

A CROSS – SECTIONAL STUDY ON PREVALENCE OF MALNUTRITION AMONG UNDERFIVE CHILDREN AT ANGANWADIS IN POONAMALLEE HUD

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Abstract

BACKGROUND : In India, malnutrition in children under the age of five is a major public health issue. Notwithstanding India's economic prosperity, the undernutrition-related infant mortality rate remains high in both urban and rural areas.

OBJECTIVES : To ascertain the prevalence of malnutrition among young children (under the age of five).

METHODOLOGY : A cross-sectional study was undertaken on children under five at Anganwadis in Poonamallee, Tamil Nadu. The study used multi-stage sampling. Socio-demographic profiles of mothers with under-five children and a structured knowledge questionnaire assessed mothers' nutritional awareness. WHZ, WAZ, and MUAC were determined from anthropometric measures of children under five. Growth charts were retained after evaluations. The data was entered into MS EXCEL and analyzed with SPSS Version 16. Continuous variables were defined by mean, median, and mode, while categorical variables were described by proportion.

RESULTS : 17.65 percent of the 340 children that were evaluated were found to be underweight, 12.06 percent were found to be stunted, and 3.82 percent were found to be wasting. Underweight and stunting were statistically linked. The child's age and birth order were statistically significant predictors of underweight in this study. The stunting scores of children under five were statistically associated with their age ($\chi^2 = 11.96, p < 0.001$). This study found that wasting scores were significantly affected by age and birth order.

KEYWORDS : Prevalence, Malnutrition, Under-five children, Anganwadi

INTRODUCTION

Malnutrition in children is a major public health issue. In 2020, it was thought that 149 million children under 5 years old would be stunted (too short for their age), 45 million would be wasted (too skinny for their height), and 38.9 million would be overweight.¹ Both policymakers and researchers are concerned about the high prevalence of child undernutrition in India and its slow rate of decline. The country has failed to meet its child undernutrition targets set by the Millennium Development Goals despite implementing and maintaining the Integrated Child Development Scheme (ICDS), the largest intervention of its kind in the world.²

While health has improved in India over the past few decades, such improvement has not been uniform or fair. The poor are disproportionately affected by malnutrition, especially in urban settings where poverty-related health problems are more severe than in the suburbs or even the countryside. Residents of urban slums have a higher risk of death than the general population, are more likely to be malnourished and have less access to health care for themselves and their children.³ A proper diet is crucial for a child's immune system health and physical and mental growth. So, it is vital to focus on nutrition. Undernutrition or malnutrition simply refers to an inadequate diet. Malnutrition contributes significantly to global childhood mortality.⁴ Typically, underdeveloped and

developing nations confront nutritional issues.⁵ The United Nations Children's Fund (UNICEF) has identified food instability, an unhealthy environment, inadequate care, and a lack of access to healthcare as the leading causes of child malnutrition.⁶

A child's dietary status may also be affected by other factors such as their family's socioeconomic situation, parental education level, and familiarity with available healthcare resources.⁷ More than half of the world's malnourished children are found in India, Pakistan, and Bangladesh, making this problem a significant burden on these countries.

The National Health Survey found that the incidence of stunting was 30–40% and the prevalence of wasting was 14% in Pakistan.⁸

In India, a significant portion of children under the age of five suffer from a condition known as malnutrition. This is demonstrated by the fact that the percentage of children in India who are underweight is nearly twice as high as the



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percentage of children in Sub-Saharan Africa, making it one of the highest rates in the world. It has also been found that the issue of malnutrition in India is a concentrated phenomenon. This means that a relatively small number of states, districts, and villages are responsible for a large share of the burden of malnutrition. In fact, only five states and fifty percent of villages are responsible for approximately eighty percent of the problem.⁹

Every year, malnutrition kills about 2.3 million children in developing countries between the ages of 6 and 60 months. This is about 41% of all deaths in this age group.¹⁰

A recent study of children aged 3 months to 3 years old, conducted in 130 districts across 53 countries using Demographic and Health Surveys from 1986 to 2006, discovered that — variance in mild under-weight has a larger and more robust correlation with child mortality than variance in severe under-weight.¹¹

The study indicated that the frequency of moderate underweight among preschool-aged children in emerging nations merits further attention as a relevant indicator of changing public health conditions. In order to design and implement timely interventions at the community level, it is crucial for the health system to diagnose malnutrition early on.

OBJECTIVES

1. To determine the prevalence of malnutrition among children under the age of five.
2. To explore the association between Malnutrition and various demographic factors.

