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# AN OBSERVATIONAL STUDY FOR PREVALENCE OF MALNUTRITION AMONG UNDER FIVE YEAR CHILDREN AND ITS ASSOCIATED FACTORS AT URBAN HEALTH TRAINING CENTER, SMS MEDICAL COLLEGE, JAIPUR


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## ABSTRACT

**Introduction:** Malnutrition is the most widespread condition affecting the health of children [1]. As recent data shows higher malnutrition in children of urban area and little work has been done in this regard hence this study aims to estimate the magnitude and explore the socio-economic determinants of malnutrition among under-five children of field practicing area of UHTC. This would help in better understanding of the issue and future planning. **Methods:** This Community based, cross-sectional, observational study was done at Sushilpura area from July 2021 to October 2022. Total 360 children under five year of age were assessed for malnutrition and factors associated. **Results:** There were 46.7% male and 53.3% female. Majorities (83.9%) were Hindus and were nuclear families (68.3%). Only 6.4 percent families were higher socioeconomic status while only 7.2% households were lowest socioeconomic status. Around one fourth subjects were from ST/SC categories. The prevalence of under nutrition was 56.4%. Overall stunting was about 35.3% with 4.2% of severe stunting; moreover about 21.1% had wasting with 5.6% of severe wasting. Sex, religion, caste, family size, socio economic status, livestock in house, ventilation of house, overcrowding were significant factors associated with malnutrition. **Conclusion:** under-nutrition is high among children of Sushilpura, an urban dwelling of Jaipur city. One third was stunted and every fifth child was wasted too. Low socioeconomic status, less educated parents, poor sanitation, female sex, birth order, lack of exclusive breast feeding, nuclear family, higher number of episodes of acute diarrhea in last one year were important associated factors. Presence of domestic livestock and absence of overcrowding were positive factor for preventing malnutrition.


**KEYWORDS :** Malnutrition, prevalence, children, urban area, Jaipur

## INTRODUCTION:

Malnutrition is the most widespread condition affecting the health of children [1]. There are 178 million undernourished and 20 million severely malnourished children in whole world with 3.5 to 5 million annual deaths [2]. It indicates that 45 per cent of the children who died before the age of 5 years were found to have malnutrition [3]. Eighty per cent of newborn mortality occurs in low birth weight babies [4]. Most (80%) of undernourished children are from 20 countries only including India where around 60 million children are under nourished [5]. Under weight is the earliest sign of malnutrition and that varies from 2 per cent in developed countries to 30 per cent in developing countries [6]. Long duration malnutrition leads to stunting [7]. The prevalence of stunting in Southern Asia sub region is much higher (30.7%) than the global average (22.0%) similarly wasting is also higher (14.1%) than the global average (6.7%) [8]

India and neighboring countries like Pakistan, Bangladesh, Nepal has more under-nutrition in urban areas (underweight28.9% to 36.3%, stunting 13.3% to 41.2% and wasting16.5% to 19.3%) [9,10,11,12]. NFHS-5 data also revealed underweight, stunting and wasting (27.3%, 30.1%, 18.5%) in India, (28.3%, 28.3%, 18.3% ) in Rajasthan and (25.2%, 35.8%, 18.3%) in Jaipur city respective[13].

The long-term under nutrition in childhood results in several consequences such as delayed motor and skill milestones, low intelligent quotient, behavior specific illnesses and infection. Poor school achievement, performance, low attendance and poor educational outcome are few more consequences of malnutrition that results in low income-earning capacity later in their life [14]. The recent literatures says that childhood under nutrition increases risk of cardiovascular disease, type 2 diabetes and others diseases due to disproportionate and rapid weight gain in later years of childhood life [15]

Family income is considered a very important factor for under nutrition of children of that family however there are many other studies revealed that it is not conclusive [16]. There are more consistent associated factors like mother's feeding practices, parent's health-seeking behaviour and personal hygiene, Scarcity of suitable foods, traditional beliefs and taboos about what the baby should eat [17].

As recent data shows higher malnutrition in children of urban area and little work has been done in this regard hence this study aims to estimate the load and explore the socio-economic determinants of malnutrition among under-five children of field practicing area of UHTC. This would help in better understanding of the issues and future planning.

### Primary Objective:

To estimate the prevalence of malnutrition among children aged five year residing in field practice area of Urban Health Training Centre, SMS Medical College, Jaipur.

### Secondary Objective:

To determine factors associated with malnutrition among study participant.

## METHODOLOGY

**Study Type**: Community based cross-sectional, observational study.

**Study Period:** The study period will be from April 2021 to March 2022.

**Sample Size:** A sample of 360 children under five year of age is calculated at 95% confidence & 5% absolute error to verify the expected 34.9% prevalence of malnutrition among under5 year children [nfhs4].

