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FACTORS ASSOCIATED WITH INFANT FEEDING PRACTICES AND NUTRITIONAL STATUS AMONG CHILDREN AGED 6-24 MONTHS ATTENDING CHILD WELFARE CLINICS IN KAJIADO SUB-COUNTY
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FACTORS ASSOCIATED WITH INFANT FEEDING PRACTICES AND NUTRITIONAL STATUS AMONG CHILDREN AGED 6-24 MONTHS ATTENDING CHILD WELFARE CLINICS IN KAJIADO SUB-COUNTY

F. N. KINOTI, C. MUTAI, P. WANZALA and S. M. KARANJA

ABSTRACT

***Objective*: To determine knowledge and practices on infant feeding, socio-demographic factors that influence choice of infant feeding method and nutritional status of children aged 6 to 24 months attending Mother Child Health Clinics (MCH) in Kajiado North Sub-county.**
***Design*: A hospital based cross-sectional study.**
***Setting*: Three public health facilities: Ngong sub-district hospital, Ongata Rongai and Olo-sirkon health centres in Kajiado North Sub-county.**
***Subjects*: Three hundred and fifty mother-child pairs as participants.**
***Results*: All mothers were of reproductive age, mean age was 25 years (95%= 25+-5.03) and 92.6% were married. A high proportion of mothers 94.3% and of their spouses 88.9% had attended formal education at varying levels. Out of the 350 children in the study, 56.3% were males while 43.7% were females, 84.5% of all children being one year and below. Majority of mothers 68.6% had knowledge on infant feeding practices, mainly obtaining information from health workers. Only 38.8% of mothers had complete correct information on both breast and complementary feeding. All children were breastfed at one point in their life, 55.1%, immediately after birth, not all children were exclusively breastfed for the first six months or for a total of two years as recommended. Main reasons for early termination of breastfeeding were, voluntary refusal by the child to breastfeed or feeding on complementary food. Stunting level among the children was 26.5%, underweight level was 11.1% and no child was wasted. There was a significant association between marital status, children age group and stunting using ordinal regression.**
***Conclusion*: The study showed a knowledge gap on infant complementary feeding in area of quality and quantity of food. There is need for further interventions and more education regarding infant feding practices.**

INTRODUCTION

Optimal infant and young child feeding involve mothers being empowered to initiate breastfeeding within one hour of birth, breastfeed exclusively for the first six months and continue breastfeeding for two years or more, accompanied by sufficient quantities of nutritionally adequate, safe and appropriate solid, semi-solid and soft foods starting in the sixth month. Such optimal feeding practices ensure good nutritional status and protects against illnesses (1).

Poor breastfeeding and complementary feeding practices have been documented especially in developing countries as major cause of malnutrition especially in children. Under nutrition is the underlying cause of 3.8 million deaths among, 35% of disease burden among under five and accounts for 11% of all adjusted life years globally (2).

The choice of an infant feeding method is a big challenge that's not well understood. In all societies women make decision on infant feeding, regardless of the method of infant feeding. Numerous factors affect mother's choice of infant feeding options, including socioeconomic status, cultural beliefs, level

of social support, level of education, maternal work demands, maternal age, range of care interventions provided during pregnancy, childbirth and the early postpartum period, family pressures and commercial advertising (3,4). Biological factors including infant size, sex, development, interest/desire, growth rate, appetite, physical activity, and maternal lactation capacity may also influence the decision about the type of feeding for infant, supplementation, and determine the need and timing of complementary feeding too (3,4).

Only 37% of infants are exclusively breastfed for six months globally (5) and 61% in Kenya (6), demonstrating high levels of inappropriate feeding practices. As a result, substantial levels of malnutrition and poor child health and survival have been documented. Globally, 25% of children are stunted, 17% underweight and 8% wasted (7) while in Kenya,26% are stunted, 11% underweight and 4% are wasted (6). This study obtained information on knowledge and practices on infant feeding, socio-demographic factors that influence choice of infant feeding methods and nutritional status of children. The information obtained can be used by policy makers and implementers for further interventions

MATERIALS AND METHODS

Study design: Study design was a hospital based descriptive cross-sectional study that followed a quantitative approach. A questionnaire was the main data collection tool. A weighing scale and a stadiometer were used to take anthropometric measurement from children.

