

Assessment of Effect of Maternal Employment on Nutritional Status of Under Five Children In Mendera Kochi Kebele, Jimma Town, Jimma Zone, Ethiopia: Community Based Cross Sectional Study

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Abstract

Background: Malnutrition continues to be a critical public health problem in sub-Saharan Africa. For example, in East Africa, 48% of children under-five are stunted while 36% are under weight. Poor health and poor nutrition are now more characteristics of children living in urban area than of children in rural areas. Therefore this study assessed the effect of maternal employment on nutritional status of under-five children at Mendera Kochi kebele of Jimma town South West of Ethiopia.

Method: Community based cross sectional study design was conducted in Jimma town Mendera Kochi kebele from April 15-May 05. Systematic sampling technique was used. Pre-tested structured questionnaires used for data collection. A total of 264 study subjects were interviewed. The collected data analyzed using SPSS 20 version.

Result: Out of 264 total households the majority, 96(36.4%) of mothers were living in households with 3-4 or more family members. Out of 264 respondents 155(58.7%) were government employee, 93(35.3%) and the remaining were private and NGO employees. The income level of majority of respondents, 54.5% was between 1000 and 1500. A total of 254 children aged 0–59 months were enrolled in this study. The age of the children in the study area, 6-12 months 89(35%), 12-24 months 111(43.6%), and 24-59 months 54(21.4%) respectively. Weight of children's 53(21.1%) were between 1500-2500 gm, 40(16.1%) were between 2500-4000gm, 25(9.8%) were >4000gm and the rest were below 1500gm. 151(57.2%) children of working mothers had a mean upper arm circumference value of ≥ 23.5 . 51.1% of the children had height for age ranged from 90-95% percentiles.

Conclusion- The children of working mothers were observed to achieve better nutritional status from their anthropometric measurement. Maternal employment is not a protective factor against diarrhea and acute respiratory infection.

Introduction

Nutrition has special significance in countries with disadvantages in socioeconomic and hygienic standards. The problems of poverty, safe drinking water, environmental hygiene and poor literacy contribute to the problems of nutrition and public health (1). Hunger and malnutrition are devastating problems, particularly for the poor and underprivileged (2). Anthropometry evaluates long term nutritional history with rapid, accurate, reliable and quantitative means of nutritional assessment, which is useful in monitoring normal growth and nutritional health in well-nourished individuals. Nutritional anthropometry is of vital importance in growth failure and under nutrition. The state of nutrition both under and over can be detected objectively by studying the characteristics of each age group – weight, height, various circumferences and skin folds. Nutritional anthropometry is defined as measurements of variations of the physical dimensions and the gross composition of the human body at different age levels and degree of nutrition (3, 4).

Childhood and women during pregnancy and lactation are supposed to vulnerability to malnutrition (5, 6). Chronic under nutrition occurs when long term food consumption is insufficient to meet the energy requirements, on a daily basis for daily energy expenditure. It is usually assessed in terms of body measurements in adults – in thinness; in children – stunting. Nutritional status of children is linked with the mothers'. Good nutrition of women is not only essential for the wellbeing of women, is also an important factor determining the growth and development of their children in uterus and as young children (9). The conditions of poverty, most importantly the high proportion of women working away from home, the dependence on cash income and the deteriorating environmental conditions pose special challenges to the care of children. The nutrition, growth and development of infants and young children depend not only on sufficient food, but also on adequate health services and appropriate care behaviors(9).

Women's participation in the work force in developing countries has been increasing steadily over the last several decades (12). On global basis 42% of women over age 15 are in the labor force. African women, produce as much as 80% of the food, and supplement family income by working in the formal and informal sectors as traders and producers (13).

In developing countries, the percentage of women in the paid labor force increased from 28% in 1950 to 32% in 1985, 54% in 1996 and 63% in 2011 (14,15).

In Ethiopia, in the rural area 85% of the women involved in agricultural work, while in the urban areas due to various social crises as well as rural urban migration, about 35%of urban dwellers are women. This huge work force was forced to engage in low skills, education and inability to compete with their male counter parts (16).

