnutrition (Caulfield et al. 2004). Several factors that are associated with malnutrition have been identified including poor breastfeeding and child feeding practices, lack of access to enough nutritious food, low levels of parental education and belonging to the low-income group (Ma'alini et al. 2016).

Women play multiple roles in the family that affect the health and wellbeing of all family members. In almost all societies around the world, they are assigned by custom to be the primary caregivers to infants and children. Activities carried out by women such as breastfeeding, preparing food, collecting water and fuel, and seeking preventative and curative medical care are crucial for children's healthy development. Women also play important roles as generators of family income, whether in household farms or businesses or as wage employees. In developing countries especially, such work is likely to be essential to family survival (UNDP 1995).

Maternal employment refers to mothers who are part of the workforce and earn wages or salaries (Mulu 2014). There have been remarkable changes in employment patterns globally, with a significant increase in employment rates among women (Dunifon et al. 2013). Currently, women represent 39.8 % of the global labor force (Mulu 2014). Mothers' employment has increased rapidly due to increased household income demand as a result of increased prices of food. Thus apart from household responsibilities, many women are now employed outside the home to earn income for their families (Dunifon et al. 2013). In Ethiopia, the proportion of women currently employed rises from 27% in 2005 to 38% in 2010 (EDHS 2011; Gebreselassie 2005). Woman's entering the work field has both negative and positive effects, the one is that it increases the family income and it may give the women some economic independence and status in society. It however also increases her workload and cuts into the time that she has to spend with her children (Pandey 2007; Yeleswarapu 2012). Employed mothers may have insufficient time to satisfactorily breastfeed and prepare nutritive meals for their children considering their increased burden of work. They believe that, although there may be market substitutes such as; infant formula, ready foods, employed house help, the added expense may be too expensive for most mothers (Al-Binali 2012).

On the other hand, maternal employment could be beneficial to the child's nutritional status and health care if mothers earn enough income and show a strong preference for spending the income on the

welfare of their children. Although income is the major resource required to pay for medical care, food, water, and housing that a child's health depends on, time spent in child care including that by the mother and other household members, hours spent in breastfeeding, supervision of the child, preparation of bottles feed and complementary foods, taking them to health clinics and so on are also of great importance to the optimal health of the child (Smith 2002). Therefore, this study aims to assess the effect of maternal employment on the nutritional status of their children.

Materials and Methods

Facility-based cross-sectional study was conducted from July 1- 30, 2019 in Kolfe-keraniyo Sub-city Addis Ababa Ethiopia. Kolfe-keraniyo Sub-city is one of the 10 sub-cities of Addis Ababa the capital city of Ethiopia. As of 2011, its population was 546,219 of which 220,859 male and 235,360 female. The area of the sub-city is 61.25sq. km, with a population density of 7,448.5 per/sq.m There are 15 woredas and 11 health centers in the sub-city (AACAILIC 2006/2014). This sub-city was selected since there is limited study conducted before related to this topic.

All mothers with children age 6 to 23 months old in Kolfe-Keraniyo sub-city and visiting the health center during the data collection period were source population and all mothers with a child of 6-23 months old, who visited the selected health centers were the study population. Children who visited health centers only for vaccination and growth monitoring purposes and children from working and non-working mothers were included in the study. Children with chronic diseases and children whose mother died or a child and mother live separately were excluded. A mother is considered to be "non-working mother" if she reports she is not working at least for the last six months whereas a mother is considered to be a "working mother" if she reports earning income at least for the last six months by working either in government, NGO, public, private sector, or earnings based on self-managed income-generating work. To determine the sample size, single population proportion formula was used. With the prevalence statistical parameters formula, a total of 420 sample size was recruited by taking Confidence level of 95%; Power of 80%; P, prevalence of stunting in children of the unemployed mothers 46% (obtained from the previous study (Wondafrash et al. 2017) which has similar aims and sound finding reports related to the outcome variable); d-the permissible margin of error (the required precision=5%), and none response rate 10%.

Four of the 11 health centers of the sub-city were selected by the lottery method. Study participants were drawn proportionally from the selected health centers. Finally, study subjects were selected by using a simple random sampling method. Nutritional status of the children (stunting, wasting and under-weight) was taken as the dependent variable of the study.