Study population: The target population was mother-child pairs, children of both sexes visiting, Mother Child Health clinics in three health facilities: Ngong sub-ditrict hospital, Ongata Rongai and Olo-sirkon Health Centres. Inclusion criteria for participation were; mother-child (6-24 months pair, mothers 18 years and above who consented or below 18 years, but were accompanied by their parent to give consent.The exclusion criteria were; mother-child (<6->24months) pair, mother-child (6-24 months) with more than one child, mothers who never gave consent and mothers less than 18 years, not accompanied by their parent since their were not of legal age of giving a consent. Approval to carry out the study was obtained from Scientific Steering Committee, Ethics and Research Committee of Kenya Medical Research Institute and Ministry of Health.

Data analysis: SPSS and EPI-INFO were used for data analysis. Descriptive statistics described measures of location (mean, median, and mode) and spread (range). Chi- square test was used to test the strength of association between dependent and independent variables. Odds ratio (OR) and 95% CI were used to estimate the strength of association between independent and dependent variables. The threshold for statistical significance was set at $p<0.05$. Ordinal regression determined predictors at multivariate level.

RESULTS

Socio-demographics: Most (65.1%) of the children were aged 6-9 months, male children (56.3%) were at a higher proportion than female (43.7%). About half of the mothers (50.9%) were within the age range of 20-25 years (mean maternal age = 25 years, SD = 5.03) and most (92.6%) were married.
Most (94.3%) of all mothers were literate as well as their spouses' where (96.6%) were literate.Majority (62.0%) of the mothers were housewives while their spouses were in formalemployment.

Knowledge on Infant feeding practice: Mothers were asked if they had information on infant feeding practice, a high proportion (68.6%) of them had knowledge on infant feeding practice, Most (82.5%) obtained information on breast and complementary feding from health workers, (8.8%) from mother/in-law, (4.6%) friends and neighbours, (3.8%) books and internet while (0.04%) observed the employer. Quality and quantity of information was sought by asking them the kind of information they had, (44.2%) of mothers had correct information on breastfeeding and (33.4%) on complementary feeding. As a whole only (38.8%) of mothers had correct and complete information on both breast and complementary feeding.

Breast feeding practice: All children were breastfed at one point in their life though (21.6%) of them were not exclusively breastfed for six months.In majority of children, (82.0%) breastfeeding was iniated in their first hour of life. Only (6.6%) of children were not being breastfed during the time of study, (43.3%) stopped at an age below twelve months and (56.3%) at twelve months and above. Reasons given by mothers for early termination of breastfeeding were; a third (30.4%) cited voluntary refusal by the child to breast feed, (21.7%) cited refusal by the child to feed on complementary food, (43.4%) cited medical related condition like pregnancy, HIV, family planning methods and breast soreness, (4.3%) cited lack of milk from the mother and (4.3%) cited work

Complementary feeding practice: Majority (96.0%) of children, were on complementary feeding during the interview. In a quarter (26.8%), complementary feeding was initiated at an age below six months and (62.8%) at six months. On onset of weaning porridge was the major food used in majority (65.7%)

of children.

Nutritional status: Stunting was found in (26.5%) of children, underweight in (11.1%), no child was found wasted.

Bivariate statistics: Association between knowledge, practices and socio-demographic factors. Married mothers were 1.093 (OR, 95% CI 0.445-2.686) times more likely to be knowledgeable than single mothers. Mothers who had male children were 1.311 (OR, CI 0.817-2.103) times likely to be more knowledgeable than mothers who had female children. Mothers level of education (X^2=4.7, p<0.05), occupation (X^2=12.089, p<0.05) were statistically associated with having knowledge . Age (X2=10.187, p>0.05), Marital status (X^2=0.37, p>0.05), child gender (X^2=1.265, p>0.05) and children age distribution ((X^2=5.283, p>0.05) were not significantly associated with knowledge. Spouse level of education (X^2=8.340, p>0.05), occupation (X2=1.878, p>0.05) and major source of income (X^2=1.362, p>0.05) were not significantly associated with complete information. Married mothers were 0.711 (OR, CI 0.161-3.140) likely to practice exclusive breastfeeding compared single mothers. It was also found out that mothers who had male children were 1.171 (OR, CI 0.587-2.338) times more likely to practice exclusive breastfeeding than mothers who had female children. Age (X^2=3.948, p>0.05), marital status (X2=0.102, p>0.05), children gender (X2=0.334, P>0.05) and children age distribution (X2=4.368, p>0.498) were not significantly associated with feeding practice. There was no statistically significant association between education level (X^2=0.420, p>0.05), Spouse level of education (X^2=2.020, p>0.05), mothers occupation (X^2=4.244, p>0.05), spouse occupation (X^2=3.653, p>0.455) and major source of income (X^2=1.142, p>0.05) with feeding practice

