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Complementary feeding practices and nutrition status of children aged 6-24 months attending maternal child health clinic at Embu county and referral hospital, Embu County, Kenya

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Abstract
Complementary feeding practices include the introduction of solid and semi-solid foods at the age of 6 months and a gradual increase in the amount of food given and frequency of feeding as the child get older. In Kenya, inappropriate complementary feeding practices contribute to more than 10,000 annual deaths for children under five years. Nutrition status is the condition of the body as influenced by utilization of nutrient taken. Under five malnutrition rates in Kenya are 26% stunting, 4% wasting and 11% underweight. The study determined the complementary feeding practices and nutrition status of children aged 6-24 months attending maternal child health clinic at Embu County and Referral Hospital. A cross-Sectional Descriptive Study was conducted, purposive sampling was used to select the study location. The study sample (n=61) was chosen using the systematic sampling method. Dietary practices in the study were the time for the introduction of complementary foods, amount of food given and frequency of feeding while nutrition status measures included the weight for height to indicate the level of wasting, height for age to indicate the level of stunting. Maternal child health clinic at Embu County and Referral Hospital, Embu County, Kenya**.** Sixty one Mothers/caregivers with children aged 6-24 months. Almost half (45.9%) of the children were introduced to complementary foods at 6 months, 42.6% before six months and 11.5% after six months. 3% of the children aged 6-8 months consumed 2-3 tablespoons of food per feed, 70.5% of children aged 9-11 months consumed half a cup per feed and 24.6% of children aged 12-24 months consumed ¾ of a cup per feed.78.9% of the children aged 9-24 months were fed 3-4 times in a day, 21.1% of children aged 6-8 months were fed 2-3 times in a day. The majority (91.7%) of children had normal weight for their height, 4.5% were moderately wasted and 3.8% were severely wasted, 90.1% of children had normal height for their age and 9.8% were moderately stunted. The study found sub-optimal complementary feeding practices among mothers/caregivers with children aged 6-24 months. Also, in cases of acute and chronic malnutrition were above the acceptable level. Health education and counselling to the mothers/caregivers on optimal complementary feeding practices should be the main intervention.

Keywords: complementary feeding practices, nutrition status, time of introduction of food, the frequency of feeding, amount of food given, wasting and stunting

Introduction
Complementary feeding practices include the introduction of solid and semi-solid foods at the age of 6 months and gradual increase on the amount of food given and frequency of feeding as the child get older, while nutrition status is the condition of the body as influenced by utilization of nutrient taken [14]. Infants and young child feeding practices directly affect the nutritional status of the child under two years, impacting on child survival [2]. Poor complementary feeding practices, coupled with high rates of infectious diseases are the proximate causes of malnutrition during the first two years of life [15]. Vital opportunities to save millions of children's lives are being lost and many more children are not growing and thriving the way they should [10]. Malnutrition has a profound effect on a child growth and development, as it can lead to permanent stunting, impaired brain and mortal development or excess weight gain, predisposing the child to obesity later in life [10].

In Kenya, complementary foods introduced to children after 6 months are usually low in energy and micronutrients, unhygienically prepared and stored which predisposes infants to diarrhoea and inadequate diet intake leading to growth faltering [4].

Breastfed children 6-23 months should receive animal sources foods and vitamin A rich fruits and vegetables daily [8]. It is unlikely that a young child who eats foods from less than three groups will receive both an animal source food and vitamin A fruit or vegetables, therefore, three food groups are considered the minimum number that a breastfed child should take [1]. Breastfed infants 6-8 months should receive complementary foods 2-3 times a day with one or two snacks, the breastfed child aged 9-23 months should receive meals 3-4 times a day with one or two snacks [9].

Poor complementary feeding practices remains an important threat to developing countries. Globally, it is estimated that 2.2 million children below the age of five years die annually of malnutrition associated with inappropriate complementary feeding [14].

In Kenya, inappropriate complementary feeding practices contribute to more than 10,000 annual deaths for children under five years [6]. The prevalence of stunting, wasting and underweight for children under five years in Kenya, is 26%,

4% and 11% respectively [3]. Data from demographic and health survey [3], indicates that introduction of other foods and fluids starts at the first month with 64% and 84% of infants being given complementary foods by 2-3 months and 4-5 months respectively. Unfortunately the complementary foods which replace breast milk of these children are low in energy and micronutrients.

In Embu County, 26.8% of children under five years are moderately stunted, 6.5% severely stunted, 3% moderately wasted while only 0.2% are severely wasted [3].

Materials and Methods

The study was conducted in Embu level five hospital, Embu County, Kenya. The hospital is the County referral hospital and has specialized services including in-patient and out-patient medical services.

A cross-sectional descriptive study was conducted in which factual information about complementary feeding practices and nutrition status was investigated. Purposive sampling was used to select Embu County and Referral Hospital, Embu County, Kenya as the study location because the hospital is the main County refferal hospital where most nutrition and health related cases are reffered to from other county health facilities. The study sample was chosen using the systematic sampling method.