METHODS

A cross-sectional study was conducted on children under the age of five at Anganwadis at Poonamallee of Tamil Nadu. Sample size was calculated based on Naresh et al previous study prevalence of underweight 24% among under five children, with 99% confidence limit and 25% of relative precision of estimate using the following formula $N = (z)^2 \times (1-p) / (p) \times (e)^2$ Sample size (N) = $(2.58)^2 \times (1-0.24) / 0.24 \times (0.25)^2$. The sample size was determined to be 340 children under the age of five. The Institutional Ethics Committee at the Directorate of Public Health and Preventive Medicine in Chennai gave their approval for the study to be done. Prior permission for the study was obtained from the parents or guardians of the child enrolled in it, as well as informed consent. The present study is based on a cross-sectional survey that was conducted at Poonamallee. The study participants were selected via a multi-stage sampling procedure, resulting

with children aged under five at 208 Anganwadi centres at Poonamallee, Nemam, Thirumazhisai, and Sorechery area. There are roughly 50 anganwadi centres spread across each areas. From these four areas children enrolled in anganwadi centres were selected. The tool included socio-demographic profiles of mothers with under-five children, and a structured knowledge questionnaire was used to assess mothers' awareness of malnutrition. Anthropometric measurements for children under the age of five were taken, and the Weight for Height (WHZ), Weight for Age (WAZ), and Mid-Upper arm circumference (MUAC) were calculated using this information. Following these evaluations, growth charts were kept. The data was entered into MS EXCEL and analyzed with the Statistical Package for Social Sciences (SPSS) Version 16. Continuous variables were described using descriptive statistics (mean, median, mode), while categorical variables were described using proportion.

RESULTS

Table 1 : Demographic information for Under-five Children (N = 340)

| S. No | Demographic information | F | % | |
|-------|---|------------------------|-----|--------|
| 1. | Age of the child | < 1 years | 45 | 13.24 |
| | | 1-2 years | 68 | 20.00 |
| | | 2-3 years | 127 | 37.36 |
| | | 3-4 years | 54 | 15.88 |
| | | 4-5 years | 46 | 13.53 |
| 2. | Gender | Male | 161 | 47.35 |
| | | Female | 179 | 52.65 |
| 3. | Mother age | 21-25 years | 116 | 34.12 |
| | | 26-30 years | 147 | 43.24 |
| | | 31-35 years | 77 | 22.65 |
| 4. | Type of family | Nuclear family | 170 | 50.00 |
| | | Joint family | 162 | 47.65 |
| | | Extended family | 8 | 2.35 |
| 5. | Religion | Hindu | 302 | 88.82 |
| | | Christian | 27 | 7.94 |
| | | Muslim | 11 | 3.24 |
| 6. | Locality of Residence | Rural | 123 | 36.18 |
| | | Semi-urban | 79 | 23.24 |
| | | Urban | 138 | 40.59 |
| 7. | Order of birth | 1st | 163 | 47.94 |
| | | 2nd | 148 | 43.53 |
| | | 3rd & above | 29 | 8.53 |
| 8. | Occupation of father | Skilled Worker | 166 | 48.82 |
| | | Unskilled Worker | 66 | 19.41 |
| | | Unemployed | 11 | 3.24 |
| | | Technical Professional | 97 | 28.53 |
| 9. | Education of Mother | Post graduate | 43 | 12.65 |
| | | Degree | 93 | 27.35 |
| | | Higher secondary | 184 | 54.12 |
| | | Non formal education | 20 | 5.88 |
| 10. | Monthly family income | Below Rs.5000 | 57 | 16.76 |
| | | Rs.5001-10000 | 132 | 38.82 |
| | | Rs.10001-15000 | 109 | 32.06 |
| | | Rs.15001-20000 | 42 | 12.35 |
| 11. | Vaccination Details | Yes | 340 | 100.00 |
| | | No | 0 | 0.00 |
| 12. | Have you given Iron syrup tablets to your child as per schedule | Yes | 340 | 100.00 |
| | | No | 0 | 0.00 |

