Biological Forum – An International Journal **15(6): 777-780(2023)**

ISSN No. (Print): 0975-1130
ISSN No. (Online): 2249-3239

Prevalence of malnutrition among children under five years in rural areas of Salem district, Tamilnadu

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(Received: 19 April 2023; Revised: 18 May 2023; Accepted: 28 May 2023; Published: 14 June 2023)
(Published by Research Trend)

ABSTRACT: Prevalence measures the occurrence of any health condition, exposure or other factors related to health. Malnutrition among under five children in India is a major public health problem and the study was aimed to determine the prevalence of malnutrition among children under five years in rural areas of Salem District, Tamil Nadu. A Cross-sectional study was conducted among 100 children under five years in rural areas of Salem District. 47 children were Female and 53 were Male, among these 29 comes under Severe Acute Malnutrition (SAM) and 48 comes under Mild-Moderate malnutrition. The Stunting ratio was observed to be 68, Underweight and wasting ratio was found to be 76. Majority of the children with malnutrition were found with multiple co-morbidities, associated risk factors - poverty, unhygienic sanitation and on clinical examination children with thin-sparse and brown hair leads the most on evaluation regarding malnutrition. From this study, it was concluded that among the study population, more than half of the children were more prone to malnutrition, the overall prevalence of malnutrition in our study population is found to be 0.77%.

Keywords: Malnutrition, SAM, Mild-Moderate malnutrition, Co-morbidities.

INTRODUCTION

A child's malnutrition can be defined as a pathological condition resulting from inadequate nutrition, due to insufficient intake of energy and other nutrients (protein energy malnutrition), and Overnutrition due to overconsumption of food and other nutrients (overweight and obesity) (Young & Susanne 1995). Undernutrition among under five children in India is a major public health problem (Poewe *et al.,* 2017). Malnutrition in the form of undernutrition, namely underweight, stunting and wasting has been coined as the "silent emergency" by the United Nations children's fund (Priyanka *et al.,* 2016; Shukla *et al.,* 2018; Yadav *et al.,* 2016). Currently in India, around 60 million children are Underweight (Bryce *et al.,* 2008). The prevalence of malnutrition in children under the age of five is 35.7% underweight, 38.4% stunted, and 21% wasted (Murarkar *et al.,* 2020).

It accounts for 22% of India's disease burden. Malnutrition is commonly referred to as an unhealthy diet or undernourishment. That is a major health problem in India, especially affecting preschool children under the age of five (Bhutia, 2014). The main causes of malnutrition include inappropriate dietary choices, low income, difficulty in obtaining food, various physical and mental conditions, delayed growth, low weight or wasting, severe or frequent infections, diarrhoea, pneumonia, inadequate maternal and child care, equity and gender imbalances, impaired immune function, inadequate access to water, sanitation and health services, limited access to quality, health, education, and social services. Basic causes include formal and informal infrastructure and resources (Govindarajan *et al.,* 2014; Sahu *et al.,* 2015).

Children under five years are more prone to these circumstances. Children whose weight-for-age(W/A), height-for-age(H/A) and weight-for-height(W/H) ±2 Standard deviations from the median of the reference population are considered as lack of weight, stunted, thin, or wasted respectively.

Based on the brief survey on children under five- years, about 29 children were born with low birth weight, 70 of them suffered from recurrent infection, 48 of them were malnourished due to multiple and closely spaced birth, 68 were stunted, 76 of them were underweight and wasted. Comprehensive research concerning contributive, abrasive, and associated factors leading to malnutrition is required to analyse the trouble in depth and formulate higher health policies. Therefore, the current lookup was conducted to assess the malnutrition among five-year children in the chosen Anganwadi centres in the rural areas of Salem District, Tamil Nadu.