**Sampling Unit:** Unit of study is Family.

**Sampling Procedure:** We have randomly selected 360 children of age group 0- 59 months in Sushilpura under UHTC of SMS Medical College, Jaipur. Sushilpura has a population of 9868 with 1522 households. A list of households was taken from UHTC. Three hundred sixty households were randomly selected out of 1522 households using computerized random number table. One randomly selected child was included in the study from each household where number of children below five year of age was more than one using chit method. If there was no child below five year available in any of randomly selected household then house next to this was considered for study. All children with no malnutrition from these selected households were also assessed and compared for determining the associated factors.

**Study Variables:** Weight as per age, Height as per age, Height as per weight

- Mid arm circumference
- Vaccination status
- No of visits to AWC in last 2 month
- H/o of exclusive breast feeding in children up to 6 month of age
- Weaning status in children of age 6 to 18 month of age
- Age of weaning
- Socio demographic factors ;- Age, Sex, parents education, parents occupation, no of Siblings, water supply, monthly family income, monthly per capita income, livestock in house, overcrowding status

**Inclusion Criteria:** Under five year's children and where Parents/ Guardians gave written informed consent.

**Study Tool:**

- A semi structured proforma would be used for data of socio demographic variables.
- WHO growth chart for detection of malnutrition.

**Statistical Analysis:** Continuous data would be summarized in terms of mean and standard deviation, difference in two mean would be analyzed using student't' test, count data would be expected in forms of proportion, difference in proportion would be analyzed using chi square test . The level of significance would be kept 95% for all statistical analysis.

## RESULT

In present study a total of 360 children were covered, of which 21% were below 1 year, 43.3% were 1-3 years of age and 35% were 4-5 years of age. There were 46.7% male and 53.3% females (48.3%) population. Majorities (83.9%) of the households were Hindus, and 68.3% of the households were nuclear families, 21.7% were extended family and 10% were joint families. Only 6.4 percent families were higher socioeconomic status while only 7.2% households were lowest socioeconomic status in present study. 24.4% household was ST/SC categories and 75.6% were general caste. The prevalence over-nutrition was 3.9% and under-nutrition was 56.4% out of which 35.3% stunted and 21.1% wasted.

