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# Socio-Demographic Factors Affecting the Growth Status of Under-Five Children in Urban Slums of Davangere City: A Cross Sectional Study

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## ABSTRACT

**Introduction:** 1-5 years old children are most vulnerable and high risk group. According to national family health survey 3 (NFHS-3) 48% of under-five children are chronically malnourished. Nutrition of pre-school children is of paramount importance because it is the foundation for life time health.

**Objective**: To study the associated socio-demographic factors affecting the growth status.

**Methods**: A Cross- sectional Community based descriptive study was conducted involving 530 under-five children in urban slums of Davangere City. Data was collected using a pre-designed & pretested questionnaire & anthropometric measurements.

**Results:** The prevalence of underweight (49.3%), stunting (76.8%) and wasting (27.5%) was highest in 12-24 month. The prevalence of underweight is 34.5% in males and 23% in females. Stunting and wasting was seen in 50.3% and 21.4% male children.

**Conclusions:** Socio-demographic factors like age, sex, parent's literacy status had an impact on better growth status of children. Lower socio-economic condition, higher birth order, lower birth interval were found to have adverse effect on growth status of children.

**Key Words**: Under-five, Malnutrition, under-weight, stunting.

## INTRODUCTION

"Nation marches on the tiny feet of young children and no nation can flourish without due love and attention paid to its children" truly said as 1-5 old are most vulnerable and high risk group calls for special health services. 12.5-15% of world population are in this age group.[1] 25-30%of mortality in developing countries occurs in this age group.

According to national family health survey 3 (NFHS-3) 48% of under-five children are chronically malnourished.1outof 5 under five children are wasted. 43% of under-five children are underweight for their age. Under nutrition in India is about 48% and highest in the world that is nearly double that of Sub Saharan Africa.[2]If this continues India would be raising a generation which is debilitated and unable to contribute effectively to the productivity of the country.

In India, since Independence the infant mortality and death rate have come down to one third and half respectively. Unfortunately malnutrition, which is not much talked about, has come down only by one fifth.[3]This is when the agricultural production has increased many fold and granaries are having the problem of storing food grains.

Themain causes of malnutrition in India are, Socio-demographic factors like poverty, illiteracy, family size, on acceptance of Family welfare methods and Scarcity of suitable foods, traditional beliefs and taboos regarding the breast feeding practices, weaning practices and that present during illness.[4]

Environmental factors like parental education socioeconomic status, sanitation, parental attitudes and child rearing practices influence the growth and development.[5]It is projected that more than half of Indian population will live in urban areas by 2020 and nearly 1/3rd of this urban population will be urban slum dwellers.

## METHODOLOGY

**Study design:** A descriptive community based cross-sectional study.

**Study setting:** Study was conducted involving the under- five children and their parents in urban slums of Davangere city of Karnataka.

**Sample Size:** Sample size was calculated considering the reported underweight prevalence of 43% by NFHS-3 data[2] and the sample size of **530** was calculated using the formula, $4PQ/D^2$ and fixing 10% as the relative precision.

**Sampling:** There are 44 declared slums in Davangere city. To represent the different geographical and socio-cultural characteristics, city was divided into 4 quadrants by using map issued from Davangere City Corporation. The slumswere listed according to ward numbers. From each quadrant one slum was selected randomly. From each slum one fourth of the sample size i.e., 135 was covered.

**Data collection and analysis:** Study subjects were reached by house to house visit and examined. Informed written consent was taken from parent or guardian. The data was collected by interviewing the parent or guardian using a pre-designed and pre-tested proforma. General physical examination including recording of anthropometrics was done applying standard procedures as below.

WEIGHT - Body weight was measured without any footwear and with minimal clothing nearest to 0.1 Kg using a standard UNICEF Salter spring balance for children aged 1 to 5 years and by standard standing weighing machine for children aged 5 to 6 years. The scale was zeroed before each session.[6]

HEIGHT - In children aged above 2 years standing height was measured without any footwear to nearest 0.1 cm using a non-stretchable non-flexible fibre glass measuring tape was fixed to straight wall near the flat surface. The children were made to stand straight with heels, buttocks, shoulders and back of head touching the wall. Head was held comfortably erect with the lower border of orbit of the eye in the same horizontal plane as the external canal of the ear (Frankfurt plane) and the arms hanging loosely by the sides with palms facing the high. The headpiece was then lowered gently making contact with the top of head.[6]

The supine length was measured in children less than 2 years of age using an infantometer. For the purpose of simplification the term height is used throughout the study.[6]

The height and weight of each child was compared with WHO growth standards[7] for that particular age and sex to get growth indices like weight for age, height for age and weight for height indices. Children below -2SD of the reference median on any of these indices were considered as undernourished and termed as underweight, stunted and wasted respectively.

Data was entered intoMicrosoft Excel spreadsheet. Epi info (Version 7) was used for performing the statistical analyses.