Referenced Z-scores while nutritional status of children was assessed from the median of WHO reference population:

Stunting

Moderate: Height-for-age between -2 SD to -3 SD,

Severe: Height-for-age < -3 SD

Wasting

Moderate: Weight -for- height between -2SD to -3

SD Severe: Weight -for- height < -3 SD

Underweight

Moderate: Weight-for-age between -2SD to -3 SD

Severe: Weight-for-age < -3 SD

The questionnaire was administered to the mothers in face-to-face interview, then anthropometric measurements (weight and length) were taken from their children. Mothers were asked to recall foods and drinks that children had eaten for the past 24-hour preceding the interview. The anthropometric measurements of children were entered to ENA-SMART software for nutritional analysis and then transferred to SPSS version 24 for further statistical

analysis. The collected data were entered and analysed by using SPSS software. Frequencies of descriptive statistics were presented using graphs and table. Variables that had P-value of 0.2 or less on binary logistic regression were entered into multiple logistic regression to assess the association between dependent and independent variables and to control the effect of cofounders. P-value of ≤ 0.05 was taken as statistically significant. Ethical clearance was obtained from Santé medical college, Addis Ababa City Administrative Health Bureau, and communication was made with the officials of Kolfe-keraniyo sub city and selected health centers. The confidentiality of each study participants in sampled client information was assured. All participated individuals had informed about their right to refuse participation and data collectors were instructed not to attempt to force any one to participate.

Result

Socio-demographic characteristics of the study

participants: From a total of 420 mother-child pairs, 417 mothers were included in the study and the response rate was 99%. Of those 207(49.6%) were employed and 210(50.4%) were unemployed. Regarding maternal age, 102(49.3%) of employed and 91(43.3%) of unemployed mothers were found within the age range of 25-29 years (Table 1).

Table 1: Socio-demographic characteristics in study participants Kolfe-Keraniyo Sub-city, Addis Ababa, Ethiopia, 2019

Variable	Employed N (%)	Unemployed N (%)	Total N (%)
Age of mother			
18-24	65(31.4)	51(24.3)	116(27.9)
25-29	102(49.3)	91(43.3)	193(46.3)
>30	40(19.3)	68(32.4)	108(25.85)
Religion			
Orthodox	93(44.9)	87(41.4)	180(43.15)
Muslim	82(39.6)	100(47.6)	182(43.6)
Protestant	32(15.5)	23(11.0)	55(13.25)
Marital status			
Married	194(93.7)	205(97.6)	399(95.67)
Divorced	13(6.3)	5(2.4)	18(4.35)
Educational status			
College and above	99(47.8)	52(24.8)	151(36.3)
High school	51(24.6)	47(22.4)	98(23.5)
Elementary school	30(14.5)	66(31.4)	96(22.95)
Read and write only	18(8.7)	25(11.9)	43(10.3)
Unable to read and write	9(4.3)	20(9.5)	29(6.9)
Monthly income of husband			
Less than Birr 500	8(3.9)	2(1.0)	10(2.45)
Birr 500 - Birr 2000	12(5.8)	36(17.1)	48(11.45)
Birr 2001- Birr 4500	46(22.3)	44(21.0)	90(21.65)
More than Birr 4500	78(37.9)	66(31.4)	144(34.65)
Don't Know	62(30.1)	62(29.5)	124(29.8)
House hold size			
2-3	85(41)	80(38.1)	165(39.6)
4	100(48.3)	81(38.6)	181(43.45)
5 or more	22(10.6)	49(23.4)	71(17)
Head of the household			
Male	77(37.2)	204(97.1)	286(67.15)
Female	38(18.4)	5(2.4)	43(10.4)
Both	92(44.4)	1(0.5)	93(22.45)

About 180(43.15%), 182(43.6%), and 55(13.25%) of the study participants were orthodox, Muslim, and protestant followers, respectively. Majority of employed (93.7%) and unemployed (97.6%) mothers were married. Pertaining to the educational status of mother, 99(47.8%) of employed and 52(24.8%) of unemployed mothers were attended college and above, 9(4.3%) of employed and 20(9.5%) of unemployed mothers were unable read and write. When employed mothers were asked about the type of work they did, 64(31%) of mother were government employee, 47(23%) were self-employee, 46(22%) private sector employee, vender (13%), and daily laborer (9%).