Table I presents the demographic statistics for mothers with children under the age of five. Of 340 children, 127 (37.36%) were between the ages of 2 and 3 and 68 (20%) were between the ages of 1 and 2 years. There were 54 people in the age bracket of 3 to 4 years (15.88%). The gender distribution of the children indicates that 179 (52.6%) of them were females, while 161 (47.35%) were males. Regarding the age of the mothers of the children, 147 (43.24%) were between the ages of 26 and 30. There were 116 individuals between the ages of 21 and 25 (34.12%), and 170 (50.0%) of the children came from nuclear families. 162 (47.65%) of children belonged to a nuclear household. Around 302 children in this study were Hindu (88.82%) and 27 were Christians (7.94% of the population). The locality of residence of the children in the survey revealed that the majority, 123 (36.18%), were from rural areas, while 138 (40.59%) were from urban areas. Around 163 (47.94%) of the children were born first. 148 (43.53%) of the samples were from second birth order. Regarding the occupation of the fathers of the children, 48.82% of 166 fathers were skilled workers. There were 97 technical professionals (28.53%). Almost 184 (54.12%) of the mothers of children who participated in the survey had completed their high school education. 93 (27.35%) of the moms had a bachelor's degree or higher. The monthly household income of the bulk of children, 132 (38.82%), was between Rs 5001 and Rs 10000. 109 families with a monthly income between Rs 10,001 and Rs 15,000 had a monthly income of Rs 10,001 to Rs 15,000 (32.06). Each of the 340 samples (100%) had been vaccinated. Regarding the consumption of iron syrup/ tablets, the schedule indicates that all 340 children (100%) had it.

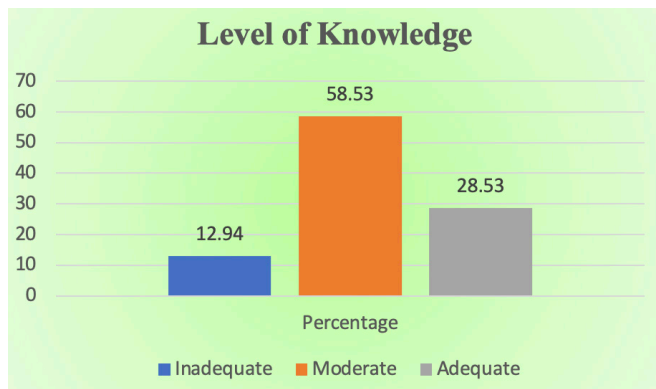


Figure 1 : Percentage of Knowledge of Mothers among Under-five Children regarding Malnutrition

In general, 12.94% of mothers have a score that indicates they have an inadequate level of knowledge, 58.53% of mothers have a score that indicates they have a moderate level of knowledge, and 28.53% of mothers have a score that indicates they have an acceptable level of knowledge.

Table 2 : Level of Underweight, Stunting and Wasting Among Under Five Children (N = 340)

| Malnutrition Indices | -3 | | -2 | | -1 | | MEDIAN | | 1 | |
|----------------------|----|------|----|-------|----|-------|--------|-------|---|------|
| | n | % | n | % | n | % | n | % | n | % |
| WAZ - Underweight | 12 | 3.53 | 48 | 14.12 | 97 | 28.53 | 178 | 52.35 | 5 | 1.47 |
| HAZ - Stunting | 8 | 2.35 | 33 | 9.71 | 78 | 22.94 | 218 | 64.12 | 3 | 0.88 |
| WHZ - Wasting | 8 | 2.35 | 5 | 1.47 | 5 | 1.47 | 319 | 93.82 | 3 | 0.88 |

The above table illustrates the prevalence of underweight, stunting, and wasting among children under five years old. On the Malnutrition index WAZ (Underweight), the majority of children, 178 (52.35%), were in the Median weight range (Normal). 48(14.12%) of the samples were below -2.0 (undernourished). Those with a BMI <-3 accounted for 12 (3.53%) of the malnourished.

Among 340 children with HAZ (Stunting), 218 (64.1%), were judged normal. 33 (9.71%) of the sample population was malnourished. Eight (2.55%) of the samples were below -3 (severely malnourished).

Similarly, with regards to Wasting, WHZ reveals that the vast majority of children (319, 93.82%) had a normal nutritional status, whereas 8 (2.35%) were extremely malnourished.

