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A COMPARATIVE STUDY OF INFANT FEEDING PRACTICES AND ITS IMPACT ON THEIR NUTRITIONAL STATUS ATTENDING URBAN HEALTH TRAINING CENTRE (UHTC) AND RURAL HEALTH TRAINING CENTRE (RHTC) IN THE FIELD PRACTICE AREA OF A TERTIARY CARE HOSPITAL

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ABSTRACT **Background:** Infant feeding practices comprising of both breastfeeding and complementary feeding have a major role in determining the nutritional status of the child.

Objectives- To assess and compare the breastfeeding practices, complementary feeding practices and the nutritional status of infants in both urban and rural field practice areas of a Tertiary Care Hospital.

Methods: A cross-sectional study was conducted at the UHTC and RHTC of a teaching medical institution over 3 months. 50 infants each aged 6 to 12 months visiting the immunization opd were selected by systematic random sampling. Information on sociodemographic variables, breastfeeding and complementary feeding practices was recorded and anthropometric analysis was done by WHO growth charts.

Results: There was a significant difference observed in the educational level of mothers (urban 86% and rural 32%). Colostrum feeding immediately after birth was higher in urban areas (90%) compared to rural (80%). Exclusive breastfeeding rate was 88% urban and 78% among rural mothers while continued breastfeeding rate at one year was 72% in urban and 84% in rural mothers. Mothers provided porridge (58%) in urbans areas and cow's milk (52%) followed by rice preparations (24%) in rural areas as first complementary foods. The prevalence of underweight is 24% and 42%, stunting is 18% & 30% and wasting is 16% & 30% in the urban area and rural area respectively.

Conclusions: Present study revealed inappropriateness in breastfeeding practices as well as complementary feeding practices in both urban and rural areas. Nutritional status of infants was better in urban area.

KEYWORDS : Exclusive breastfeeding, Complimentary feeding, underweight, wasting, stunting etc

INTRODUCTION

Proper nutrition of children leading to adequate growth and good health is the essential foundation of human development. Despite global efforts for improving maternal and child health and specific efforts like Integrated Child Development Services (ICDS), malnutrition among children remains a significant problem in India. Infant feeding practices constitutes a major component of child caring practices apart from socio-cultural, economic and demographic factors.

Nutritional status of children is an indicator of nutritional profile of the entire community. Factors which are responsible for the higher prevalence of malnutrition in India comprise low birth weight, maternal health problems, delay in introduction of complimentary feedings, faulty child care and other poor environmental conditions which are again more prevalent in slums [1]

Globally, approximately 149 million children under-5 suffer from stunting. In 2018, over 49 million children under-5 were wasted and nearly 17 million were severely wasted.[2] India is one among the many countries where child undernutrition is severe and also undernutrition is a major underlying cause of child mortality in India. Under-nutrition remains a challenge in India despite vast improvements in the country's economy. India is home to big proportions of the world's undernourished children.

In a recently released Global Nutrition Report 2018, revealed the prevalence of stunting, wasting and overweight at national level as 37.9, 20.8 and 2.4% respectively[3]

In India as per National Family Health Survey IV (2014–2015, recent in the series) 38.4, 21 and 35.7% of children below 5 years suffer from stunting, wasting and underweight respectively (corresponding figure for NFHS III, 2005–2006 were 47.9, 19.8 and 42.5% respectively). Prevalence of severe acute malnutrition (SAM) in India is 7.5%[4]

While the District Factsheet of Mumbai shows that the prevalence of stunting, wasting and underweight is 25.5, 25.8 and 22.7 percent respectively [5]. This study will provide insights about breastfeeding practices, complimentary feeding practices in infants prevailing in the urban and rural areas of Maharashtra which in turn has an overall impact on their nutritional status.