Participants child characteristics: Ninety seven (46.9%) of employed and 106(50.5%) of unemployed mothers had children within the age range of 12-17 months. One hundred twenty two (58.9%) and 111(52.9%) of females and 85(41.1%) and 99(47.1%) of males were from employed and unemployed mothers, respectively. Regarding child birth weight, majority 174(84.1%) of employed and 177(84.3%) of unemployed were normal. All 207(100%) of employed and 210(100%) of unemployed mothers children were vaccinated according to their age and 231(55.4%) of the children were fully immunized from both employed and unemployed mothers.

Table 2: Participants' child characteristics by employment status in Kolfe-Keraniyo Sub-city, Addis Ababa, Ethiopia, 2019

Variable	Employed N (%)	Unemployed N (%)	Total N (%)
Age of child			
6-11	66(31.9)	34(16.2)	100(24.05)
12-17	97(46.9)	106(50.5)	203(48.7)
18-23	44(21.3)	70(33.3)	114(27.3)
Sex of child			
Female	122(58.9)	111(52.9)	233(55.9)
Male	85(41.1)	99(47.1)	184(44.1)
Birth weight			
LBW	14(6.8)	16(7.7)	30(7.75)
NBW	174(84.1)	177(84.3)	351(84.2)
HBW	19(9.2)	17(8.1)	36(8.65)
Child fever(last 2 weeks)			
Yes	41(19.8)	58(27.6)	99(23.7)
No	166(80.2)	152(72.4)	318(76.55)
Child cough(last 2 weeks)			
Yes	31(15)	46(21.9)	77(18.45)
No	175(84.5)	164(78.1)	339(81.3)
I don't know	1(0.5)		1(0.5)

Breastfeeding practice of mother: From the total study participants, 415(99.5%) had ever breastfed their children, of those 205(49.4%) of mothers were employed and the remaining 210(50.6%) were unemployed. Eighty-eight (42.5%) of employed and 67(31.9%) of unemployed mothers had given formula milk for their children before initiation of breastfeed. About 126 (60.9%) of employed and 127(60.5%) of unemployed mothers initiate breast-feeding during the first hour after delivery. The prevalence of exclusive breast feeding practice among employed and unemployed mothers was 74(35.7%) and 160(76.2%), respectively. One hundred sixtyseven (80.7%) of employed and 173(82.4%) of unemployed mothers were breastfed their children till the time of the survey, and 40(19.3%) of employed and 37(17.6%) of unemployed were not. Nearly nineteen (47.5%) of employed mothers were stop breastfeeding because of their working condition.

Complementary feeding practice and minimum dietary diversity of the child: Most of the study participants 200(96.6%) of employed and 207(98.6%) of unemployed mothers were started complementary feeding for their children, of which 123(61.5%) of employed and 39(18.8%) of

unemployed were started before six months. Majority 343(82.2%) of both employed and unemployed mothers were feeding their children additional foods and fluids apart from breast milk three or more times a day. Regarding the use of bottle feeding which has nipple, 129(63.3%) were employed and 78(37.7%) were unemployed. When mothers asked about child feeding practice apart from breast milk, from seven food groups which are listed in WHO indicators for assessing infant and young child feeding practice guideline 124(62%) of employed and 94(45.4%) of unemployed mothers were given four or more food groups for their children.

Mothers working characteristics: About 174(84.1%) of mothers were working for 5-6 days/week and 124 (59.9%) of employed mothers reported to work for 4-8hours/day, and 171(82.6%) of the mothers had no onsite child care at their workplace. During their working time, 11(5.3%), 26(12.6%), 170(82.1%) were used expressed breast milk, infant formula, and other liquids and foods, respectively.

Nutritional status of children: The result of Anthropometry demonstrates that the prevalence of wasting, stunting, underweight, and overweight

among infant and young children of both employed and unemployed mother was 6.95%, 9.82%, 10.5%, 5.55%, respectively. The study result indicates that majority of employed mothers children (94.2%) and

unemployed children (91.9%) had normal weight for age Z score and 29(6.95%) of both employed and unemployed mothers' children were wasted.