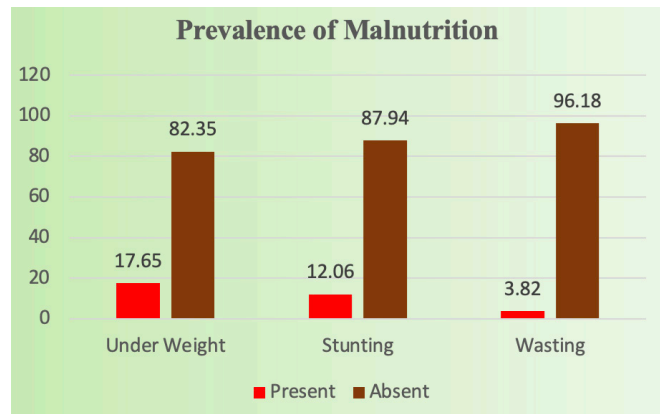


Figure 2 : Prevalence of malnutrition among children under the age of five

From Figure 2, it was understood that 17.65 % of the 340 children screened were underweight, 12.06% were stunted, and 3.82% were wasted.

Table 3 : Mean Height, Weight and MUAC of Under Five Children (N = 340)

| S. No | Variables | Mean ± S.D |
|-------|-------------------------------|--------------|
| 1. | Height | 88.17 ± 9.57 |
| 2. | Weight | 11.38 ± 2.49 |
| 3. | Mid -Upper Arm Circumferences | 13.90 ± 0.75 |

The mean and standard deviation values of the children's height, weight, and mid - upper arm circumferences are

shown in Table III. Height had a mean and standard deviation of 88.17 + 9.57. Similarly, the weight was 11.38 + 2.49, and the mean and standard deviation scores for the mid-upper arm circumference were 13.90 + 0.75.

Table 4 : Age Wise Association between Level of Malnutrition among Under-five children (N = 340)

| S. No | Age of children (0-5 yrs.) | Malnutrition | | | | Chi square test | P value | |
|-------|----------------------------|--------------|----|--------|-----|-----------------|---------|--------------------|
| | | Malnutrition | | Normal | | | | |
| | | n | % | n | % | | | |
| 1. | Underweight | < 1 years | 3 | 5.00 | 42 | 15.00 | 21.93 | 0.001*** |
| | | 1-2 years | 3 | 5.00 | 65 | 23.21 | | |
| | | 2-3 years | 25 | 41.67 | 102 | 36.43 | | |
| | | 3-4 years | 14 | 23.33 | 40 | 14.29 | | |
| | | 4-5 years | 15 | 25.00 | 31 | 11.07 | | |
| 2. | Stunting | < 1 years | 0 | 5.00 | 42 | 15.00 | 11.96 | 0.02* |
| | | 1-2 years | 6 | 5.00 | 65 | 23.21 | | |
| | | 2-3 years | 19 | 41.67 | 102 | 36.43 | | |
| | | 3-4 years | 6 | 23.33 | 40 | 14.29 | | |
| | | 4-5 years | 10 | 25.00 | 31 | 11.07 | | |
| 3. | Wasting | < 1 years | 0 | 5.00 | 42 | 15.00 | 4.21 | 0.30 ^{NS} |
| | | 1-2 years | 2 | 5.00 | 65 | 23.21 | | |
| | | 2-3 years | 4 | 41.67 | 102 | 36.43 | | |
| | | 3-4 years | 0 | 23.33 | 40 | 14.29 | | |
| | | 4-5 years | 7 | 25.00 | 31 | 11.07 | | |

Table 5 : Association between level of underweight score and mothers Demographic variables (n = 340)

