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# Child care practices and the nutritional status of infants of working mothers in day care centres in Oshun State, Nigeria

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## ABSTRACT

*This descriptive cross-sectional study was carried out to examine the impacts of child care practices on the nutritional status of infants of working mothers attending day care centres in Irewole local government area, Oshun state, Nigeria. Out of the wards in the purposively selected local government area, 8 were randomly selected and a comprehensive list of the registered daycare centres in those wards was obtained from the local government secretariat in Ikire. Data collection was done using anthropometric measurements of the infants, and a self-developed pretested questionnaire administered on the infants' parents and care providers by trained research assistants. The questionnaires were then sorted, cleaned and coded before entry into the computer. Data analysis was carried out using Statistical Package for Social Sciences version 12.0. Majority of the care providers were females (91.3%) and married (84.4%). Most of them (72.9%) were aged between 18 and 38 years and 83.7% have had over 10 years working experience in infant care. Among the care providers 58.9% were College of Education graduates, 33.5% were holders of Senior Secondary School certificate while a small proportion (7.6%), had no formal education. About 42.5% of them specialised in education of young children. Most of the parents, 87.7%, were university graduates, 97.8% of them were married, 1.5% divorced and 0.7% were separated. Also, 46.23% of these parents were bankers, 10.67% were high cadre civil servants/university lecturers and 4.7% were secondary school teachers. Most of the care providers (87.5%) and (62.6%) have had training before and while working in the day care centres respectively. The weight and height (length) of the infants ranged from 4.0-15.0kg and 50-100cm respectively, while majority of them (58.6%) were females. Nutritional status assessment revealed that none of the male infants was wasted, 4.5% of the female ones were wasted; 3.2% of male and 5.2% female infants were stunted. Also, 0.4% males and 2.7% females were underweight. Environmental characteristics and sanitation of the day care centres revealed that majority of them used water closet system (72.5%) and refuse disposal was mostly by either city service or open dumps (61.3%). Primary water source was deep well (83.8%) while 16.2% obtained water from bore holes. Results indicated that most of the children studied were well nourished.*

**Keywords:** Child care practices, day care centres, nutritional status, infants, working mothers.

## INTRODUCTION

Adequate nutrition during infancy and early childhood is fundamental to the development of each child's full human potential. The period from birth to two years of age is a "critical window" for the promotion of optimal growth, health and behavioural development. Longitudinal studies have consistently shown that this is the peak age for growth faltering, deficiencies of certain micronutrients, and common childhood illnesses such as diarrhoea. Stunting which has occurred earlier is very difficult to reverse after a child attains the age of 2 years.

The immediate consequences of poor nutrition during these formative years include significant morbidity and mortality and delayed mental and motor development. In the long-term, early nutritional deficits are linked to impairments in intellectual performance, work capacity, reproductive outcomes and overall health during adolescence and adulthood. Thus the cycle of malnutrition continues, as the malnourished girl child faces greater odds of giving birth to a malnourished, low birth weight infant when she grows up. Poor breastfeeding and complementary feeding practices, coupled with high rates of infectious diseases, are the principal proximate causes of malnutrition during the first two years of life. For this reason, it is essential to ensure that caregivers are provided with appropriate guidance regarding optimal feeding of infants and young children.

The impact of child care practices on the health of children and the importance of encouraging exclusive breastfeeding has gained increased recognition during recent years. Breastfeeding is more nutritious, more hygienic and cheaper than bottle-feeding and in addition, confers immunity to infants against common infections. Moreover, breastfeeding promotes healthy birth spacing. While breastfeeding is advantageous the world over, it is particularly important in the Third world where families are generally poorer, health services less adequate, and the general health environment more hazardous. Thus, the United Nations Children's Fund (UNICEF) has made the promotion of breastfeeding one of the major components of its strategy to improve child survival [1].