Table 3: Complementary feeding practice and Dietary diversity score of the child among employed and unemployed mothers in Kolfe-Keraniyo Sub-city, Addis Ababa, Ethiopia, 2019

Variable	Employed Number (%)	Unemployed Number (%)	Total Number (%)
Additional fluid/ food			
Yes	200(96.6)	207(98.6)	407(97.6)
No	7(3.4)	3(1.4)	10(2.4)
When did you start			
<6months	123(61.5)	39(18.8)	162(40.15)
>6 months	77(38.5)	168(81.2)	245(59.85)
How many times do you feed apart from breast milk			
1-2 times	37(17.9)	27(12.9)	64(15.4)
3 times	110(53.1)	84(40.0)	194(46.55)
>3 times	53(25.6)	96(45.7)	149(35.65)
Not yet	7(3.4)	3(1.4)	10(2.4)
Snack in b/n main meals			
Yes	164(79.2)	174(84.1)	338(81.65)
No	43(20.8)	33(15.9)	76(18.35)
Give infant formula			
Yes	52(25.1)	38(18.4)	90(21.75)
No	155(74.9)	169(81.6)	324(78.25)
Feeding bottle which has nipple			
Yes	129(62.3)	78(37.7)	207(50)
No	78(37.7)	129(62.3)	207(50)
Dietary diversity score			
Good (≥ 4 food groups)	124(62)	94(45.6)	218(53.8)
Poor (≤ 3 food groups)	76(38)	112(54.4)	188(46.2)

About 376(90.3%) of both employed and unemployed mothers children had the normal height for age Z score; 35(8.38%) and 6(1.44%) of children had moderate and severe stunting respectively. Regarding weight for height Z score 373(89.5%) of both employed and unemployed mothers children had

normal weight for their age, and 44(10.5%) of children were underweight. Pertaining to heavyweight for height Z score from the total 417 children 19(4.55%) and 2(1.0%) were overweight and obese, respectively.

Table 4: Nutritional status of children among employed and unemployed mother in Kolfe-Keraniyo Sub-city, Addis Ababa, Ethiopia, 2019

Variable	Employed N (%)	Unemployed N (%)	Total N (%)
Weight for height Z score			
Normal (+2 to -2SD)	195(94.2)	193(91.9)	388(93.05)
Moderate (<-2 SD to ≥ -3 SD)	12(5.8)	17(8.1)	29(6.95)
Height for age Z score			
Normal (+2 to -2 SD)	193(93.2)	183(87.4)	376(90.3)
Moderate (<-2 SD to ≥ -3 to)	13(6.3)	22(10.47)	35(8.38)
Severe (<-3 SD)	1(0.5)	5(2.38)	6(1.44)
Weight for age Z score			
Normal (+2 to -2 SD)	192(92.8)	181(86.2)	373(89.5)
Moderate (<-2 SD to ≥ -3 SD)	15(7.2)	29(13.8)	44(10.5)
(Heavy)Weight for height Z score(over weight)			
Normal (+2 to - 2 SD)	194(93.7)	202(96.2)	396(94.9)
Over-weight (>2 SD)	13(6.3)	8(3.8)	21(5.05)

Factors influencing the nutritional status of children

Stunting: Stunting was to be influenced more by the size of family members and minimum dietary diversity score of children. Children from family size of four and above were more likely to be stunted as compared to children from family size of three or less [AOR 3.45, 95%CI: (1.58, 7.52)]. Also, children who were not met minimum dietary diversity score

(MDDS) was likely to be stunted compared to children who were met MDDS [AOR 16.84, 95%CI: (5, 56.75)].

Wasting: Wasting was found to be strongly associated with child vaccination status. The odds of not fully vaccinated children being wasted was [AOR 4.70, 95% CI (1.49, 14.87)] compared to fully-vaccinated children.