| Demographic variables | | Underweight score | | | | Chi square test | P Value |
|-----------------------|------------------------|-------------------|-------|--------|-------|-----------------|--------------------|
| | | Malnutrition | | Normal | | | |
| | | n | % | n | % | | |
| Age of the child | < 1 years | 3 | 6.67 | 42 | 93.33 | 21.92 | 0.001*** |
| | 1-2 years | 3 | 4.41 | 65 | 95.59 | | |
| | 2-3 years | 25 | 19.69 | 102 | 80.31 | | |
| | 3-4 years | 14 | 25.93 | 40 | 74.0 | | |
| | 4-5 years | 15 | 32.61 | 31 | 67.39 | | |
| Gender | Male | 30 | 18.63 | 131 | 81.37 | 0.21 | 0.65 ^{NS} |
| | Female | 30 | 16.76 | 149 | 83.24 | | |
| Mother age | 21-25 years | 15 | 12.93 | 101 | 87.07 | 2.72 | 0.26 ^{NS} |
| | 26-30 years | 30 | 20.41 | 117 | 79.59 | | |
| | 31-35 years | 15 | 19.48 | 62 | 80.52 | | |
| Type of family | Nuclear family | 36 | 21.18 | 134 | 78.8 | 3.60 | 0.16 ^{NS} |
| | Joint family | 22 | 13.58 | 140 | 86.42 | | |
| | Extended family | 2 | 25.00 | 6 | 75.00 | | |
| Religion | Hindu | 55 | 18.21 | 247 | 81.79 | 0.86 | 0.65 ^{NS} |
| | Christian | 3 | 11.11 | 24 | 88.89 | | |
| | Muslim | 2 | 18.18 | 9 | 81.82 | | |
| Locality of Residence | Rural | 21 | 17.07 | 102 | 82.93 | 0.05 | 0.95 ^{NS} |
| | Semi-urban | 14 | 17.72 | 65 | 82.28 | | |
| | Urban | 25 | 18.12 | 113 | 81.88 | | |
| Order of birth | 1st | 21 | 12.88 | 142 | 87.12 | 6.82 | 0.05* |
| | 2nd | 30 | 20.27 | 118 | 79.73 | | |
| | 3rd & above | 9 | 31.03 | 20 | 68.97 | | |
| Occupation of father | Skilled Worker | 28 | 16.87 | 138 | 83.13 | 1.26 | 0.74 ^{NS} |
| | Unskilled Worker | 11 | 16.67 | 55 | 83.33 | | |
| | Unemployed | 1 | 9.09 | 10 | 90.91 | | |
| | Technical Professional | 20 | 20.62 | 77 | 79.38 | | |
| Education of Mother | Post graduate | 5 | 11.63 | 38 | 88.37 | 1.41 | 0.71 ^{NS} |
| | Degree | 16 | 17.20 | 77 | 82.80 | | |
| | Higher secondary | 35 | 19.02 | 149 | 80.98 | | |
| | Non formal education | 4 | 20.00 | 16 | 80.00 | | |
| Monthly family income | Below Rs.5000 | 12 | 21.05 | 45 | 78.95 | 1.83 | 0.61 ^{NS} |
| | Rs.5001-10000 | 20 | 15.15 | 112 | 84.85 | | |
| | Rs.10001- 15000 | 22 | 20.18 | 87 | 79.82 | | |
| | Rs.15001-20000 | 6 | 14.29 | 36 | 85.71 | | |

The table above illustrates the Age Wise Association between Level of Malnutrition among Under-five children. Underweight ($\chi^2 = 21.93$, $p = 0.001$) and stunting ($\chi^2 = 11.96$, $p = 0.02$). had a statistically significant association.

The preceding table depicts the relationship between the demographic characteristics of samples and the prevalence of underweight scores among children under the age of five. In this study, the child's age ($\chi^2 = 21.92$, $p < 0.001$) and birth order ($\chi^2 = 6.82$, $p < 0.05$) were found to be statistically significant in association to the underweight scores of children under the age of five.

Table 6 : Association between level of stunting score and mothers demographic variables (N = 340)

| Demographic variables | | Stunting score | | | | Chi square test | P value |
|-----------------------|------------------------|----------------|-------|--------|--------|-----------------|--------------------|
| | | Malnutrition | | Normal | | | |
| | | n | % | n | % | | |
| Age of the child | < 1 years | 0 | 0.00 | 45 | 100.00 | 11.96 | 0.001*** |
| | 1-2 years | 6 | 8.82 | 62 | 91.18 | | |
| | 2-3 years | 19 | 14.96 | 108 | 85.04 | | |
| | 3-4 years | 6 | 11.11 | 48 | 88.89 | | |
| | 4-5 years | 10 | 21.74 | 36 | 78.26 | | |
| Gender | Male | 25 | 15.53 | 136 | 84.47 | 3.47 | 0.06 ^{NS} |
| | Female | 16 | 8.94 | 163 | 91.06 | | |
| Mother age | 21-25 years | 13 | 11.21 | 103 | 88.79 | 0.47 | 0.79 ^{NS} |
| | 26-30 years | 17 | 11.56 | 130 | 88.44 | | |
| | 31-35 years | 11 | 14.29 | 66 | 85.71 | | |
| Type of family | Nuclear family | 24 | 14.12 | 146 | 85.88 | 1.41 | 0.49 ^{NS} |
| | Joint family | 16 | 9.88 | 146 | 90.12 | | |
| | Extended family | 1 | 12.50 | 7 | 87.50 | | |
| Religion | Hindu | 33 | 10.93 | 269 | 89.07 | 3.38 | 0.18 ^{NS} |
| | Christian | 6 | 22.22 | 21 | 77.78 | | |
| | Muslim | 2 | 18.18 | 9 | 81.82 | | |
| Locality of Residence | Rural | 14 | 11.38 | 109 | 88.62 | 2.84 | 0.24 ^{NS} |
| | Semi-urban | 6 | 7.59 | 73 | 92.41 | | |
| | Urban | 21 | 15.22 | 117 | 84.78 | | |
| Order of birth | 1st | 14 | 8.59 | 149 | 91.41 | 8.52 | 0.01** |
| | 2nd | 19 | 12.84 | 129 | 87.16 | | |
| | 3rd & above | 8 | 27.59 | 21 | 72.41 | | |
| Occupation of father | Skilled Worker | 17 | 10.24 | 149 | 89.76 | 2.99 | 0.39 ^{NS} |
| | Unskilled Worker | 12 | 18.18 | 54 | 81.82 | | |
| | Unemployed | 1 | 9.09 | 10 | 90.91 | | |
| | Technical Professional | 11 | 11.34 | 86 | 88.66 | | |
| Education of Mother | Post graduate | 6 | 13.95 | 37 | 86.05 | 2.77 | 0.42 ^{NS} |
| | Degree | 7 | 7.53 | 86 | 92.47 | | |
| | Higher secondary | 26 | 14.13 | 158 | 85.87 | | |
| Monthly family income | Below Rs.5000 | 5 | 8.77 | 52 | 91.23 | 4.77 | 0.19 ^{NS} |
| | Rs.5001-10000 | 14 | 10.61 | 118 | 89.39 | | |
| | Rs.10001- 15000 | 19 | 17.43 | 90 | 82.57 | | |
| | Rs.15001-20000 | 3 | 7.14 | 39 | 92.86 | | |

