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ORIGINAL ARTICLE

Maternal Occupation and Child Nutritional Care among Working-Class Mothers of Children Aged 6-24 Months in Ibadan Metropolis

Ajayi OM,[1] Oyewole OE,[2] Agada PA,[3] Asuzu MC.[4]

[1] Texila American University, Gayana

[2] Department of Health Promotion and Education, Faculty of Public Health, College of Medicine, University of Ibadan, Ibadan.

[3] Department of Community Health and Primary Care, College of Medicine, University of Lagos Idi-Araba, Lagos State

[4] Department of Community Medicine, University of Medical Sciences, Ondo-City, Ondo State.

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Maternal Occupation,

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Working-Class Mothers,

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ABSTRACT

Background: Mothers' involvement in income-generating activities can limit their time on child-care practices, which may negatively affect their children's nutritional status. This study was designed to investigate the perceived effect of maternal occupation on the nutritional care of children aged 6-24 months.

Methods: This cross-sectional survey involved 392 consenting working-class mothers with children aged 6-24 months purposively selected from vaccination centres in all four Oyo State-owned secondary and tertiary health facilities within the Ibadan metropolis. Child nutritional care (CNC) was measured using five domains of care: child-feeding knowledge (CFK), child-feeding practice (CFP), child-mother interaction (CMI), hygiene practices (HP), and health-seeking behaviour (HSB). Each scale was graded as <50%= poor and ≥ 50%= good. Data were analysed using descriptive statistics, the Chi-square test, and logistic regression at $p<0.05$.

Results: Most (81.0%) of the mothers worked long hours daily. Trend of poor CNC was 31.1% (CFK), 23.7% (CFP), 17.9% (CMI), 25.8% (HP), and 13.0% (HSB). Traders had poorer scores but no statistical significance for the selected domains CFK (53.0%), CFP (37.0%), CMI (45.0%), HP (61.4%) and HSB (100%). Mothers who worked six hours at most daily were more likely to have good HP (OR=1.31, 95% C.I: 0.68-2.50) and good CFK (OR=1.87, 95% C.I: 1.02-3.43) compared with mothers who worked more hours daily.

Conclusion: Traders provided poor child nutrition, and mothers who worked fewer hours daily had better hygiene practices and good child-feeding knowledge. Workplace childcare health education materials can potentially improve working mothers' childcare practices.

Correspondence to:
Olawumi Ajayi,
School of Public Health, Texila American University, Gayana
Email; wumi.ajayi@yahoo.com

INTRODUCTION

Undernutrition encompasses stunting, severe wasting, and intrauterine growth retardation. It has been linked to about 2.2 million deaths globally among children under the age of five.[1] Beyond hampering growth and development, malnutrition establishes a synergistic relationship with infection, escalating the vulnerability of malnourished individuals to infectious diseases due to compromised immune systems. Malnutrition, apart from delaying growth and development in children, also has a synergistic relationship with infection: it puts malnourished individuals at an increased risk of acquiring an infectious disease because their bodies cannot properly fight infection.[2] Infection then contributes to even greater malnutrition because the body either doesn't desire food or cannot properly absorb the nutrients it needs.[3] This is especially true among children in developing countries, where malnutrition contributes to over 50% of childhood deaths.[4]

Nigeria appears to have made some progress towards achieving the target for stunting. Despite the observed progress, 31.5% of children below the age of 5 years are still stunted, which is still higher than the average for the African region (30.7%).[5] Some progress has also been made towards achieving the target for wasting in this population. However, 6.5% of children under five are still affected, which is higher than the average for the African region (6.0%). To improve child survival in sub-Saharan Africa and to give young children the best possible start in life, better nutrition and child-feeding practices must become a priority.[6] Child nutrition is an indirect measure of living conditions and quality of life, which reflects how much investment is being made in an individual child's future as a future adult of society.[7]

Urban poverty, the high proportion of women working outside the home, dependence on cash income, and the unavailability of household resources (food, water, sanitation services, and alternative child caregivers) are the major constraints to good child-care practices in some African cities.[8] The Encarta dictionary defines occupation as the job by which someone earns a living or an activity on which time is spent. Infants and young children's nutrition, growth, and development depend on sufficient food, adequate health services, and appropriate care behaviours.[9]

Mothers' employment status has potential implications for virtually all aspects of children's growth and development, and nutrition outcomes are no exception. Research has also found that children born to employed mothers had a higher chance of undernutrition.[10] The quality of children's diets and subsequent physical health may depend significantly on whether and how much their mothers work outside the home. Childrearing can be time-intensive; it is an issue when major economic activities such as market work artisanship are added. Thus, there has been concern that maternal employment harms children by reducing the quantity and quality of time mothers spend with their families.[11]

The critical care practices that could impact child nutrition include caring for pregnant and lactating mothers, breastfeeding and feeding young children during illness, psychosocial care, food preparation and storage, and hygiene.[12] However, these factors largely depend on the availability of resources for the caregiver to implement. These resources include knowledge and practices about child rearing, control of resources and autonomy for childcare (these include decision-making role and employment of caregiver), workload and time constraints for providing childcare and social support (these include the availability of alternate caregivers, sharing of workload, father's role in childcare and community support).