Table5: Association of child and maternal related variable with child stunting, under-weight and wasting in Kolfe-Keraniyo Sub-city Addis Ababa, Ethiopia, 2019

Variable	Nutritional status of children							
	Wasting COR(95%CI)	AOR(95%CI)	Stunting COR(95%CI)	AOR(95%CI)	Underweight COR(95%CI)	AOR(95%CI)	Malnutrition COR(95%CI)	AOR(95%CI)
Employment status								
Not employed/Empto	1.56(0.71, 3.42)	1.24(.46, 3.33)	2.02 (1.03,3.98)*	0.79 (0.34,1.82)	2.04 (1.06,3.93)*	1.20 (0.53,2.70)	1.93 (1.25,2.98)€	1.35 (0.79,2.32)
Family size								
≥ 4/<4	2.54(1.1, 5.88)*	1.76(.69, 4.48)	4.30 (2.17,8.54)§	3.45 (1.58,7.52)€	2.63 (1.31,5.28)€	1.75 (0.8,3.82)	4.05 (2.38,6.9)§	3.35 (1.83,6.13)§
4 th vaccination								
Not completed	3.25 (1.23, 8.64)*	4.7(1.49, 14.87)€	0.82 (0.24,2.79)	1.26 (0.31,5.05)	1.06 (0.36,3.16)	1.57 (0.45,5.44)	1.08 (0.51,2.27)	1.26 (0.53,2.99)
CF initiation time								
<6/≥6	1.10 (0.51, 2.40)	1.37 (.52,3.60)	0.38 (0.18,0.81)€	0.43 (0.18,1.06)	0.58 (0.29,1.15)	0.80 (0.35,1.84)	0.74 (0.48,1.15)	1.07 (0.61,1.87)
Food diversity								
Poor/good	18.33 (4.29,78.32) [§]	20.7 (4.67,91.94)§	19.21 (5.82,63.37)§	16.84 (5.56,75)§	32.88(7.8,137.89)§	30.01 (7.09,126.9)§	7.56 (4.62,12.39)§	7.02 (4.2,11.71)§

Significant level (P-value) for $\alpha = < 0.05$, < 0.01 and < 0.001 represented by *, € and §

Discussion

The present study was designed to determine the effect of maternal employment status on the nutritional status of 6 to 23 months old children in Kolfe-keranyo sub-city, Addis Ababa. In this study, the overall prevalence of stunting, under-weight, and wasting among children from both employed and unemployed mothers was 9.8%, 10.5%, and 6.95% respectively, which is lower than the stunting (37%) and underweight (21%) prevalence of the National Ethiopian Mini Demographic and Death Survey. This is could be due to the difference in sample size between the two studies, while the prevalence of wasting in this study was 6.95% which is consistent with EDHS report of 7 % (EDHS 2016).

The current study found that the prevalence of ever breastfeeding was 99.5%. The percentages in both groups were almost similar to EDHS 2016 reports of 97 % (EDHS 2016). In contrast, this study result is higher than the study done in Wolayta sodo town prevalence of ever breastfeeding was 90.8% and 82.6% among employed and unemployed mothers respectively (Eshete et al. 2017). The results of this study indicated that the prevalence of exclusive breast feeding among employed and unemployed mother was 35.7% and 76.2%, respectively. Recent studies on determinants of exclusive breastfeeding mention maternal employment as one factor that influences the practice (Mekuria and Edris 2015; Ogunba and Sciences 2015; Taddele et al. 2014).

The study conducted in Northwest Ethiopia, Injibara Town, showed the prevalence of exclusive breastfeeding practice was 44% and 65% among employed and unemployed mothers, respectively (Mekuanint 2014) which is comparable with this study finding. In Ghana, studies on maternal work and exclusive breastfeeding in parts of the country have looked into exclusive breastfeeding practice of

formal sector working mothers, and have found that mothers in this sector are unable to practice exclusive breastfeeding as recommended by the WHO due to conditions prevalent at their work places. These studies found that exclusive breastfeeding rate among formal sector working mothers ranges from 10% to 50% depending on the type of work (Danso 2014; Gladzah 2013). The most startling finding was that, the prevalence of prelacteal feeding which was 42.5% and 31.9% among employed and unemployed mothers respectively, which is much higher than EDHS 2016 reports of 8%. It might be due to urbanization of the study area and the increasing number of cesarean section delivery 28.6%, which results delayed the contact hour of mothers with their child after delivery for different reason. According to EDHS 2016 report, infants in urban areas were more likely to receive prelacteal feeding (12%) than those in rural areas (7%). And children born to mothers with more than secondary education were more likely to receive a prelacteal feeding 17%, compared with children of mothers with secondary education or lower 7-8% (EDHS 2016). In contrast with this finding, the study done in Ghana revealed that employed mothers were less likely to practice prelacteal feeding compared to unemployed mothers. The negative association might have been as a result of more employed mothers having formal education than unemployed mothers (Akasise 2017).