Nutritional problems, including malnutrition and under-nutrition, have the major health and welfare problems facing developing countries for the last fifty years (17). Malnutrition is complex in its etiology and cumulative in its manifestations. It not only impairs physical and intellectual performance, but also causes considerable ill health and contributes significantly to child morbidity and mortality. Thus, malnutrition continues to be a problem of considerable magnitude in most developing countries. Among the population, children suffer the most from effects of malnutrition and diarrhea, which often coexist, so much, so that it remains to be the main source of suffering, disability and death (11)

To date, they remain to be the main sources of suffering, disability and death, particularly among children and mothers in most developing countries. The fact that women have dual responsibilities placed on them; to provide care and to provide income; justifies a particular focus on the relation of women's work to child outcomes. According to a report by UNICEF, this "silent emergency"- malnutrition, with other diseases, causes 40,000 child deaths every day with another 150 million children living with ill health and poor growth. One-fourth of child deaths in the world, one-third of child deaths in Africa are attributed to malnutrition (18, 19). About 25% of the World's under-five children are described as malnourished (20).

Concern for the dual role of woman in developing societies, both as income earner and family care provider, has recently emerged as an important factor in development planning. Focusing on nutrition, it would appear that increased income should lead to improved family welfare, and thus, too improved child dietary intake and nutritional status.

Therefore, there is an argument that income earned by mother or maternal employment has a direct effect on childcare, nutritional status of children and the mother themselves. Such argument, however, has not been substantiated by studies from developing countries (21).

Very few studies however indicated that the nutritional status of children of working and non-working mothers was not significantly different (27).

Different studies showed that women's employment might exert influence on household nutrition through increased status, power autonomy of decision-making ability (28).

Different literatures revealed that the relationship between maternal work status, well-being, and nutritional status of children are complex issue surrounded with controversies. The Ethiopian government policy on women aims at creating an opportunity that encourages women's participation in the labor force. Hence, the percentage of women in the labor force is increasing from time to time. Therefore, it would be of interest to find out whether the well being of children affected more by the time constraints of women working, or by the increased income generated by the mother's working particularly in urban setting. Hence, with this understanding this study was initiated. Therefore, in this study, maternal work status was examined in relation to nutritional (anthropometrics) and health status of children (29).

Materials And Methods

Community based cross sectional study was conducted on randomly selected 264 women of reproductive age (15–49) who have under five children within selected households. Single population proportion formula was used to determine the required sample size with the assumptions, P = the national prevalence to the lowest level in Addis Ababa of malnutrition 22% (30), d = Degree of accuracy required (sampling error) 5% i.e. d = 0.05., Z = Standard score for 95% confidence level 1.96., Number of households of the kebele 2, 926. This gave a sample size of $n = (1.96)^2 * 0.22(1-0.22) / (0.05)^2 = 264$. By using correction formula, $nf = n / 1 + n / N$

Where: nf = final sample size, n = initial sample size, N = total household, $nf = 264 / (1 + (264 / 2, 926)) = 240$. With 10% contingency, $nf = 240 + 24 = 264$ was the final sample size. Systemic sampling technique was used. Dividing the total number of household for the calculated sample size, $(2, 926 / 264)$ k interval obtained (K ~ 11). The first house was selected by simple lottery method.

The data collection conducted through face to face interview using pre-tested structured questionnaire adopted from previous studies and translated to local language.

Data collectors (five Midwifery students and one MSc nutrition expert) additionally utilized Measuring tape and MUAC measurement for detecting under five children's nutritional statuses. Data collectors trained before actual data collection.

To maintain the quality of data pre-test was done on 5% of the sample. After data collection, each questionnaire was checked for completeness, edited, cleaned for missed values and missed variables and analyzed using SPSS version 20 for frequencies and percentages for categorical variables and means for numerical variables and the result was presented using tables, figures and texts.

Result

Socio- demographic of respondents

Out of 264 total households the majority, 103(40.7%) of mothers were Muslims. Majority of mothers 98 (38.6) can read and write, Illiterate 90 (35%), Primary 39 (15.4%) and the rest were secondary, tertiary and above. Oromo was the dominant ethnicity constituting 220 (86.6%) followed by Dawro 19 (7.5%) and other ethnic groups 15 (5.9%). With respect to marital status, more than half were married 194(73.6%) and the rests were single. Most mothers, 117(44.5%) were aged 25–30 years and more. About 96(36.4%) of mothers were living in households with 3–4 or more family members. Out of 264 respondents 155(58.7%) were government employee, 93(35.3%) and the remaining were private and NGO employee. The income level of majority of respondents was between 1000 and1500 which is (54.5%).