**Ethical considerations:** Ethical clearance for the study was obtained from the Institutional Ethics Committee.

## RESULTS

The prevalence of underweight was significantly higher ($p<0.05$) in 12-24 month age group compare to other groups. It was observed that all the 3 types(under-weight, stunting, wasting) of malnutrition were higher in male children.

In context to birth order of a child, second born are at the risk of wasting significantly more compared to other children (p-0.005).

As the birth interval increased prevalence of underweight and wasting reduced which was significant. Children with birth interval less than 2 years shows highly significant wasting compared to other children (p-0.0003).

The prevalence of underweight and wasting was not associated with religion in which children are born. Stunting was highly significantly high among Hindu compared to children born in other religion ($p<0.001$).

Parent's literacy has high impact on underweight, stunting and wasting of children with high significance ($p<0.001$). Our study shows that type of family in which children are born has no effect on growth status such as underweight, stunting and wasting of the child.

## DISCUSSION

According to study done in rural area in Kenya, Africa both underweight and stunting was maximum in 12-24 months age group children at 46.2% and 60.5% and was statistically significant [OR= 2.34,95% CI=1.01 to 5.95 for underweight children and OR=2.74, 95%CI=1.10-6.88].

**Table 1: Growth status of Children according to Age, Sex, Birth order, Birth interval**

| Variables | Total | Underweight (%) | Stunting (%) | Wasting (%) |
|---|---|---|---|---|
| **Age (Months)** | | | | |
| 24-Dec | 138 | 68 (49.3) | 106(76.8) | 38(27.5) |
| 25-36 | 128 | 20 (15.6) | 38(29.7) | 22(17.2) |
| 37-48 | 179 | 32 (17.8) | 59(32.9) | 32(17.9) |
| 49-60 | 85 | 35(41.2) | 32(37.6) | 4(4.7) |
| Total | 530 | 155 (29.2) | 235(44.3) | 96(18.1) |
| | | P<0.05s | P<0.05 S | P<0.05 S |
| **Sex** | | | | |
| Male | 290 | 100 (34.5) | 146 (50.3) | 62 (21.4) |
| Female | 240 | 55 (23) | 89 (37.1) | 34 (14.2) |
| Total | 530 | 155 (29.5) | 235 (44.3) | 96 (18.1) |
| | | P < 0.05 S | P<0.05 S | P<0.05 S |
| **Birth Order** | | | | |
| 1 | 167 | 57 (34.1) | 64 (38.3) | 32 (19.2) |
| 2 | 250 | 68 (27.2) | 122 (48.8) | 56 (22.4) |
| 3 | 107 | 28 (26.2) | 47 (43.9) | 8 (7.5) |
| 4 | 6 | 2 (33.3) | 2 (33.3) | 0 (0.0) |
| Total | 530 | 155 (29.2) | 235 (44.3) | 96 (18.1) |
| | | P=0.39 Ns | P=0.19 Ns | P=0.005 S |
| **Birth Interval (N=363)*** | | | | |
| < 24 | 148 | 57 (38.5) | 84 (56.75) | 46 (31.09) |
| 24-36 | 120 | 19 (15.8) | 46 (38.33) | 9 (8) |
| >36 | 95 | 22 (23.1) | 41 (43.15) | 9 (9.5) |
| Total | 363 | 98 (27.0) | 171 (47.1) | 64 (17.6) |
| | | P=0.005 S | P=0.17 NS | P=0.0003 HS |

(* birth interval in months, children with birth order one are excluded)

Neither underweight nor stunting was associated with father's literacy status [OR=0.91 and 0.88, 95% CI=0.53-1.56 and 0.51-1.52 for underweight and stunting prevalence respectively]. Even though the percentage prevalence was slightly different the trends were similar to our study.[8]

In a study conducted in a drought affected district of Orissa the prevalence of underweight was found to be high in 12-24 months age group at 69%. The stunting prevalence was found to be high in 37-48 months age group at 54.4% while wasting was seen commonly in 12-24 months age group.[9]

The trend of this prevalence may be due to feeding patterns, immunization status and child rearing practices.

In a study conducted in a tribal area of Madhya Pradesh it was observed that prevalence of underweight, stunting and wasting among boys was 62.9%, 54.4% and 30.1%; while in girls it was found to be 60.3%, 48.8% and 35.8% respectively.[10] further qualitative research is needed to explore this result even in our study.

According to NFHS 2005-06, it is reported that the prevalence of underweight among Hindu children was 41.8 and among Muslim children was 43.2%, stunting was 48% and 53.2% among Hindu and Muslim children. On the other hand significant difference was observed with regards to prevalence of wasting which was 20.3% among Hindu children and 18.4% among Muslim children.[11]In our study religion has no effect on underweight and wasting of children but stunting is more prevalent among Hindus. This difference is may be because of type of diet, genetic makeup and cultural patterns.

In a study conducted near Ghaziabad, there was no difference in the prevalence of malnutrition depending on the caste.[12]

In the study done at Calcutta, West Bengal, substantial difference was observed in the prevalence of malnutrition among children belonging to illiterate and literate fathers (74.76% and 57.28%) and illiterate and literate mothers (69.55% and 54.93%) difference being statistically significant (p<0.05). Our study shows that higher the education level of parent, growth status of the children is poor compared to others. This could be because of the confounding effect of factors like occupation of the parents, artificial feeding.