As mentioned in the literature review, Mothers' employment status was strongly associated with complementary feeding (Solomon et al. 2017). The result of this study showed that, 61.5% of employed and 18.8% of unemployed mothers were started complementary feeding for their children before six months of age. The high percentage of employed women was started complementary feeding as early as the recommended age compared with their unemployed counterparts. Previous studies indicated

that inadequate time for childcare by working mothers could influence the complementary feeding initiation and practices of mothers. A study in northern Ethiopia revealed that house-wives (unemployed mothers) were more likely to initiate timely complementary feeding compared to employed mothers (Shumey et al. 2013).

Dietary diversity is a proxy for adequate micronutrient density of foods. Minimum dietary diversity assesses food intake among children age 6 to 23 months from at least four food groups. The cut-off of four food groups is associated with better-quality diets for both breastfed and non-breastfed children. Consumption of food from at least four food groups means that the child has a high likelihood of consuming at least one animal source of food and at least one fruit or vegetable in addition to a staple food (grains, roots, or tubers) (EDHS 2016). Inappropriate complementary feeding practices increase the risk of under nutrition, illness and mortality among children under the age of two years (WHO 2003, 2009). Despite have optimum breastfeeding, children who do not receive sufficient dietary diversity and meal frequently after 6 months of age could become stunted (Black et al. 2008).

In this study, 62% of employed and 45.4% of unemployed mothers were given four or more food groups for their children prior to the data collection day, surprisingly, it is much higher than the reported national (EDHS 2016). On the other hand, which was comparable with the study done in Addis Ababa 59.9% (95% CI: 54.7–65.3) of the children aged 6–23 months had fed on four or more food groups meeting the minimum requirement of diversified diet (Solomon et al. 2017). In fact, the study found that a strong association between dietary diversity scores of children and all forms of malnutrition (stunting, under-weight and wasting). Another important finding was that maternal educational attainments of secondary and above were significantly associated with minimum dietary diversity compared to those mothers who had no formal education. This finding is consistent with another study done in Addis Ababa (Solomon et al. 2017).

Another important finding was that, 100% of both employed and unemployed mothers child were vaccinated according to their age, and 55.4% of the children were fully immunized from both employed and unemployed mothers. This was highest from national survey report of 89% (EDHS 2016).

The overall result showed that there was no statistically significant association between maternal employment status and nutritional status of their children. However, Family size, minimum dietary

diversity score of children was strongly associated with stunting. Wasting was found to be influenced more by children vaccination status. All maternal and child characteristics except for family size, children vaccination status and dietary diversity score left insignificant for the association with child nutritional status. Although, these results differ from studies which were done in Adama town (Wondafrash et al. 2017), it was consistent with a study done in Wolayta sodo town, which reported the same insignificant association (Eshete et al. 2017). In general, in this study family size, vaccination status and dietary diversity score of children was the most important factors which influenced children nutritional status positively or negatively. This study shares the common limitation of the cross-sectional study – difficult to make a causal association. As the study considered the 24-h recall method to assess the dietary diversity score of children, it might not accurately reflect participants past feeding dietary habit and there might be a recall bias.

Conclusions and Recommendations

In this study, that prevalence of stunting, underweight and wasting among children 6 to 23 months old of employed and unemployed mothers was lower compared to the national reports. There was no statistically significant association between maternal employment and child nutritional status. However, the family size and minimum dietary diversity score of children were strongly associated with stunting. Wasting was found to be influenced more by children vaccination status. Therefore, nutritional intervention initiatives should focus on promoting family planning, motheral education on the importance of child vaccination and good dietary diversity practice, especially during postnatal followup.

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