Distribution of mothers' employment

From all working mothers, 33(21.3%) of them were working the whole week, while 105(93.7%) of them still need support from their husband (Table 1).

Table 1
Distribution of mothers by employment in the last 12 months, Jimma south west
Ethiopia, May 2017.

		No of days doing work per week	Frequency	%
Employed mothers	Yes	1–2 days	26	17.1%
		3–5 days	96	63.2%
		The whole week	33	21.3%
		TOTAL	155	100%
	No	From husband	105	93.7%
		From relatives	4	3.6%
		Help from others	3	2.7%
		TOTAL	112	

Characteristics and Feeding pattern of under five children

A total of 254 children aged 0–59 months were enrolled in this study. 46.1% and 53.9% were (Males) and (Females), respectively. The age of the children in the study area was 6–12 months 89(35%), 12–24 months 111(43.6%), and 24–59 months 54(21.4%) respectively. Concerning place of delivery, out of 264 respondents 155(58.9%) mothers were delivered at health institutions. The remaining delivered at home being assisted either by traditional trained birth attendants (TTBA), traditional birth attendants (TBA), and/or relatives. According to mother’s information 147(57.9%) children were measured at birth for their weight. Hence, from children whose weight was measured, 53(21.1%) were between 1500–2500 gm, 40(16.1%) were between 2500-4000gm, 25(9.8%) were > 4000 gm and the rest were below 1500 gm.

Employed mothers Child diagnosis with nutritional related illness indicated that most of them 25(39.7%) and 20(31.7%) were due to poverty and lack of adequate care respectively (Table 2). Most of the mothers, 123(48.4%) breast fed within the interval of 4-6months (see Table 3). 77(29%) of those mothers reporting having worked outside home in last12 months started introduction of weaning < 6months(Table 5). 155(61%) of the mothers vaccinated their child at six weeks of their birth(Table 7). 51.1% height for age of children’s of working mothers were ranged from 90–95% percentiles(Fig. 1).

Table 2

Distribution of under five children by nutritional status, Jimma south west of Ethiopia, May 2017.

			Frequency	%
Child diagnosis with nutritional related illness	YES	Lack of adequate care	20	31.7%
		Inadequate breast milk feeding	15	23.8%
		Poverty	25	39.7%
		Chronic medical Illness	2	3.2%
		Other	1	1.6%
		Total	63	100%
	No	Total	201	76.3%

Table 3

Distribution of under five children by their breast feeding time in months in Jimma South West Ethiopia, May 2017.

Variables		Frequency	%	
Breast feed the child	Yes	Less than four months	25	9.8
		4–6 months	123	48.4%
		7–9 months	49	19.3%
		10–12 months	25	9.8%
		> 12 months	30	11.9%
		Total	252	99.2%
	No	2	0.8%	
Duration of exclusive breast feeding	< 2 months	5	1.97%	
	< 4 months	41	16.1%	
	<=6 months	204	80.3%	
	> 6months	2	0.8%	
Age of child weaned	< 2 months	5	1.97%	
	2-4months	25	9.8%	
	4-6months	26	10.2%	
	> 6 months	196	77.2%	
Frequency of breast feeding during day light hours on working days	< 2 times	4	1.6%	
	3–4 times	55	21.6%	
	5–6 times	155	61%	
	> 6 times	38	14.96%	

Childhood diseases

Three illnesses that are of major importance for infant and child survival that have been found in the survey were, fever, acute respiratory infection (ARI), and diarrhea.

The prevalence of acute respiratory infection was estimated by asking mothers if their children under-five had cough with short and rapid breathing in the two weeks preceding the survey. These symptoms were compatible with pneumonia. It should be born in mind that morbidity data collected in the survey were

subjective, i.e., dependent on mothers' perception of illness, and not validated by medical personnel. Out of 254 total children of the age of under five only 5 (1.96%) children has been ill in the last two weeks before the data collection, the commonest one was ARI 4(80%). 3(60%) of them were seek treatment in government health institution. 47 (17%) of mothers reporting having worked outside home within last 12 months reported their children's Childhood illnesses (Table 4)

Table 4

Distribution of mothers by working characteristics, under five children breast feeding time and child hood illness, Jimma south west of Ethiopia, May 2017.