The relationship between maternal occupation and mothers' ability to care for their children has not been explored in Ibadan, Nigeria. This study will provide information on the role of maternal occupation in childcare practices and, consequently, the nutritional status of children of women with children aged 6-24 months in Ibadan. This study examines the role of maternal occupation in child nutritional care, nutritional status, and children's health.

METHODOLOGY

Ibadan, the capital of Oyo State and a central commercial town in the state has inhabitants from different ethnic groups who are involved in varying degrees of economic activities. Oyo State has a population of 5.6 million[13] (NPC, 2006) and is located between latitudes 70 and 90 north of the equator and bounded by longitudes 20 and 40 east of the Greenwich Meridian. A descriptive cross-sectional survey was conducted on mothers of children aged 6 to 24 months engaged in income-generating activities and attending vaccination centres in secondary facilities within the Ibadan metropolis. The minimum working hours referenced in this study is six hours[14] because the standard working hours in Nigeria are 8 hours with one hour of break time; nursing mothers who are still breastfeeding are entitled to an additional one hour taken as two 30-minute breastfeeding breaks. The study area was an urban setting selected based on the commercial nature of state capital cities. The health facilities selected included Adeoyo State Maternity Hospital, Yemetu, Jericho Nursing Home, Eleyele. Jericho General Hospital, Onireke and the Oni Memorial Children's Hospital. Data collection was conducted during immunization sessions at the immunization clinics in these four major hospitals in Ibadan, the capital of Oyo State.

Study Population

The study focused on nursing mothers or primary caregivers and their children aged six to 24 months. These participants were attending immunization centres in four major hospitals in Ibadan and were also involved in income-generating activities at the time of data collection.

Inclusion Criteria

Mothers with children between the ages of 6 and 24 months, who were attending immunization centres in selected health facilities in Ibadan and engaged in some form of occupation, were interviewed during the data collection process.

Table I. Sociodemographic Characteristics of Respondents

Variable	Frequency	Percent
Age of Mother in years		
≤ 25	65	16.6
26- 35	276	70.4
>35	51	13.0
Total	392	100.0
Marital status		
Married	392	98.0
Separated	5	1.2
Single	3	0.8
Total	393	100.0
Number of Children Under Five		
1	247	63.0
2	117	29.8
3	22	5.6
4	6	1.5
Total	392	100.0
Age of index child in months		
6-12 months	295	75.3
13-24 months	97	24.7
Total	392	100.0
Gender of Index Child		
Male	182	46.4
Female	210	53.6
Total	392	100.0
The highest level of education of the respondent		
Primary	50	12.7
Secondary	171	43.6
Tertiary	170	43.4
No formal education	1	0.3
Total	392	100.0
Occupation of respondent		
Trader	184	47.0
Businesswoman	31	7.9
Artisan	73	18.6
Civil servant	53	13.5
White-collar work outside civil service	51	13.0
Total	392	100.0
Daily working hours of respondent		
≤ 6 hours	75	19.1
> 6 hours	317	80.9
Total	392	100.0

Only eligible mothers who were willing to participate in the study were recruited.

Exclusion Criteria

Persons outside this category were excluded from the study.

Sample Size Determination

Using the sample size formula for cross-sectional descriptive studies:

$n = Z^2pq/d2$ (Leslie Kish Formula)

Where z= 1.96, (level of significance of 5% (1.96)

d =5% =0.05

Using THE prevalence of 35%, p = 35/100 p= national prevalence of IYCF (NDHS 2008).

= 0.35 (Note: p + q = 1 thus q= 1-p)

1- 0.35 = 0.65

$1.96^2 \times 0.35 \times 0.65$

$0.05^2 = 349.5$

33

Allowing for NONE OR incomplete responses of 10%

10% [349.6] = 34.9 ≈ 35

349.5 + 35 = 384.6 ≈ 384.5

n= 385 (minimum sample size)

Sampling Procedure

To obtain a representative sample of the population for the study, the immunization centres of four major hospitals were selected using a three-stage sampling technique involving purposive and random sampling techniques. Stage one was a purposive selection of Ibadan due to the commercial nature of the city out of the cities in Oyo State.