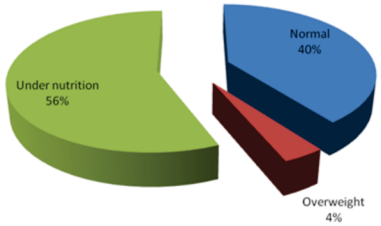


**Figure:** Distribution of study participants as per Nutrition status

**Table-1 Association of Socio demographic variables with nutritional status of children**

| Variable | Total n= 360 (100%) | Malnutrition status | | | P-value |
|---|---|---|---|---|---|
| | | Normal n=143 (39.7%) | Over-weight 14(3.9%) | Under-nutrition 203(56.4%) | |
| Age | | | | | |
| 1-12 | 78(21.6%) | 27(35%) | 6(7.69%) | 45(57.6%) | 0.209 |
| 13-24 | 88(24.44%) | 29(33%) | 4(4.55%) | 55(62.5%) | |
| 25-36 | 68(18.89%) | 28(41%) | 2(2.94%) | 38(55.8%) | |
| 37-48 | 69(19.17%) | 35(51%) | 0 | 34(49.2%) | |
| 49-60 | 57(15.83%) | 24(42%) | 2(3.51%) | 31(54.3%) | |
| Sex | | | | | |
| Female | 168(46.67%) | 58(34.5%) | 4(2.3%) | 106(63.1%) | 0.039 |
| Male | 192(53.33%) | 85(44.2%) | 10(5.2%) | 97(50.5%) | |
| Religion | | | | | |
| Hindu | 302(83.8%) | 132(43.7%) | 10(3.3%) | 160(52.9%) | 0.002 |
| Muslim | 45(12.5%) | 6(13.3%) | 4(8.8%) | 35(77.7%) | |
| Other's | 13(3.6%) | 5(38.4%) | 0 | 8(61.5%) | |
| Marital Status | | | | | |
| Divorced | 8(2.22%) | 3(37.7%) | 0 | 5(62.3%) | 0.826 |
| Married | 352(97.7%) | 40(39.7%) | 14(3.9%) | 198(56.2%) | |
| Family Type | | | | | |
| Extended | 78(21.6%) | 48(61.5%) | 8(10.2%) | 22(28.2%) | 0.00 |
| Joint | 36(10.0%) | 36(100.0%) | 0 | 0 | |
| Nuclear | 246(68.3%) | 59(23.9%) | 6(2.4%) | 181(73.5%) | |
| SES | | | | | |
| Upper | 23(6.3%) | 18(78.2%) | 5(21.7%) | 0 | 0.00 |
| Upper Middle | 78(21.6%) | 17(21.7%) | 2(2.5%) | 59(75.6%) | |
| Lower Middle | 111(30.8%) | 14(12.6%) | 1(0.9%) | 96(86.4%) | |
| Upper Lower | 122(33.8%) | 94(77.0%) | 6(4.9%) | 22(18.0%) | |
| Lower | 26(7.2%) | - | - | 26(100.0%) | |
| Type of House | | | | | |
| Kaccha | 4(1.1%) | 0 | 0 | 4(100.0%) | 0.001 |
| Mixed | 18(5.0%) | 0 | 0 | 18(100.0%) | |
| Pakka | 338(93.8%) | 143(42.3%) | 14(4.1%) | 181(53.5%) | |
| Livestock in house | | | | | |
| No | 349(96.9%) | 135(38.6%) | 12(3.4%) | 202(57.8%) | 0.001 |
| Yes | 11(3.0%) | 8(72.7%) | 2 | 1(9.0%) | |
| Ventillation | | | | | |
| Adequate | 220(61.1%) | 117(53.1%) | 14(6.3%) | 89(40.45%) | 0.001 |
| Not Adequate | 140(38.8%) | 26(18.57%) | 0 | 114(81.43 %) | |
| Overcrowding | | | | | |
| Absent | 224(62.2%) | 125(55.8%) | 10(4.4%) | 89(39.7%) | 0.00 |
| Present | 136(37.7%) | 18(113.2%) | 4 | 114(83.8%) | |
| ANC Visit | | | | | |
| _>4 | 238(66.1%) | 138(57.9%) | 13(5.4%) | 87(36.5%) | 0.00 |
| <4 | 122(33.8%) | 5(4.1%) | 1 | 116(95.0%) | |
| Birth Weight | | | | | |
| Normal | 261(72.5%) | 103(39.4%) | 10(3.8%) | 148(56.7%) | 0.98 |
| Low Birth Weight | 99(27.5%) | 40(40.4%) | 4 | 55(55.5%) | |

**Table-2 Association of Nutritional status with Mother & Child associated factors**

| Variable | Total n= 360 (100%) | Malnutrition status | | | P-value |
|---|---|---|---|---|---|
| | | Normal n=143 (39.7%) | Over-weight 14(3.9%) | Under-nutrition 203(56.4%) | |
| Exclusive Breast Feeding | | | | | |
| No | 129(35.8%) | 9(6.9%) | 0 | 120(93.0%) | 0.00 |
| Yes | 231(64.1%) | 134 (58.0%) | 14(6.0%) | 83(35.9%) | |
| Immunization status | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| Complete Immunization till date | 286(79.4%) | 138 (48.2%) | 12(4.2%) | 136(47.5%) | 0.00 |
| Incomplete /Not mmunized | 28(7.7%) | 0 | 0 | 28(100.0%) | |
| Not Immunized | 46(12.8%) | 5(10.8%) | 2(4.3%) | 39(84.7%) | |
| Mother's hand washing practice | | | | | |
| Not Practiced | 142(39.4%) | 0 | 2(1.4%) | 140(98.5%) | 0.00 |
| Practiced | 218(60.5%) | 143(65.6 %) | 12(5.5%) | 63(28.9%) | |
| Child hospitalization in last one year | | | | | |
| No | 275(76.3%) | 132(48.0 %) | 11(4.0%) | 132(48.0%) | 0.00 |
| Yes | 85(23.6%) | 11(12.9%) | 3(3.5%) | 71(83.5%) | |
| Personal hygiene of children | | | | | |
| Fair | 110(30.5%) | 48(43.6%) | 1(0.9%) | 61(55.4%) | 0.001 |
| Good | 182(50.5%) | 88(48.3%) | 11(6.0%) | 83(45.6%) | |
| Poor | 68(18.8%) | 7(10.2%) | 2(2.9%) | 59(86.7%) | |

Female child had significantly more malnourished (63.1%) as compared to male (50.2%). Muslims had significantly more (77.7%) malnourished children as compared to Hindu (52.9%). General category had 50% malnourished and Sc/St had 76.1%, this difference was significant ($p<0.05$). Bigger family size where 7-9 family members with elderly people to look after young children had 12.5% of under-nourished compare to the families where only 1-3 members are present had much higher proportion (68.4%) of under-nourished children. No Child of joint family was under-nourished compared to nuclear family (73.5%). Lower middle class is significantly associated with malnutrition, with type of housing condition as kaccha houses had more under-nourished child as compared to pakka houses.