METHODS AND MATERIALS

Type of study Design

A cross-sectional study was carried out from May 2019 to August 2019 in urban field practice area under Urban Health Centre (UHTC), Dharavi, Mumbai and rural field practice area under Rural Health Training Centre (RHTC), Vasind, Shahapur, Maharashtra of L.T.M Medical College, Mumbai. The study subjects were infants in the age group of 6 months to 12 months attending the immunization OPD in the UHTC and RHTC in the respective field practice areas.

Sampling Technique and Sample Size

A study conducted by Ashwini et al.[6] showed that the prevalence of exclusive breast feeding in urban area was 16.25% and in rural area was 15.26% [3]. Absolute error of 10.00% at 95% confidence interval was considered and by using the formula $n = 4pq/d^2$, sample size was calculated as 50 in urban area and 50 in rural area.

Inclusion Criteria:

All the infants who were 6 months to 12 months of age & free from significant illness were included in this study.

Exclusion Criteria:

The infants were disqualified from study if they had congenital anomaly or any serious/ debilitating illness.

Systematic random sampling method was used and every third infant of age 6 to 12 months coming to the immunization OPD of urban and rural health training centres and who fulfilled the inclusion and exclusion criteria were selected.

Collection of Data

Mothers of the selected children who were willing to participate in the study were interviewed using a pre-designed, pre-tested, pre-validated questionnaire by oral interview method. Informed consent was taken and they were interviewed about the socio-demographic

characteristics i.e. age of the child, religion, socio-economic status and educational status of mother, infant feeding practices i.e. initiation of breastfeeding, feeding of colostrum, exclusive breastfeeding, complimentary feeding and also details about feeding of pre-lacteals was collected.

Exclusive breastfeeding rate i.e. proportion of infants exclusively breastfed for first six months and complementary feeding rate i.e. the proportion of infants aged 6-9 months who receive both breast milk and solid or semi-solid food as suggested by WHO were used in the present study

Collection of Anthropometric Information

The anthropometrical data such as weight (kg) and height (cm) of the babies were taken individually; The weight and height measurements were converted into three summary indices of nutritional status: weight-for-age, height-for-age and weight-for-height. Each of these indices is expressed in terms of the number of standard deviation units (Z score) from the median of the WHO international reference population. The total prevalence of malnutrition can be classified as *severe* and *moderate* if children with Z-scores below minus 3 standard deviations (-3SD) and children with Z-scores between minus 3 standard deviations (-3SD) and below minus 2 standard deviation (-2SD) from the median of the reference population respectively. Thus, according to WHO criterion based on standard deviation (SD) units (termed as Z-scores), the present study identified children who were less than (-2SD) below the reference median on the basis of weight-for-age, height- for-age and weight-for height indices and were considered respectively to be underweight, stunted and wasted.

Data Analysis

All the statistical analysis and all other data processing were done by using SPSS 21.0 version. Data were analyzed in terms of frequency distribution, crosstabs, percentage means and standard deviation. Statistical tests were used to find out the association between selected various form socio-economic status, Anthropometric status, income, expenditure, nutritional status, dietary and disease pattern and cultural superstitions. The raw anthropometric data of SPSS 21.0 were transferred to WHO Anthro App to obtain derived indices of anthropometric measurements, such as weight for age, height for age and weight for height Z-score, percentiles and median of children. For tabular, charts and graphical representation, Microsoft word and Microsoft excel were used.

RESULTS

Majority of 30 (60%) urban as well as 33 (66%) rural mothers were in the age group of 20 to 24 years with a mean age of 24.45 ± 1.34 years in urban and 25.20 ± 2.52 years in rural area. Among the study participants, as many as 331 (82.75%) urban and 322 (84.74%) rural mothers were Hindus. Literates were more among urban participants with 361 (90.25%) urban and 296 (77.89%) rural mothers being literates. Whereas, employment status was better in rural area with 44 (11.58%) rural mothers being employed in various jobs as opposed to 23 (5.75%) urban mothers. Indicators of Breastfeeding were calculated and it was found that *Early initiation of breastfeeding* was 60% in urban area & 54% in rural area. *Exclusive breastfeeding rate* under 6 months of age was 88% among urban mothers and 78% among rural mothers. *Continued breastfeeding rate* at 1 year was 72% in urban mothers and 84% in rural mothers.