Complementary feeding is defined as the process that starts when breast milk alone is no longer sufficient to meet the nutritional requirements of infants and therefore other foods and liquids are needed along with breast milk. The target age range for complementary feeding is generally taken to be 6 to 24 months of age, even though breastfeeding may continue beyond two years. A review of feeding guidelines promoted by various national and international organizations has shown that there are inconsistencies in the specific recommendations for feeding infants and young children [2]. Some of the feeding guidelines are based more on tradition and speculation than on scientific evidence, or are far more prescriptive than is necessary, regarding issues such as the order of foods introduced and the amounts of specific foods to be given. To avoid confusion, a set of unified, scientifically based guidelines is needed, which can be adapted to local feeding practices and conditions.

The 54th World Health Assembly urged member states to promote exclusive breastfeeding for six months as a global public health recommendation. This recommendation followed a report by a WHO Expert Consultation on the Optimal Duration of Exclusive Breastfeeding, which considered the results of a systematic review of the evidence [3], and concluded that exclusive breastfeeding for six months confers several benefits on the infant and the mother. Chief among these is the protective effect against infant gastrointestinal infections, which is observed not only in developing country settings but also in industrialized countries [4].

By the beginning of the twentieth century, psychologists and educators had established a set of precepts almost identical to today's notions of child development. In 1934, when the psychologist Ethel Kavin published *The Wise Choice of Toys*, children's projected abilities according to age were a primary consideration in choosing toys appropriate to their interests and skills. This new body of research (and conclusions) became increasingly part of the fabric of everyday life, as accepted educational institutions such as the kindergarten incorporated it into their teaching activities. The kindergarten in fact, as conceptualized by the German educator Friedrich Froebel in the 1840s, was instrumental in transforming the field of early childhood education and influenced thinking about infancy as well. Froebel's idea that children learn best through play is still the basis for most scholarship on early childhood.

Today, play is considered to be a key part of the daily care of infants. Current child-rearing literature emphasizes the importance of early childhood development for achievements later in life. As a result, parents in industrialized societies often feel a real sense of urgency in stimulating their children enough, often through toys. The noted pediatrician T. Berry Brazelton observed that this sense of urgency has been fueled by both toy manufacturers and child experts. So-called educational toys, in particular, are products of this trend. Lamaze toys (made by Learning Curve) and products made by the Baby Einstein Company are specifically marketed as playthings that contribute to an infant's physical and mental development. Baby Einstein for example, produces a line of toys designed to stimulate precocious development through exposure to classical music.

Many families need and use child care in addition to what parents can provide. Most children and about half of all infants have parents who work outside the home. One of the biggest family challenges has been the increase in the number of mothers with young children who are in the paid labour force [5]; [6].

Day care facilities help to fill a very real need. However, there are some very disturbing questions that have come in reference to the effects that child care practice at day care centre has on the children. Some experts and doctors strongly advise against putting infants in day care centres. During the first six months of life, children who develop the best are those who have a tremendous amount of attention, and who enjoy a lot of fun play. When the children begin crawling at six or seven months of age, they need access to someone who is excited to teach them. This process helps to support their curiosity, increase their enthusiasm, and help their overall development. It is very rare for a caregiver to show the same amount of interest in a child that a parent would. This is because mothers are very quick to respond to a baby's non-stop demands for love and attention. Many doctors recommend that substitute care be delayed until a baby is at least four months old. An occasional baby sitter to give the mother a break would of course be necessary, and have less of an effect on the child. Most times however, parents are forced to leave their children in day care centres due to economic reasons.