Stage two involved the selection of all the available state-owned secondary and tertiary health facilities within the Ibadan metropolis, which covers five Local Government Areas, namely, Ibadan North, North East, North West, South East, and South West. Four hospitals were selected during data collection, including Adeoyo Maternity Hospital Yemetu, Oni Memorial Children Ring Road, Jericho Nursing Home, and Jericho General Hospital.

All eligible mothers/primary caregivers attending immunization centers in the selected hospitals during the data collection period were interviewed. Ninety-eight mother-child pairs were selected per immunization centre, for a total of 392 respondents.

Instrument for Data Collection

A semi-structured, pretested, and interviewer-administered questionnaire was used to obtain information on the socio-demographic characteristics of respondents, maternal occupation, working hours, child feeding knowledge and practice, dietary diversity index, parity, health-seeking behaviour, and hygiene practices. For this study, three domains of care, the composite childcare indices[15] were adapted and edited. The questionnaire was categorized into eight sections (A-H).

A 22-point knowledge scale assessed respondents' understanding of appropriate child feeding, and a reliability test showed a Cronbach's alpha of over 70%. Other scales used included a 20-point practice scale, a 22-point child-caregiver interaction scale, a 20-point hygiene scale, and a 23-point health-seeking behaviour scale. Each scale was graded as <50%= poor and ≥ 50%= good. The nutritional status of the children was assessed using the dietary diversity index, and anthropometry was classified using the WHO Anthro 2005 standard. Data were analysed using descriptive statistics, Chi-square test and logistic regression at $p<0.05$.

Data Collection

Research assistants, consisting of postgraduate students from the Faculty of Public Health, underwent comprehensive training and were evaluated for competencies before recruitment for the data collection. The processes involved several key steps to ensure smooth running of data collection and quality assurance:

Anthropometric Assessment: The index child underwent anthropometric measurements. Face-to-face interviews were conducted alongside anthropometric assessments. Tools for this included a UNICEF Electronic Scale, Infant/Child Length Measuring Board, equipment bag, and waterproof envelopes. Recumbent lengths were measured according to the NCHS standard using a 200cm measuring board, precise to 0.1cm, while Standardized weighing scales were employed for weight measurement precise to 0.1kg. Child ages were accurately determined using documented evidence from health books/cards and birth certificates. Data obtained were compared with WHO reference standards using growth charts to assess weight for age.

Data Collection Tools: Various tools were utilized, including weighing scales, bags, pens, spare paper, pencils, pencil sharpeners, and erasers. After the field work was completed, data entry commenced immediately.

Ethical considerations

Ethical approval was obtained from the Oyo State Ministry of Health's Ethical Review Committee in Ibadan, Nigeria. Informed consent was obtained from participants who were fully briefed in Yoruba and participated voluntarily. Participants could withdraw at any time. Questionnaires were numbered serially instead of using names to ensure privacy protection. The study involved minimal risk, as it only gathered information without intervention. While there were no direct benefits, participants received feedback that could help them make informed child care decisions.