Association between knowledge, practices and nutritional status of infants aged 6 to 24 months attending child welfare clinicIt was found that mothers whose children had normal weight for height were 0.582 (OR, CI 0.2771-1.220) times less likely to be knowledgable compared to mothers whose children had high weight for height. Stunting (X2=1.953, p>0.744), Wasting (X2=3.361, P>0.05), Weight for height (X2=2.091, p>0.05) were not statistically associated with knowledge . Stunting (X2=3.142, P>0.05), Wasting (X2=4.609, P>0.05), weight for height (X2=0.402, P>0.05) were not significantly associated with practices

Association between socio demographics characteristics and stunting: Marital status (X2=26.716, P<0.05), children age distribution (X2=53.733, P<0.05) and children gender (X2=10.253, P<0.05) were significantly associated with stunting. Spouse level of education (X^2=44.500, P<0.05), Mothers occupation (X^2=38.556, P<0.05), Spouse occupation (X^2=29.505, P<0.05) and major source of income (X^2=23.059, P<0.05) were significantly associated with stunting. Mothers level of education (X^2=12.762, P>0.05), mother's age (X^2=17.246, P>0.05) were not statistically associated with stunting.

Association between Socio demographics characteristics and wasting: Child's age (X^2=0.018, P<0.05) and spouse level of education (X^2=41.404, P<0.05) were significantly associated with wasting. Mother's age (X2=10.194, P>0.05), marital status (X^2=2.960, P>0.05), child's gender (X2=35.328, P>0.05) were not significantly associated with wasting. Mothers level of education (X2=8.246, P>0.05), Mothers occupation (X^2=23.913, P>0.05) spouse occupation (X^2=19.071, P>0.05) and major source of income (X^2=19.588, P>0.05) were not significantly associated with wasting

Multivariate analysis: The significant factors from bivariate analysis (with p<0.05) were subjected to multivariate analysis (Ordinal regression) to determine the final independent factors that were associated with dependent factors. There was a significant relationship between marital status (p<0.015) and stunting , infant age groups, 6-9 months (p<0.008) and 10-12 months (p<0.017) were statistically associated with stunting. There was significant relationship between infant's age groups; 6-9 months (p<0.005), 10-12 months (p<0.008), 13-15 months (p<0.008) and wasting (p<0.05).

DISCUSSION

Majority of the children, (84.5%) were below one year. This contrasted a similar study in Nepal[8] which indicated that age was evenly distributed in all age groups.

A high proportion of mothers (68.6%) reported having information on feeding practices but on further determination of quality and quantity of information they had, only (38.8%) of them had complete correct information on exclusive breastfeeding for six months, continous breastfeeding for atleast two years as well as introducing complementary feeding at six months and type of food to wean with. Majority (82.5%) of the mothers reported the source of knowledge on feeding practices to be from health workers, (8.8%) mother / in-law, (6%) friend and neighbors, (3.8%) internet and books and (0.4%) observed the employer. Majority had knowledge on breast feeding and when to introduce complementary foods. Only few had information on suitable type and quantity of complementary foods. to wean, showing a gap when it comes to knowledge on dietary diversity and accepted meal frequency. Earlier studies documented similar findings (10,11) The findings of the study indicated that all children were breastfed at one point of their life. This was

in agreement with a similar study in Ghana (12) and slightly higher than KDHS 2014-2015 finding, (99.6%) of children are breastfed at one point of their life (6). A high proportion (82.0%) of children were breastfed within first hour of birth; (55.1%) breastfed immediately, (26.9%) within one hour.A previous study in Nairobi revealed that (75%) of mothers initiated breastfeeding within one hour of birth (13) .This proportion was higher than UNICEF finding where (39%) of infants in developing world are breast fed within one (14). This positive result on breastfeeding could have been contributed by most mothers delivering term babies in health facilities through normal delivery. An earlier study had indicated that caesarean deliveries were associated with delay in timely initiation of breastfeeding (15). Majority (93.4%) of children were still breastfeeding at the time of interview.This was slightly lower compared to a similar study in South Africa[16] in which (97%) of children were still breastfeeding at the time of study. The reasons given for early termination were, refusal by the child to breastfeed and maternal illness (sore breast, HIV mothers, drugs used for family planning or other illness), this was in agreement with a previous study in Nairobi (13). Majority (74.0%) of children had been exclusively breastfed for six months, a figure higher than the national rate of (61%)(6) and the global one of (37%) (5). This may be due to the fact that in the the rate of exclusive breast feeding has been on the rise in kenya, from (13.2%) in 2003 [28] to (32%) in 2009 (17) and recently to (61%) in 2014[6]. However, the number has not yet reached the WHO goal of 90% (18).