There is increasing recognition that optimal complementary feeding depends not only on what is fed, but also on how, when, where, and by whom the child is fed [4]. Behavioural studies have revealed that a "laissez-faire" style of feeding predominates in some populations [8], [9], [10], with encouragement to eat rarely observed or observed only when children refused food or were ill. It has been hypothesized that a more active style of feeding may improve dietary intake. The evidence to date on the impact of feeding behaviours on dietary intake and child health is scarce. However, in an urban population in Ghana, it was found that a "care practices" scale (which included breastfeeding patterns, timing of complementary feeding, food quality, and two "active feeding" behaviours) was positively associated with child anthropometric status among mothers with little or no schooling [11]. Several intervention studies that included feeding behaviours as

part of the recommended practices have reported positive effects on child growth, but it is not possible to separate the influence of responsive feeding from that of the other changes that occurred in breastfeeding practices and the types of complementary foods offered. When more data are available from controlled research trials, it may be possible to pinpoint the types of feeding behaviours that make the most difference to child health and behavioural development. In the meantime, the recommendations above represent the current consensus on optimal practices among experts in the field.

Attention to hygienic practices during food preparation and feeding is critical for prevention of gastrointestinal illness. The peak incidence of diarrhoeal disease is during the second half year of infancy, as the intake of complementary foods increases. Microbial contamination of foods is a major cause of childhood diarrhoea. For the fact that they are difficult to keep clean, feeding bottles are a particularly important route of transmission of pathogens. In addition, use of fermented foods can reduce the risk of microbial contamination, and has the added advantage of improving nutrient content.

Infections with or without illness are common in children. Spending time in child care centres or other facilities and being exposed to a large number of children for some time provides an opportunity for infectious diseases to be spread. It is not possible to prevent the spread of all infections and illnesses within child care centres.

This study was carried out to investigate the effects of child care practices on the nutritional status of the infants of working mothers attending daycare centres in the study location.

## **MATERIALS AND METHODS**

This is a descriptive study to examine the impacts of child care practices on the nutritional status of infants of working mothers attending daycare centres in Irewole local government area, Oshun state, Nigeria. Out of the wards in the purposively selected local government area, 8 were randomly selected and a comprehensive list of the registered daycare centres in those wards was obtained from the local government secretariat in Ikire. Care providers of 20 randomly selected daycare centres and the parents of attending under-2 children were contacted and informed for their consent. Only those that consented were served with the self-developed pretested questionnaires which were administered on them by trained research assistants. The questionnaires were then sorted, cleaned and coded before entry into the computer. Data Analysis was carried out using Statistical Package for Social Sciences version 12.0 [12].

### **Data Collection**

Data collection was carried out with a pretested structured questionnaire and anthropometric measurements.

#### ***Anthropometric Measurements***

The ages of the children were recorded with the help of their mothers who were all well educated.

##### ***Mid Upper Arm Circumference (MUAC):***

The MUAC was carried out to estimate skeletal muscle mass and fat stores using a flexible, non-elastic measuring tape. The measurement was taken in centimeters with the non-elastic tape measure placed firmly on the left mid upper arm, at the mid-point between the acromion process of the scapular and the olecranon process of the ulna bone [13].

*Infant Weight:*

The body weight of the infants was measured to the nearest 0.2kg [13], using a weight balance with suspended bag. Each infant was placed inside the bag with minimum clothing on and the weight was recorded. Height of the infants was taken and readings were taken to the nearest 0.1cm [14], using a length board with a headpiece was used in determining their lengths. They were placed in a lying position, ensuring that their heads touched the headpiece with their back, back of knees and heels touching the board and their hands relaxed by the size. The horizontal plane (head piece) was lowered firmly into the head until it is of the same height with the head while the subject inhaled and the readings were taken at an accuracy of 0.1 cm, and at observed eye level.

*Head Circumference:*

Head circumference was measured using a non-elastic measuring tape. The tape was placed firmly round the head and measurement taken to the nearest 0.1cm. Chest circumference was then measured by placing the tape firmly round the chest at the nipple line and measurements taken to the nearest 0.1cm. Chest/head circumference ratio was then calculated by dividing the value for chest circumference by head circumference [13].