The above table illustrates the association between sample demographics and the prevalence of stunting in children under the age of five. In this study, the age of the children was found to be statistically significant ($\chi^2 = 11.96$, $p < 0.001$) in association to the stunting scores of children under the age of five.

The preceding table depicts the association between the demographic characteristics of samples and the prevalence of wasting scores among children under the age of five. In this study, the child's age ($\chi^2 = 3.88$, $p < 0.05$) and birth order ($\chi^2 = 5.74$, $p < 0.05$) were found to be statistically significant in association to the wasting scores of children under the age of five.

Table 7 : Association between level of wasting score and mothers demographic variables (N = 340)

| Demographic variables | | Wasting score | | | | Chi square test | P Value |
|-----------------------|----------------------|---------------|------|--------|--------|-----------------|--------------------|
| | | Malnutrition | | Normal | | | |
| | | n | % | n | % | | |
| Age of the child | < 3 years | 6 | 2.22 | 234 | 97.78% | 3.88 | 0.05* |
| | 4-5 years | 7 | 8.70 | 327 | 91.30 | | |
| Gender | Male | 6 | 3.73 | 155 | 96.27 | 0.01 | 0.93 ^{NS} |
| | Female | 7 | 3.91 | 172 | 96.09 | | |
| Mother age | 21-30 years | 8 | 3.04 | 255 | 96.96 | 1.93 | 0.16 ^{NS} |
| | 31-35 years | 5 | 6.49 | 72 | 93.51 | | |
| Type of family | Nuclear family | 9 | 5.29 | 161 | 94.71 | 1.99 | 0.16 ^{NS} |
| | Joint/extent family | 4 | 2.35 | 166 | 97.65 | | |
| Religion | Hindu | 12 | 3.97 | 290 | 96.03 | 0.17 | 0.68 ^{NS} |
| | Christian/Muslim | 1 | 2.68 | 37 | 97.32 | | |
| Locality of Residence | Rural | 4 | 3.25 | 119 | 96.75 | 1.47 | 0.22 ^{NS} |
| | Semi-urban/Urban | 9 | 6.52 | 129 | 93.48 | | |
| Order of birth | 1st | 2 | 1.22 | 161 | 98.78 | 5.74 | 0.05* |
| | 2nd& above | 11 | 6.21 | 166 | 93.79 | | |
| Occupation of father | Skilled Worker | 13 | 3.95 | 316 | 96.05 | 0.87 | 0.35 ^{NS} |
| | Unemployed | 0 | 0.00 | 11 | 100.00 | | |
| Education of Mother | Literate | 13 | 2.33 | 307 | 97.67 | 1.61 | 0.20 ^{NS} |
| | Non formal education | 0 | 0.00 | 20 | 100.00 | | |
| Monthly family income | Below Rs.10000 | 8 | 5.26 | 181 | 94.74 | 0.19 | 0.66 ^{NS} |
| | Rs.10001-20000 | 5 | 2.38 | 146 | 97.62 | | |