About (96.0%) of children were on complementary food during study time. For (10%) of the children, complementary foods were introduced at above six months, for (26.0%) the food was introduced before six months and for (60%) at six months. WHO guidelines on complementary feeding, state that all infants should start receiving complementary foods in addition to breast milk from 6 months onwards [19]. The findings were similar to KDHS 2014 (6) where (26.9%) of children are introduced complementary foods before six months.

Majority of children(70.6%) had normal weight for height, (26.5%) were stunted with (9.4%) and (17.1%) being severely and moderately stunted, respectively. This finding was similar to the current KDHS survey that reported (26.0%) of children to be stunted (6). However, (2.9%) had a high weight for height.

The prevalence of being underweight among children (weight for age) was (11.1%), with (3.7%) and (7.4%) being severely and moderately underweight, respectively. The finding was similar to current KDHS report, which shows (11%) of children are underweight (6). According to UNICEF, WHO-World Bank joint report, Africa experienced a slight decrease in the underweight prevalence among children, from (23%) in 1990 to (17%) in 2013 (7).

Additionally, (5.4%) were overweight with (4%) and (1.4%) being overweight and obese, respectively. Poor feeding practices lead to overweight and obesity too, which has serious health consequences. This result confirms the, global prevalence of overweight trend is on the rise in all regions from a burden of 32 million in 2000 to 42 million in 2013 (7).

No child was found to be wasted (low weight for height) but (9.4%) had high weight for height. This is in contrast to the national wasting prevalence among children reported by KDHS 2014 that indicate only (4%) of children in Kenya are wasted[6] . A joint report by UNICEF, WHO-World Bank reported that only (8%) of children in the world are wasted with a third in Africa (7), showing that the prevalence of wasting is low compared to that of stunting and underweight

Married mothers were 1.09 times more likely to be knowledgeable on infant feeding practices than single mothers and mothers with male children were 1.13 times more knowledgeable on infant feeding practices than those with female children. Mothers' level of education and occupation was statistically associated with having complete information on infant feeding practice ($P<0.05$) at bivariate level. There was no statistical significance between marital status and feeding practice ($p>0.05$). Married mothers were 0.7 times likely to practice exclusive breast feeding compared to single mothers. Other studies have documented similar results that married women exclusively breastfeed their infants more than single women (20,21).

There was no statistical significance between feeding practice and stunting, wasting and being underweight ($p>0.05$) at bivariate level. This contrasted with several studies (13,22,23,24) which demonstrated a statistical significance.

A statistical significant was found between marital status, children age distribution and gender, mother's and spouse's occupation, spouse's level of education and major source of income and stunting($p<0.05$). In the KDHS 2008-2009 survey, it was reported that stunting was least common among children of more educated mothers and those from wealthier families (6). A study in Alexandria associated stunting with age and mother's level of education, where stunting rapidly increased with age and children of non-educated mothers had a significant risk, 2.31 times more of being stunted than of mothers of high education level (25).

Infant age and spouse's level of education were significantly associated with wasting ($p<0.05$) at bivariate level and further analysis identified infant age as a predictor of wasting at multivariate level. In contrast a study in India, showed that all socio-demographic factors were not associated with wasting

(p>0.10). In Kwale, it was reported that occupation of household heads and mothers appeared to be a major factor influencing level of wasting (p<0.05) (22,26).

No statistically significant association was found between all the socio-demographic factors and underweight (p>0.05) (26,27).

In conclusion, breastfeeding was universal, though, not all were exclusively breastfed for six months or were breastfed for a period of two years as per the WHO and UNICEF guidelines demonstrating mixed feeding practice which is unacceptable. Breastfeeding initiation was impressive, 55.1% of children were breastfed immediately after birth and 82.0% in the first hour of delivery though not yet the UNICEF target value of 90%.

Most of the mothers had knowledge on exclusive breastfeeding and when to introduce complementary feeding but knowledge on quantity, quality and types of food to complement with was limited, demonstrating a knowledge gap on complementary feeding.

Children age was not evenly distributed, majority being of immunisable age, that is nine months and below, showing most mothers take their children to MCH for immunisation, therefore demonstrating awareness gap on growth monitoring and nutritional counseling in this society.

About a quarter 26.5% of the children were stunted, 2.9% had a high weight for height; 11% were underweight and 4.4% were overweight. No child was wasted.

Breast feeding and complementary feeding practices had no significant effect on nutritional status; marital status and child age group were found to be predictors of stunting, similarly child age was a wasting predictor.

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