Prevalence of underweight was 68.7% among children of birth interval less than 36 months, while it was significantly less (p<0.05) in children with birth interval of more than 36 months.[13]

According to NFHS 2005-06, in Karnataka it was revealed that children born to illiterate mothers are much more likely to be undernourished than children whose mothers have completed at least high school and it was also found that the percentage of undernourished children decreased with increase

**Table 2: Growth status of children according to other socio demographic factors**

| Variables | Total | Underweight (%) | Stunting (%) | Wasting (%) |
|---|---|---|---|---|
| **Religion** | | | | |
| Hindu | 418 | 131 (31.3) | 203 (48.56) | 70 (16.7) |
| Muslim | 102 | 22 (21.6) | 30 (29.4) | 22 (21.6) |
| Christian | 10 | 2 (20.0) | 2 (20.0) | 4 (40.0) |
| Total | 530 | 155 (29.2) | 235 (44.3) | 96 (18.1) |
| | | P= 0.93ns | P<0.001hs | P=0.2 Ns |
| **Mother's Education** | | | | |
| Illiterate | 220 | 52 (23.6) | 92 (41.8) | 38 (17.3) |
| Primary | 147 | 57 (38.8) | 62 (42.2) | 36 (24.5) |
| Secondary | 127 | 30 (23.6) | 59 (46.5) | 12 (9.4) |
| Puc | 32 | 14 (43.8) | 22 (68.8) | 6 (18.8) |
| Degree | 4 | 2 (50.0) | 0 (0.0) | 4 (100.0) |
| Total | 530 | 155 (29.2) | 235 (44.3) | 96 (18.1) |
| | | P=0.003 S | P=0.02 S | P<0.001 Hs |
| **Father's Education** | | | | |
| Illiterate | 126 | 28 (22.2) | 42 (33.3) | 28 (22.2) |
| Primary | 86 | 34 (39.5) | 38 (44.2) | 20 (23.3) |
| Secondary | 252 | 75 (29.8) | 119 (47.2) | 36 (14.3) |
| Puc | 58 | 18 (31.0) | 32 (55.2) | 10 (17.2) |
| Degree | 8 | 0 (0.0) | 4 (50.0) | 2 (25.0) |
| Total | 530 | 155 (29.2) | 235 (44.3) | 96 (18.1) |
| | | P=0.03 S | P=0.04 S | P=0.21 Ns |
| **Type Of Family** | | | | |
| Nuclear | 277 | 69 (24.9) | 110 (39.7) | 44 (15.9) |
| Joint | 169 | 56 (33.1) | 87 (51.5) | 38 (22.5) |
| 3-Generation | 82 | 30 (36.6) | 38 (46.3) | 14 (17.1) |
| Broken | 2 | 0 (0.0) | 0 (0.0) | 0 (0.0) |
| Total | 530 | 155 (29.2) | 235 (44.3) | 96 (18.1) |
| | | P=0.08 Ns | P=0.06 Ns | P=0.30 Ns |
| **Socio-Economic Status** | | | | |
| I | 2 | 0(0.0) | 0(0.0) | 0(0.0) |
| Ii | 30 | 10(33.3) | 4(13.3) | 6(20.0) |
| Iii | 315 | 90(28.6) | 147(46.7) | 60(19.0) |
| Iv | 155 | 47(30.3) | 68(43.9) | 24(15.5) |
| V | 28 | 8(28.6) | 16(57.1) | 4(14.3) |
| Total | 530 | 155(29.2) | 235(44.3) | 96(18.1) |
| | | P=0.87 Ns | P=0.003 S | P=0.56 Ns |

in mother's education level. With regards to stunting it was observed that 57.4% of children of illiterate mothers were stunted, 50.4% among children of mothers who completed Primary school and 40.3% among children of mothers who completed High school. This declining trend of under nutrition with increase in mother's educational level was also observed in our study.The findings were similar to that observed by NFHS 2005-06 were the prevalence of underweight is 36.1% among children of Birth order 1.[11]

In another study conducted in Uttar Pradesh the prevalence of underweight was maximum at 75% among children of low socio-economic status while only 24% among children of high socio- economic status ($\chi 2=5.66$, DF=2, $p<0.02$). [14]This is similar to our study results as lower socioeconomic status is usually associated with nutritional deficiencies, lack of awareness, and non-utilization of health care facility.

## CONCLUSION

Socio-demographic factors like age, sex, parent's literacy status had an impact on better growth status of children. Lower socio-economic condition, higher birth order, and lower birth interval were found to have adverse effect on growth status of children. Socio-economic development among the urban slums needs to be ensured which is the important factor to tackle malnutrition, mainly undernutrition. Hence all existing efforts for combating malnutrition need to be continued in near future with full vigour and enthusiasm.

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