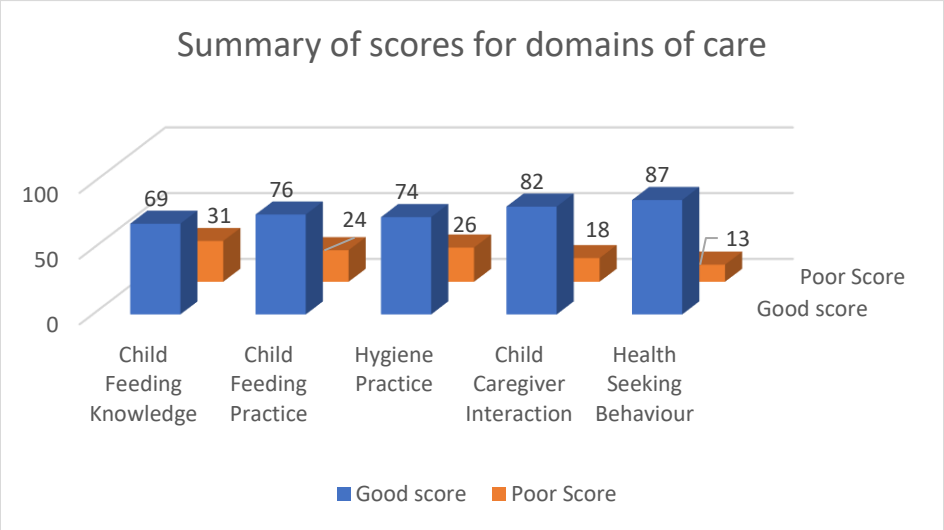

Figure 1: Summary Scores for Domains of Care

RESULTS

A total of 392 mothers were interviewed, with an average age of 30.4 years (ranging from 18 to 47 years). The average age of their children was 10.3 months (range: 6 to 24 months). Most mothers were married (98%), with a small percentage separated (1.2%) or single (0.8%). Educational levels were evenly split, with 43.6% having secondary education and 43.4% having tertiary education. A few had primary education (12.7%) or no formal education (0.3%). Many respondents were traders (54.9%), followed by artisans (18.6%), civil servants (13.5%), and others in white-collar jobs (13%). Fig 1 shows that many mothers had good knowledge and practices across several domains of care. More than half (69%) had good child-feeding knowledge, and 76% demonstrated good child-feeding practices. In terms of hygiene, most mothers practiced good hygiene, with 26% showing poor hygiene habits. Similarly, most mothers had positive child-caregiver interactions, while 18% had poor interactions. Lastly, 87% of mothers exhibited good health-seeking behaviour, with 13% displaying poor behaviour.

Table II: Distribution of Nutritional Status

Classification	Normal N (%) (Z Score ≥ -2 Sd)	Under-Nutrition N (%) (Z Score < -2 Sd)	Total
Wasting	345(88.0)	47(12.0)	392(100.0)
Stunting	224(57.2)	168(42.8)	392(100.0)
Underweight	296(75.5)	96(24.5)	392(100.0)

Table ii shows the distribution of nutritional status among the 392 index children. Wasting has the lowest prevalence, with 0.8% of children severely wasted, while 11.2% are wasted. Underweight prevalence was higher than wasting; 3.3% were severely underweight, and 21.2% were underweight. The prevalence of stunting was highest, with 28.8% of the children being severely stunted and about 14.0% stunted.

Table iii shows the relationship between the maternal type of occupation (outside of childcare) and nutritional care domains, showing that maternal occupation was significantly related to the time challenges mothers experienced in childcare and hygiene at $p<0.05$. The other four domains of care did not have a significant relationship with maternal occupation; however, traders and artisans appeared to have the highest proportions in the population of respondents who scored poorly in the summary of scores for each of the nutritional care domains.

Table iii shows that the multivariate logistic regression analysis of maternal factors associated with child-feeding knowledge, the results showed that mothers who worked more than 6 hours daily were 1.87 (about twice) more likely to have poor child-feeding knowledge than mothers who only worked up to 6 hours daily. The association was observed at 95% C.I 0.30- 0.92. Also, mothers aged 25 or older were less likely (OR 0.53, C.I: 1.01- 3.39) to have poor child-feeding knowledge than younger mothers.

Table III. Relationship Between Poor Child Feeding Knowledge and Maternal Characteristics

Association	P value	OR	95% C.I	
			Lower	Upper
Work less up to 6 hours.		1.00		
Work more than 6 hours	0.001	1.87	0.30 - 0.92	
Age <or = 25 years		1.00		
Age > 25 years	0.036	0.53	1.01 - 3.39	

Table iv shows the multivariate logistic regression analysis of maternal factors associated with child/mother interaction; the results showed that mothers who work more than 6 hours daily are 3.56 (about four times) more likely to have poor child/mother interaction than mothers who only work up to 6 hours daily. The association was observed at 95% C.I (1.38 – 9. 18).

Table IV Relationship Between Poor Child/Mother Interaction and Maternal Characteristics

Association	P value	OR	95% C. I	
			Lower	Upper
Work up to 6 hours.		1.00		
Work more than 6 hours	0.00	3.56	1.38 – 9.18	

Table v shows the multivariate logistic regression analysis of maternal sociodemographic factors associated with hygiene practice; as shown, mothers who spend more than 6 hours working daily have a 1.31 times greater chance of having poor hygiene practice than mothers who only work for 6 or fewer hours daily. The association was observed at 95% C.I (0.04 - 5.00). Also, respondents who completed secondary education or less were 5 times more likely (OR 5.00, C.I: 2.86 - 8.78) to have poor hygiene practices than those with higher educational qualifications.