*Body Fat determination:*

Body fat was determined as follows:

$$\text{Body fat} = 0.491 \times \text{weight} - 6.918 \quad [15].$$

Lean body Mass (LBM) was calculated thus:

$$\text{LBM} = \text{Body weight} - \text{body fat}$$

Body Mass Index (BMI) was calculated as:

$$\text{BMI} = \frac{\text{Body weight (kg)}}{\text{Height (m)}^2}$$

The recorded height (infant length), weight and arm circumference were compared with reference standards [16]. Nutritional status was assessed using weight-for-age, height-for-age and weight-for-height (< -2 s.d. NCHS standards).

## RESULTS

### Socio-Demographic Characteristics of Care Providers

Majority of the care providers were females (91.3%) and married (84.4%). Most of them (72.9%) were aged between 18 and 38 years and 83.7% have had over 10 years working experience in infant care. Monthly income of the majority (73.2%) of the care providers ranged between ₦10, 000 and ₦25, 000. Among the care providers 58.9% were College of Education graduates, 33.5% were holders of Senior Secondary School certificate while a small proportion (7.6%) had no formal education. About 42.5% of them specialised in education of the young children, while 86.1% had their working hours ranging between 8 and 12 hours daily.

Most of the parents, 87.7%, were university graduates, 97.8% of them were married, 1.5% divorced and 0.7% were separated. Also, 46.23% of these parents were bankers, 10.67% were high cadre civil servants/university lecturers and 4.7% were secondary school teachers. Sixty-

four percent of the respondents were Christians, 34% were Muslims, while 2 % were free thinkers.

**TABLE 1: Nutritional care training received before and while working**

	Type of training received before working		Type of training received while working	
	Frequency	Percentage	Frequency	Percentage
Cleanliness and child feeding methodology	120	15.0	100	12.5
Hygiene, Sanitation and children's food preparation	420	52.5	250	31.3
General care for children	160	20.0	150	18.8
Nil	<u>100</u>	12.5	<u>300</u>	37.5
	800		800	

Table 1 reveals that most of the respondents (87.5%) and (62.6%) have had training before and while working in the day care centres respectively.

**TABLE 2: Infant feeding knowledge of care providers**

	Frequency	Percentage
Very Good	250	31.3
Good	190	23.6
Above Average	250	31.3
Average	90	11.3
Below Average	<u>20</u>	<u>2.5</u>
	800	100

Table 2 shows that majority 86.2% have above average to very good knowledge of infant feeding.

**TABLE 3: Characteristics of the infants in the day care centres**

	Range	Mean
Age (months)	2.0 – 24.0	17.81±6.24
Weight (kg)	4.0 – 15.0	10.77±2.34
Height/Length/(cm)	50.0 – 100.0	78.79±9.64
<b>Sex</b>	Frequency	Percentage
Male	580	41.4
Female	<u>820</u>	<u>58.6</u>
	1400	100

Age of the infants ranged from 2 months to 24 months. Their weight and height (length) ranged from 4.0 kg-15.0kg and 50-100cm respectively, while majority of them (58.6%) were females.

Information on environmental characteristics and sanitation of the day care centres revealed that majority of them used water closet system (72.5%), and refuse disposal was mostly by either city service or open dumps (61.3%). Primary water source was deep well (83.8%) while 16.2% obtained water from bore holes. Also, 38.4% of the day care centres did not cook at all while most of those that cooked used domestic gas and/ or kerosene as source of energy. All the infants



in the day care centres were required to be accompanied with extra dresses, extracted breast milk and infant formula (with flasks containing boiled water) and soft snacks for the older ones.

The information on the care for the toys revealed that 88% of the day care centres washed/cleaned their toys every day while the rest washed or sterilised theirs at the weekends.