As shown in Table 1, It was found that 10% of Urban mothers and 20% of Rural mothers administered pre-lacteals to their babies instead of giving colostrum as the first food. *"Janam Ghutti"* is a paste of almonds, dates, turmeric, nutmeg and other medicinal plants. Practice of giving ghutti to their infants was more common in mothers of rural areas (10%) (Table 1).

Table 1: Comparison of foods first introduced to baby after birth.

Food items	Urban area (%)	Rural areas (%)
Colostrum	45 (90%)	40 (80%)
Ghutti	00 (00%)	05 (10%)
Honey	02 (4%)	01 (2%)
Sugarwater/water	01 (2%)	02 (4%)
Formula milk	02 (4%)	02 (4%)

Table 2: First foods introduced as complimentary foods

Food group	Urban (%)	Rural (%)
Porridge (cereal based)	29 (58%)	08 (16%)
Cow's milk	06 (12%)	26 (52%)
Mashed rice (kheer/khichdi/dalrice)	03 (6%)	12 (24%)
Semolina (suji)	03 (6%)	03 (6%)
Vegetables	05 (10%)	01 (2%)
Fruit juices/mashed	04 (8%)	00 (0%)

It was observed that *urban mothers (28%) practiced premature initiation of complimentary feeding* (<6 months) and the most common reason being elder's advice (40%) and apprehension regarding sufficiency of breastmilk to meet the nutritional needs of the infants (35%). The most common first food introduced as complementary food in urban areas was cereal based porridge (58 %) followed by cow's milk (12 %) (Table 2)

20% of rural mothers had delayed initiation of complimentary feeding beyond 6 months because: They felt that secretion of breast milk was sufficient enough to meet the nutritional needs of the infants (43.15%). They could not afford food products (eg. Fruits, vegetables etc) and were not aware of low cost weaning foods that can be prepared at home (4.15%) the most common complimentary food given by rural mothers was Cow's milk (52 %) followed by rice preparations (24%) as their staple food being rice.

A significant difference was observed in the educational level of mothers (urban 86% and rural 32%). ($p<0.005$)

It was observed that none of the urban mothers had delivered at home whereas, 16% of rural mothers delivered at home out of which 4% home deliveries occurred in the absence of a trained birth attendant

In the rural areas, practice of giving pre-lacteals was significantly associated with religion, educational status of the mother and age of mother. Whereas in urban areas factors associated with this practice were place of delivery and information given to mothers regarding benefits of breastfeeding in the hospital. ($p<0.05$)

The prevalence of underweight, stunting and wasting was found to be more in rural area compared to urban i.e. 24%,54%,34% respectively (Figure1-3)

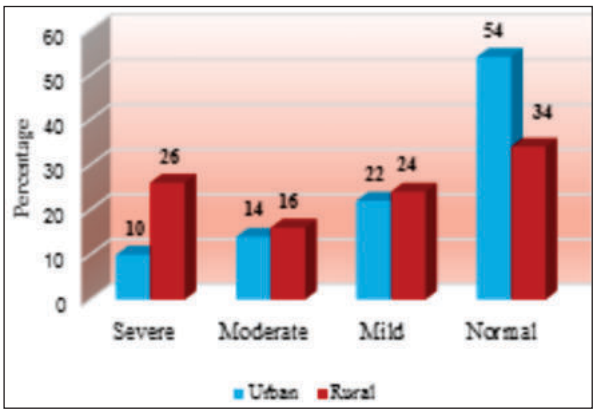

Figure 1: Underweight: Weight for age < -2 standard deviations (SD) of the WHO Child Growth Standards median