Table V: Relationship Between Poor Hygiene Practices and Maternal Characteristics

Association	P value	OR	95% C. I	
			Lower	Upper
Work less < or = 6 hours		1.00		
Work > 6 hours	0.02	1.31	0.04 - 5.00	
Education > Secondary school		1.00		
Education <or =secondary school	0.04	5.00	2.86 - 8.78	

DISCUSSION

The primary results indicated a correlation between maternal daily working hours and underweight, while no significant associations were observed with wasting and stunting in the studied population. Maternal daily work hour(s) is shown to be the most influential factor in predicting a child underweight and engaging in work for more than 6 hours a day showed a potential protective effect against underweight, Underweight is estimated from a child's weight relative to the weight of a child of the same age in a reference population. It is a direct indicator of acute malnutrition. Daily working hours have a short-term and almost immediate effect on the nutritional status of a child, especially at the stage

when the child is just attaining the age that complementary feeding becomes necessary and nutritional needs have increased. Combining the increased nutritional needs with more exposure to germs due to crawling and putting hands in the mouth can get risky when a lack of resources to provide an adequate diet is added to the mix; the synergistic relationship between malnutrition and infection will complete the cycle. The UNICEF conceptual framework for malnutrition listed inadequate dietary intake as one of the immediate causes of malnutrition.[16] Even a child that is previously well nourished because of exclusive breastfeeding can experience a decline in weight within a short period. At the same time, length changes do not happen as fast as weight changes. Urban poverty, the substantial employment of women outside the home, dependence on cash income, and restricted access to essential household resources like food, water, and sanitation have been recognized as significant challenges hindering effective child-care practices in certain African cities.[17] The term "care" encompasses the offering of time, attention, and assistance to fulfil the physical, mental, and social requirements of developing children and other members of the household.[18] While the income women earn from daily occupation (other than with childcare) is very important in ensuring the ability of the household to access daily needs, the time spent out of the home or away from the child below the age of 24 months can limit the ability of the woman to care for her child at this stage of the child's life.

This study showed that many mothers worked more than 6 hours daily in things that were not part of the immediate childcare. Data collected further showed that mothers who worked more than 6 hours daily were more likely to have poor hygiene practices, mother/child interaction, child feeding knowledge, and dietary diversity index. These four dependent variables include three out of the five domains of care studied in this research and are an important index in assessing the quality of complementary feeding. This suggests that the number of hours a woman spends working away from home or away from the child's care has an impact on the quality of care she can provide for the child. This trend aligns with a study in southwest Nigeria in 2021[19], which reported that the time a woman spent away from home significantly affected the duration of exclusive breastfeeding, the time at which complementary feeds were introduced, the frequency of feeds, and the types of illness.

The employment status of mothers is associated with diverse facets of children's growth and development, encompassing nutritional outcomes. It is expected that employed mothers might have reduced time for oversight and meal preparation. However, the supplementary income they generate can enhance access to a consistent supply of nutritious food. The fact that more than half of the respondents in this study are traders and do not have more than a secondary education may explain why long working hours may not necessarily translate to more money for them.

This study further revealed that the number of schooling years of respondents influences childcare. Mothers who had more than secondary school education were observed to be five times more likely to have good hygiene practices than their counterparts with lesser educational qualifications. Another study in Latin America[20] also reported that keeping income and other child, maternal, and household characteristics constant, maternal education was strongly and positively associated with better child-care practices. This observation aligns with a study in Uganda,[21] which indicates that although the precise mechanism by which maternal education affects child outcomes is not fully understood, evidence from various countries indicates that knowledge and practices are key pathways. Similarly, another study[22] reported a strong and positive association between maternal education and improved child-care practices, holding income and other child, maternal, and household characteristics constant. Another study[23] affirmed that educated women tend to have greater awareness of nutrition, hygiene, and healthcare.

CONCLUSION

Maternal occupation does not have a significant relationship with child nutritional care. However, the number of hours a woman spends working daily affects her ability to give good quality nutritional care to her child, aged 6-24 months. Thus, workplaces should provide creches or lactation rooms within the office premises to create an enabling environment for childcare during the break. These creches should have childcare health education materials that have the potential to improve the childcare practices of working mothers. Girl child education should be prioritised as the education of women increases their chances of being able to give their children good nutritional care.

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Author's contribution: OA: Conceptualization, methodology, investigation, data curation, formal analysis, writing - original draft preparation, writing - review and editing, visualization, project administration, funding acquisition, etc. OOE: Conceptualization, methodology, investigation, writing - original draft preparation, writing - review, editing, visualization, and supervision. APA: Writing - original draft preparation, editing and visualization. AMC: Writing – Review, editing, visualization, and supervision.

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