Variable	category	Frequency			Total
Have you taken any job outside home last12 months	Breast feeding	2-4 month	4-6 months	> 6 months	
	Yes	25	42	88	155
	No	13	51	45	109
Have you taken any job outside home last12 months	Child hood illness	Yes	No	Don't know	
	Yes	47	107	1	155
	No	42	55	12	109

Table 5

Distribution of mothers by working characteristics and introduction of weaning for under five children, Jimma south west of Ethiopia, May 2017.

Variable	category	Frequency			Total
Have you taken any jop outside home last12 months	Introduction of weaning	< 6 months	12-24 months	> 24months	
	Yes	77	43	35	155
	No	4	60	45	109

Nutritional Status Description

Anthropometrics data showed that, the children of working mothers observed to achieve better nutritional status as based on their MUAC measurement. 151(57.2%) of them had a measurement value of ≥ 12.5 (Table 6).

Table 6

Distribution of mothers by working characteristics and under five children by MUAC measurement, Jimma south west of Ethiopia, May 2017.

Variable	category	Frequency			Total
	MUAC	≥ 12.5	11-12.5	< 11	
Have you taken any job outside home last 12 months	Yes	151	2	2	155
	No	99	6	4	109

Table 7

Distribution of under five children by taking of vaccination, Jimma south west of Ethiopia, May 2017.

		Time of taking vaccination	Frequency	%
Is your child vaccinated	Yes	Within two weeks of birth	2	0.78%
		At six weeks of birth	155	61%
		At ten weeks of birth	25	9.8%
		At 14 weeks of birth	25	9.8%
		At 9 months of birth	15	5.9%
Total			222	87.4%
No	Total		32	12.6%

Discussion

The study has been attempted to assess the effect of maternal employment on nutritional status of under five children. The overall result showed that the prevalence of stunting was 7.4% children. Children of working mothers were seen to have a better nutritional status with done anthropometric measurements. Numerous studies have found that children of working mothers have a lower nutrition status (18, 22, and 24). Others however, have found maternal employment outside the home to have a positive impact on children's nutrition status (27, 32).

It is also believed that economically independent women are more likely to use their knowledge to maintain good nutrition. The overall nutritional status of children of working mothers is significantly better, particularly height-for-age were positively associated with maternal employment. This could be due to the fact that maternal employment increases economic gain of a mother that has a positive impact on children's dietary intake and anthropometry. This finding was consistent with other studies done in other country (27, 32, 33, and 20). In relation with maternal employment the household economy could be an important factor for the welfare and nutritional status of children. This finding was also consistent with the results obtained in a study done in Bangladesh (2).

The pattern of infant feeding has important influences on nutritional status of children. Feeding practices are among the principal determinants of child nutrition. These effects are influenced by the age at which the child receives liquid and solid food supplementations. In this regard, due to variations in maternal time, the majority of working mothers started feeding their children with liquids and foods supplementations earlier before the age of weaning and also early termination of breastfeeding was observed more in working mothers. This could be due to the fact that the occupation in which working mothers engaged was not compatible in such a way that mothers were able to continue to care for the child while working or return home to supervise child care. Thus, working mothers were obliged to leave their children with somebody else who care for their children. Extensive body research suggests that if adequate alternative childcare is available, there are no negative impacts of mother's employment on the child (41). However, in the much more economically and environmentally stressed situation in which many Ethiopian women live, this conclusion may not hold.

Therefore, due to all these facts, children of working mothers were at the disadvantage with regard to childcare and feeding practices. Thus, these inappropriate feeding practices increase the chance of child's malnutrition (37)

Conclusion

The children of working mothers were observed to have better nutritional status from their anthropometric measurements with higher MUAC values. 151(57.2%) of the children had a mean upper arm circumference of ≥ 12.5 . 51.1% of the children had height for age measurement within 90–95% percentiles. This study evaluated working mothers feeding practices, including duration of their breastfeeding, and time of their initiation of supplementary weaning foods. It showed that working mothers were more likely to initiate weaning earlier. Maternal employment was not found as a protective factor against childhood illnesses such as diarrhea and acute respiratory infection.