Table 8 : Association between level of knowledge score and mothers demographic variables (N = 340)

| Demographic variables | | Knowledge score | | | | Chi square test | P Value |
|-----------------------|------------------------|---------------------|--------|----------|-------|-----------------|--------------------|
| | | Inadequate/moderate | | Adequate | | | |
| | | n | % | n | % | | |
| Age of the child | < 1 years | 38 | 84.44 | 7 | 15.56 | 12.56 | 0.13 ^{NS} |
| | 1-2 years | 42 | 61.76 | 26 | 38.24 | | |
| | 2-3 years | 87 | 68.50 | 40 | 31.50 | | |
| | 3-4 years | 39 | 72.22 | 15 | 27.78 | | |
| | 4-5 years | 37 | 80.43 | 9 | 19.57 | | |
| Gender | Male | 118 | 73.29 | 43 | 26.71 | 0.80 | 0.67 ^{NS} |
| | Female | 125 | 69.83 | 54 | 30.17 | | |
| Mother age | 21-25 years | 88 | 75.86 | 28 | 24.14 | 5.38 | 0.25 ^{NS} |
| | 26-30 years | 99 | 67.35 | 48 | 32.65 | | |
| | 31-35 years | 56 | 72.73 | 21 | 27.27 | | |
| Type of family | Nuclear family | 111 | 65.29 | 59 | 34.71 | 11.03 | 0.02* |
| | Joint family | 124 | 76.54 | 38 | 23.46 | | |
| | Extended family | 8 | 100.00 | 0 | 0.00 | | |
| Religion | Hindu | 210 | 69.54 | 92 | 30.46 | 7.58 | 0.11 ^{NS} |
| | Christian | 22 | 81.48 | 5 | 18.52 | | |
| | Muslim | 11 | 100.00 | 0 | 0.00 | | |
| Locality of Residence | Rural | 77 | 62.60 | 46 | 37.40 | 10.30 | 0.05* |
| | Semi-urban | 60 | 75.95 | 19 | 24.05 | | |
| | Rural | 106 | 76.81 | 32 | 23.19 | | |
| Order of birth | 1st | 114 | 69.94 | 49 | 30.06 | 8.18 | 0.08 ^{NS} |
| | 2nd | 105 | 70.95 | 43 | 29.05 | | |
| | 3rd & above | 24 | 82.76 | 5 | 17.24 | | |
| Occupation of father | Skilled Worker | 110 | 66.27 | 56 | 33.73 | 8.20 | 0.05* |
| | Unskilled Worker | 49 | 74.24 | 17 | 25.76 | | |
| | Unemployed | 8 | 72.73 | 3 | 27.27 | | |
| | Technical Professional | 80 | 82.47 | 17 | 17.53 | | |
| Education of Mother | Post graduate | 26 | 60.47 | 17 | 39.53 | 10.61 | 0.01** |
| | Degree | 58 | 62.37 | 35 | 37.63 | | |
| | Higher secondary | 144 | 78.26 | 40 | 21.74 | | |
| | Non formal education | 15 | 75.00 | 5 | 25.00 | | |
| Monthly family income | Below Rs.5000 | 39 | 68.42 | 18 | 31.58 | 9.97 | 0.13 ^{NS} |
| | Rs.5001-10000 | 103 | 78.03 | 29 | 21.9 | | |
| | Rs.10001- 15000 | 68 | 62.39 | 41 | 37.6 | | |
| | Rs.15001-20000 | 33 | 78.57 | 9 | 21.43 | | |

The preceding table depicts the demographic characteristics of samples and the knowledge scores regarding malnutrition among the mothers of under five children. In this study, type

of family ($\chi^2 = 11.03, p < 0.02$), locality of residence ($\chi^2 = 10.30, p < 0.05$), occupation of father ($\chi^2 = 8.20, p < 0.02$) and education of mother ($\chi^2 = 10.61, p < 0.01$) were found to be statistically significant in association to the knowledge scores regarding malnutrition among the mothers of under five children.

DISCUSSION

The results of the present study, which was carried out in anganwadis in Poonamallee HUD, were interpreted using a module of the World Health Organization's (WHO) child development guidelines for the interpretation of nutritional status indicator.