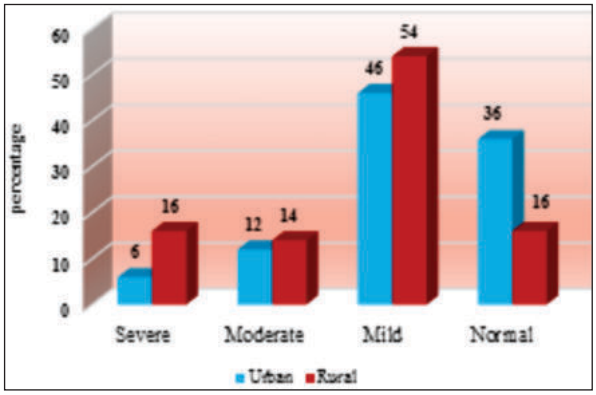

Figure 2: Stunting: Height for age < -2 standard deviations (SD) of the WHO Child Growth Standards median

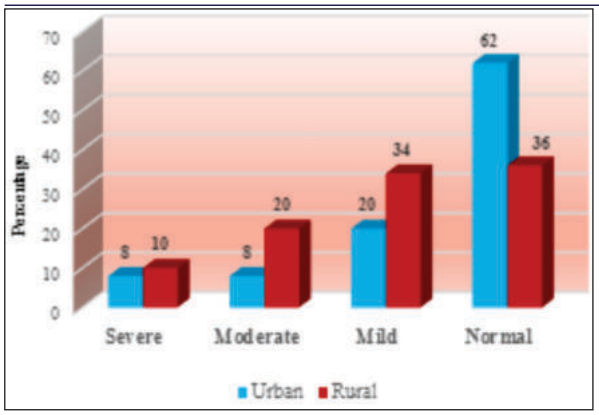

Figure 3: Wasting: Weight for height < -2 standard deviations (SD) of the WHO Child Growth Standards median

DISCUSSION

Exclusive breast feeding till 6 months of age was practiced only by 16.25% in urban and 15.26% in rural mothers. Majority of mothers practiced predominant breast feeding in both urban and rural area *(Table II)*. Studies [7, 8-14] done in various states of India demonstrated that exclusive breast feeding rate ranged from 23.50% to 69.35%. A study done in villages of Central Karnataka by Banapurmath ET al[15] showed that exclusive breast feeding rate at 4 months was 61.26%. Present study conducted to understand and compare complementary feeding habits of urban and rural mothers showed that the majority of the 69.20% mothers in the urban area started complementary feeds before the age of 6 months; whereas, in the rural areas, 42.11% mothers did so at the age of 6 months. Difference in the age at which complementary feeds were started by urban and rural mothers was statistically significant ($p<0.001$) Similarly, in a study done by Mushaphi et al[16] Vhembe District of Limpopo Province it was observed that about 77.30% mothers had started complementary foods to their infants before 6 months of age; most commonly they had done so as per elder's advice (45.00%). Contradictory observation was found in the urban and rural areas of Bihar in a study carried out by Yadav et al [17] that 17.70% urban and 13.10% rural mothers started complementary foods before 6 months of age and 53.70% urban and 54.20% rural mothers started complementary foods between 6 – 12 months of age. However, reason behind early weaning was found to be the apprehension that breast milk was not sufficient (30.00% in urban and 28.90% in rural area). In the present study less proportions of underweight (36.4% against 42.4%) and stunting (51.6% against 66.1%) were found as compared to those reported in an earlier survey in Allahabad.[18] Present study reports higher prevalence of malnourished children in case of illiterate mothers as compared to that in case of literate mothers. This finding is in agreement with IASDS study.[18]This may be due to expected better childcare practices adopted by educated mothers than those by uneducated mothers.

CONCLUSIONS

Present study revealed that various inappropriate breast feeding and complimentary feeding practices are prevalent in both urban and rural areas though urban mothers had more favorable practices compared to rural mothers. Elder's advice played an important role in shaping the breastfeeding as well complimentary feeding practices. Higher occurrence of maternal illiteracy and lower socio-economic status are also found to be associated with poor feeding practices in rural areas. The nutritional status of the selected infants were found to be varied with varying degrees, but improved nutritional condition was found in urban infants than rural.

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