Lists Of Abbreviations

ARI - Acute Respiratory Infection

BOD - Global Burden of Diseases

JUSH– Jimma University Specialized Hospital

ETB – Ethiopian Birr

HH – Households

F - Female

M - Male

MUAC – Middle Upper Arm Circumference

NCHS – National Children Health status

PEM - Protein Energy Malnutrition

UNICEF - United Nations International Children Emergency Fund

WHO – World Health Organizations

NGO – Non-Governmental Organization

BMI-Body Mass Index

MDG-Millennium Development Goal

HIV-Human Immune Virus

NDHS-National Demographic and Health Survey

AIDS- Acquired Immune Deficiency Syndrome

IFPRI-International Food Policy Research Institute

ANCOVA-Analysis of Covariance

Declarations

Ethics approval and consent to participate

Ethical clearance for the study was obtained from Jimma University. Official letter was obtained from Mendera Kochi Kebele administration to get permission and the first page of the questionnaire was providing full information to the study participants regarding the purpose and nature of the research. Verbal consent was obtained from each participant. Participation to the study was on voluntary basis, and participants was informed about their right not to participate in the study if they did not want to participate and the right to withdraw from the study at any point of the interview. Moreover, confidentiality of the information was assured through using anonymous questionnaires and keeping the data in secured place.

Consent for publication

Not Applicable.

Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing Interests

The authors declare that they have no competing interests.

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The study was funded by Jimma University. The funder has no role in the design of the study and collection, analysis, and interpretation of data and in writing the manuscript.

Authors' Contributions

Both authors participated in the design and analysis of the study. HA searched the databases, and wrote the first and second draft of the article. BF reviewed proposal development activities and each drafts of the result article. Both authors revised the manuscript and approved the final version.

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Figures

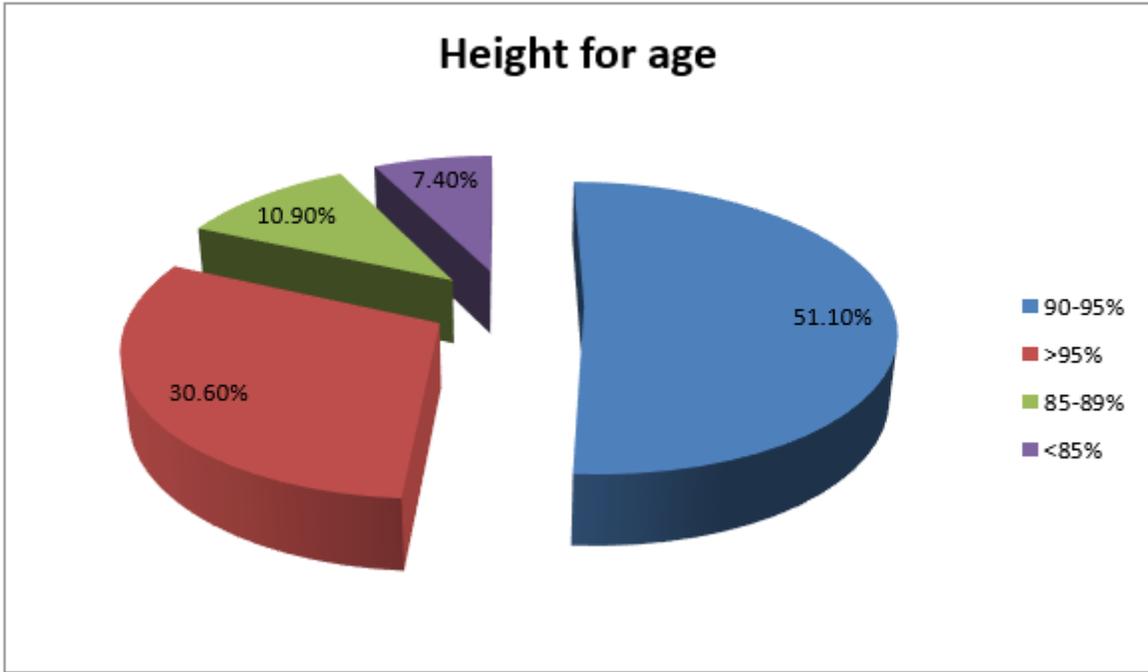


Figure 1

Height for age proportion of under five children, Jimma south west Ethiopia, May 2017