Association of livestock with nutritional status of children: Presence of livestock, absence of over-crowding and adequate house ventilation all is significantly associated with malnutrition. ANC visits of mother, exclusive breast feeding, mother hand washing practice, child illness history in last one year, personal hygiene with of children show significant difference with nutritional status of children.

The availability and accessibility of basic health care facilities seemed to be fair in the area as immunization coverage was satisfactory irrespective of the nutritional status. ANC checkups of their mothers were not complete, though they had at-least one ANC checkup during pregnancy.

## DISCUSSION

India and neighboring countries like Pakistan, Bangladesh, Nepal has more under-nutrition in urban areas [9, 10, 11, 12, 13]. Present study revealed that 56% of children <5 year were suffering from malnutrition, little higher (66.5%) prevalence was observed by Anuradha et al study [18]. Prevalence of underweight, stunting and wasting in children up to 5 year was 33.3%, 35.3% and 21.1% respectively, it also revealed that stunting was most common form of malnutrition. This was in synch with finding of Sahu et al(38%) [19], Joe et al (33%) [20] and Sujata et al Study (42%) [21]. Age is not significantly associated with malnutrition. Children from Muslim families were more (77.7%) malnourished then Hindu (52.9%) & others (61.5%) religious communities, similar results in Nidhi et al (87% vs 57%) study [22]. Under-nutrition was more in children from schedule caste/ scheduled tribe almost equal proportion was reported in Anuradha et al, Nidhi et al study, probably due to the general social backwardness in education, resources, social mobility and opportunities. More girls were malnourished than boys, similar was seen by Suraj et al, [23] gender-centric discrimination in early childhood, family and community attitudes towards the girl child may be the reason for it. Joe et al study shows opposite i.e. male have higher under nutrition[20].

Low family income results in lower literacy rate, low purchasing capacity and thus accelerating food insecurity resulting higher under nutrition rates. Present study, edem et al [24], baran et al study [25] also supported this fact. Low income also increases the likelihood of infection through inadequate personal and environmental hygiene mechanisms. Illiterate parents had higher percentage of under nourished children (90%), that is in synch with Sahu et al (75%) [19], Sujata et al study (92%) [21]. This could be due to higher earning, awareness of general health and nutrition, due to higher exposure to mass media and other opportunities. Children with history of exclusive breast feeding have lower (35.9%) under-nutrition than who did not practice it (93%), this result was supported by Sujata et al (27% vs 85%), Suraj et al, Anuradha et al study [18].

Completely immunized children had lower (47.5%) under-nutrition than incomplete (100%) or not immunized (84.7%) children, similar result found in Sahu et al study [19], Suraj et al study [23]. This could be due to the fact that not only it indicates better health care seeking and awareness regarding general health but also lowers the chance of infections. The proportion of under nourished children (28.9%) of Mothers who practiced hand washing was lower than to non practiced mothers (98.5%), similar result found in Sethy et al study [22]. Overcrowded families have more (83.8%) under-nourished children then families where overcrowding was absent (39.7%), similar result found in Joe et al study [20]. History of mother's illness during pregnancy had more under-nourished (91%) children as compared to children whose mother were free from any illness (46.8%) during pregnancy, similar findings found in Joe et al study [20]. Adequately ventilated houses had less under-nourished (40.5%) children then houses with Indequate ventilation (81.4%). Under nutrition was less (45.6%) among children with good personal hygiene as compared to poor personal hygiene (86.7%). Low proportion of malnutrition were found among mothers who had complete antenatal care visits, similar result found in Suraj et al study [23]. Apart from the above factors associated with under-nutrition, other factors such as type of delivery (pre-term/term), place of delivery (institutional or home), type of family, supplementation of IFA tablet during pregnancy, weaning, occupation of father, availability of toilet facilities in house, & family size, are all important determinants that all are associated with under nutrition.

## CONCLUSION:

Under-nutrition was prevalent in half of children below five years of age in Sushilpura, an urban dwelling of Jaipur. Stunting and underweight is more prevalent than wasting. Over nutrition was also seen in four percent of children. Poor sanitation, high birth order, lack of exclusive breast feeding, nuclear family, frequent episodes of diarrhea were associated factors. Presence of domestic livestock and absence of overcrowding were protective factors.

**Recommendation** –There is no shortcut for improving nutrition as it is strongly associated with over all development of a community. Action has to be taken at all levels i.e. individual, community and the country. We have to encourage keeping livestock at household level (cow, goat and hen) whoever has enough space. Behavior change interventions needs to be designed to address locally relevant child & maternal care, low cost nutritious food and hygiene practices keeping in mind local culture and practices. Members of self help group, peer groups, teachers and peripheral health care workers could be partner to this in enhancing women literacy at one end and non-formal skill training at another end so as to increase

economic independence. They can also help in popularizing locally available nutritious food.

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