**TABLE 4: Nutritional status of the infants in the day care centres**

	Weight for Height		Height for Age		Weight for Age	
	Normal	Wasted	Normal	Stunted	Normal	Underweight
<b>Male</b>	580 (41.4%)	Nil	535(38.2%)	45(3.2%)	370 (26.4%)	5 (0.4%)
<b>Female</b>	820 (58.6%)	37(4.5%)	659 (47.1%)	72(5.2%)	287 (20.5%)	38 (2.7%)

Results of nutritional status assessment revealed that none of the male infants was wasted but 4.5% of the female ones were wasted; 3.2% of male and 5.2% female infants were stunted. Also, 0.4% males and 2.7% females were underweight according to the new WHO international standard for assessing the physical growth, nutritional status and motor development in children from birth to five years of age.

## DISCUSSION

Child care as a concept has been identified as a major factor influencing nutritional status especially for the vulnerable groups. Hence, the need to determine the nutritional status of infants in the day care centres where considerable number of them are kept by their working parents. The result of this study revealed that majority (86.2%) of the care providers had infant feeding knowledge of above average. This might have resulted from the fact that most of them (87.5%) and (62.6%) have undergone one form of training or the other in child care, before and while working in the day care centres respectively.

Child survival, growth and development depend not only on food intake and health but also on care practices as shown by the extended UNICEF model of care [17]. Care practices include breastfeeding by their mothers while at the day care centres and feeding of young children by care providers, hygiene and health practices, food preparation (usually from home) and storage, and psychosocial stimulation which are factors put in place by day care centres. As shown by the UNICEF model, care practices depend on resources for care giving. These resources allow the care provider to put knowledge or expertise into practice [18]. The resources that a care provider draws on in giving care include: education, knowledge, physical health and nutritional status, mental health and self-confidence, autonomy and control of resources, reasonable workload and availability of time, and family and community social support. A care provider who has the available resources is more likely to give effective care and therefore maintain good child nutrition [17].

Observation revealed that childcare practices in the studied day care centres did not include food choice and cooking methods, since the choice of what the infants ate was the decision of the infants' parents. None of the day care centres cooked food for the infants. However, the centres boiled water for cleaning the infants after soiling their dresses and for warming the infants' foods brought by their parents.

It was established in this study that age has association with child care practices and this is corroborated by results from a previous study where it was stated that with an emphasis on optimizing the day care environment, observations and data from a variety of developmental

disciplines are used to establish the significance of caregiver age/age- range as a plausible influence on child development, and hence, an important factor for consideration in day care programming [14].

The environmental situations of most of the studied day care centres were found to be healthy. It was observed that most of the day care centres used water closet system (92.5%). Although some of them practised burning their refuse (not so healthy a practice for the infants), majority used either city service or open dumps for refuse disposal (61.3%). Most of the day care centres have access to safe water through deep wells with 16.2% obtaining water from bore holes. This overall result is an improvement over the result of a study conducted in 1984 [19], where most of the day care centres were observed to be lacking in basic health facilities including suitable structure, availability of first aid treatment, recreational facilities and good environmental sanitation. Also, 38.4% of the day care centres did not cook at all while most of those that did used domestic gas and/ or kerosene stoves.

The data on number of extra dresses available to the infants affirmed that 95.0% of the infants have access to at least an extra dress with which he/she was redressed after soiling the one that was previously donned. This practice would keep the infants and environment relatively clean provided that the care provider's attitude was controlled.

The nutritional status of the infants assessed in this study was good enough since 95.5%, 92.6% and 96.9% were found normal for weight-for-height, height-for-age and weight-for-age indices respectively using WHO reference standards. However, male infants were found to be better nourished for all the indices than their female counterparts. The result also showed that a number of infants in the day care centres were less than four months old, which is the minimum period to practice exclusive breastfeeding. This is in line with the result of the study conducted by the National Institute of Child Health and Human Development (NICHD) of the United States, which concluded that the majority of children begin non-maternal care prior to the age of four months for an average of thirty hours per week [20].

On the whole, the results indicated that most of the children studied were well nourished, probably because of the fairly good child care practices observed in the day care centres, and the above average educational background cum social status of the mothers who were all gainfully employed.

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