The study targeted mothers/caregivers with children aged 6-24 months. Mothers/caregivers with children aged 6-24 months who declined to consent to participate in the study due to health or personal reasons were excluded from the study. Also, children aged 6-24 months with chronic illnesses or physical impairments were not included in the study as these would affect data on complementary feeding practices and nutrition status.

Calculation of the desired sample size was done using the Cochran, (1963) formula as cited by Fisher *et al,* (1998), and a sample size of 61 was attained. Due to the possibilities of non-responses, 10% was added to make a sample size of 67. Data was collected using researcher administered questionnaires with closed and open-ended questions.

Assessment on complementary feeding practices (time for the introduction of complementary foods, amount of food given to a child and frequency of feeding) was done where the respondents were asked specific questions to elicit information on complementary feeding practices.

Data on nutrition status including weight and height was taken using salter scale and length/height board respectively and as recommended by WHO (2010). In addition, the weight and height were taken in triplicate and the average sought to ensure the reliability of the data.

The salter scale was first placed on a stable hood and calibrated before taking the weight of a child to ensure the validity of the data. Before taking the weight, the excess clothes were removed from the child and then the child was placed on the weighing pan and ensured the arrow was steady before reading the weight. The weight measurements were then recorded to the nearest 0.1 kg.

The height/length was measured for all the study participants and the readings recorded to the nearest 0.1 cm.

The researcher checked the questionnaires to ensure accuracy and completeness. Data was then edited, coded, entered and analysed using the Statistical Package of Social Sciences (SPSS) version 22. Anthropometric data of interest was the weight for height z-score and weight for age z-score. The WHO (2006) cut off points was used to interpret the nutritional status. Descriptive statistics (mean, mode, frequencies, and percentages) was used to describe quantitative data.

Approval to conduct research was obtained from Kenya Medical Training College. A research permit was obtained from the National Commission for Science, Technology and Innovation. Research authorization was obtained from Embu County Commissioner, County Director of Education and County Director of Health Services. The authority to carry out research was obtained from Embu County and referral hospital. A signed consent by mothers/caregivers were obtained before administering the questionnaire. Confidentiality was maintained.

Results

The majority (45.9%) of the children were introduced to complementary foods at 6 months, while close to half (42.6%) were introduced before six months and 11.5% after six months.

Only 3% of the children aged 6-8 months consumed 2-3 tablespoons of food per feed. About three quarters (70.5%) of children aged 9-11 months consumed half a cup per feed and 24.6% of children aged 12-24 months consumed a third of a cup per feed.

Most (78.9%) of the children aged 9-24 months were fed 3-4 times in a day while 21.1% of children aged 6-8 months fed 2-3 times in a day.

The majority (91.7%) of children had normal weight for their height, 4.5% were moderately wasted and 3.8% were severely wasted. The Global Acute Malnutrition for the study respondents was 8.3%. A big proportion (90.1%) of the study participants had normal height for their age with only 9.8% moderately stunted.

Discussion

Complementary foods were introduced to the majority of children earlier than the sixth month contrary to the UNICEF infant and young children feeding guidelines [11], which recommends that complementary feeding be initiated at six months. These research findings concur with one done by [3], which reported that introduction of other foods and fluids starts at the first month with 64% and 84% of infants being given complementary foods by 2-3 months and 4-5 months respectively. It also concurs with a study that found that mothers with children 6-24 months introduced food to their children as early as when the child was two months old because the mothers were not at home most of the time to practice exclusive breastfeeding [7].

In the current study, few children (3%) aged 6-8 months consumed 2-3 tablespoons of food per feed, while about three quarters (71.8%) of children aged 9-11 months consumed half a cup per feed and close to a quarter (24.9%) of children aged 12-24 months consumed three quarters of a cup per feed. For the three age groups, the complementary feeds were given to amounts below the MIYCN recommendations that at the age of 6-8 months a child should be given 2-3 tablespoon of food

per feed, the age of 9-11 months, half a cup of 250mls and at 12-24 months three quarter of a cup [5].

The number of complementary meals given to the study participants was less compared to the WHO recommendations [12]. On average only 50% of the respondents had consumed the number of meals in a day as per the WHO recommendations [12]. The study findings agree with a study done by [4] which showed that 58% of children 6-24 months old were fed with the recommended minimum meal frequency.

The proportion of children aged 6 – 24 months wasted among the study participants was higher than the national (4%) and county (3.2%) levels reported by [3] among the children under five years. However, the study findings agree with the findings of a study done by [7] in Korogocho slum in Nairobi which reported wasting rate of 8.4% in children aged 6-24 months. The rate of stunting among the study group was lower than the national (26%) level for children under five years as reported by KDHS [3]. The findings disagreed with a study done by [7] in Korogocho slum in Nairobi which reported a stunting rate of 25% in children aged 6-24 months.

Conclusion

The study found sub-optimal complementary feeding practices among mothers/caregivers with children aged 6-24 months. Additionally, cases of acute and chronic malnutrition were above the acceptable level. Health education and counselling to the mothers/caregivers on optimal complementary feeding practices should be the main intervention.

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