The overall prevalence of underweight was found to be 17.65% among 340 children. The prevalence of stunting among children under the age of five was 12.06%, and the level of wasting was 3.82%. According to a study conducted by Murarkar S et al, (2020) with the goal of assessing the prevalence and determinants of Malnutrition in children under five in Maharashtra, India, the overall prevalence of stunting was 45.9%, wasting was 17.1%, and 35.4% of children were underweight. Wasting, stunting, and underweight were more prevalent in an urban slum than in a rural area.¹²

Wasting could be the result of insufficient food intake or a recent bout of illness that caused weight loss. India bears the greatest burden of wasting, with over 25 million (20%) wasted children. This burden is greater than the combined burden of the next nine high-burden countries.¹³ Stunting is a symptom of chronic malnutrition, so UNICEF is focusing on stunting in children under the age of five.¹⁴ According to the Comprehensive National Nutrition Survey Report (2016-2018), rural areas had a higher prevalence of stunting (37%) than urban areas (27%).¹⁵ The results of this study were in contrast to those of a cross-sectional study that included 563 kids and looked at the prevalence of underweight in kids under five in a rural area of Tamil Nadu, India's Kancheepuram District. That study found an estimated prevalence of 52.9%. IAP determined that 30.9% of people had moderate malnutrition and 47.1% had mild malnutrition. 7% of people had severe malnutrition.¹⁶

In the present study, results revealed height had a mean and standard deviation of 88.17 + 9.57. Similarly, the weight was 11.38 + 2.49, and the mean and standard deviation scores for the mid-upper arm circumference were 13.90 + 0.75. Areekal B et al. (2014) determined the prevalence of malnutrition among children under the age of five in the Ettumanoor block of Kerala. To reach the sample size, 20 children were drawn from 30 different clusters. Height was measured with

a measuring tape with a sensitivity of 0.5cm, and weight with a weighing machine with a sensitivity of 100grams for children under 2 years old and 500grams for older children. Malnutrition was measured using Z scores from the WHO reference. The mean z height for age was -0.91 with a standard deviation of 1.3 (95% confidence interval) (-1.67 to 1.69). Again, the majority of children are below the 50th percentile, and it can be seen that the prevalence of stunting increases up to the 12-24 months category before decreasing, as with underweight. The study population's mean z weight for height was -1.08 with a standard deviation of 1.15 (95% C.I = -2.23 to 0.07), indicating that the majority of children are below the 50th percentile. In this case, the prevalence of wasting increases for 12-24 months before decreasing.¹⁷

In this study, with regard to Age wise association between level of malnutrition shows Underweight ($\chi^2 = 21.93$, $p = 0.001$) and stunting ($\chi^2 = 11.96$, $p = 0.02$) had a statistically significant association. In this study, the child's age and birth order were statistically significant predictors of underweight scores in children under five. This study demonstrated a statistically significant association between stunting scores of children under five and age ($\chi^2 = 11.96$, $p < 0.001$). In this study, the child's age and birth order were statistically significant factors in wasting scores in children under five.

The study's conclusions mirrored those of the papers listed below. Murarkar S et al. (2020) conducted a community-based cross-sectional study in 16 randomly selected clusters in two districts of Maharashtra state, India, and found that birth order has always been a significant predictor of undernutrition. In rural areas, children with birth orders of less than two were more likely to be stunted than those with birth orders of two or more (adjusted odds ratio = 2.11, $p = 0.05$).¹²

CONCLUSION

Mothers of under-5s can identify "at-risk" children in the malnourished community by knowing SAM risk indicators. Underweight was more prevalent than stunting and wasting in the study population. To understand malnutrition and improve health policies, detailed investigations on its causes, aggravators, and associated factors are needed. So, governments and NGOs must address this issue and improve these children's nutrition. Children now will live tomorrow. Hence, kid nutrition is crucial. The first six years are the most important, laying the foundation for cognitive, social, emotional, language, physical, motor, and cumulative lifelong learning. The most vulnerable to the vicious cycles of starvation, sickness, infection, and disability are children

under three years old. Child malnutrition is a major cause of child mortality in India and other nations. So, ruling out the nutritional status of high-risk groups would allow the health care delivery system and policymakers identify the core cause of malnutrition and intervene to prevent it.

RECOMMENDATIONS

Regular surveys and home visits should be conducted to monitor and improve the food intake of severely malnourished children. During in-home visits, professionals should educate parents of malnourished children on the necessity of feeding their children well, spacing apart youngsters, and practicing good cleanliness habits.

CONFLICT OF INTEREST Nil

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