MATERIAL AND METHODS

A cross-sectional study was conducted among 100 children under five years of age for estimating the prevalence of malnutrition among children under five years in rural areas of Salem district of Tamilnadu. This study was conducted under the Community Medicine department of a tertiary care hospital at Salem from November 2020-April 2021 for a period of 6 months. For this study, a total of 100 children were assessed as per the inclusion and exclusion criteria. Since all the children from our study population are minors i.e., under five years of age, the Informed consent form was obtained from their parents. They were surveyed using 54 questionnaires regarding their general information, socioeconomic status, medical history, anthropometric measurements, physical examinations, clinical examinations, dietary habits, and co-morbidities.

Mothers of children were interviewed regarding their socio-economic status, medical history, anthropometric measurements, dietary and co-morbidities, and certain characteristics by a structured questionnaire. Clinical examinations were done by the investigator to observe and analyse the signs of malnutrition. Anthropometric measurements such as height, weight, and mid arm circumference were recorded. The standard unit tape was used to measure the height, mid-arm by MUAC tape, and a digital baby weighing scale machine was used to measure the weight. Data was entered in MS-Excel. The different nutritional indices- weight for age, height for age, and weight for height were calculated based on the IAP classification. Statistical tests like proportions and Chi-square tests were used.

RESULTS AND DISCUSSION

In the present study, 85 mothers with 132 under five children were enumerated(Murarkar *et al.*, 2020). Out of the total population children below 5 years constituted 2%. From the above 132 children, 100 children were randomly selected based on the inclusion and exclusion criteria. There were 53 boys and 47 girls in the study area. The mean age of the children was 2.42 years (±SD 1.13). Out of these 100 under five children, 12 were infants. The mean birth weight of these infants was 2.8 kg (±SD 0.72). Almost 72.8 % women were in the age group between 20 and 29 years. The mean age of mothers was 25.22 years (±SD5.28). About 58.14% of mothers had education up-to high school. Exclusive breastfeeding (EBF) was given to 48% of the children.

Table 1 shows the socio-demographic details of the study population. There were a total of 29 children in the age group of 12 to 23 months. Out of 100 children, only 79 children possessed immunization card. Out of these 79 children, 91.4% were fully immunized. For 21 children, immunization information was missing as their status could not be confirmed by immunization card. We have studied the association of factors affecting malnutrition like the gender of the child, type of family, the income of the family, birth order, exclusive breastfeeding, immunization status, ARI, diarrhoea, maternal age and maternal education.

Table 2 shows the distribution of children based on their clinical examination. Out of 100 children 23 were coming under the category of normal and the remaining 77 were falls under malnutrition category. Most of the children were thin, sparse and with brown hair.

Table 3 shows the grading of malnutrition in rural area of Salem district. Out of total 100 under five children, 23 were normal, 48 were mild to moderate and 29 were severe category.

Overall, 17.1% under five children were wasted, 45.9% were stunted and 35.4% were underweight. It was observed that the prevalence of all three types of malnutrition, wasting, stunting and underweight was available in the study site. Stunting was the most common form of malnutrition observed.

Table 1. Distribution of children based on their socio-demographic details in the study population.

Socio-demographic details	Total Children	Children with Malnutrition
Age		
0-1 Yr	12	8
1-2 Yrs	29	24
2-3 Yrs	22	18
3-4 Yrs	14	9
4-5 Yrs	23	18
Gender		
Boys	53	39
Girls	47	38
Family members		
<4	67	48
4-7	24	23
>7	9	6
No. of Siblings		
<2	78	63
2-4	22	14
Fathers Education		
Illiterate	48	47
Primary	21	17
Secondary	18	9
Higher secondary	11	4
College	2	0
Mother's Education		
Illiterate	80	67
Primary	18	9
Secondary	2	1
Higher secondary	0	0
College	0	0
Father's Occupation		
Unskilled	68	51
Semi-Skilled	19	17
Skilled	13	9
Mother's Occupation		
Unskilled	87	68
Semi-Skilled	10	8
Skilled	3	1

Table 2: Distribution of children based on clinical examination.

Clinical examination	No. of Children
Build/Skinny & Bony	20
Thin, Sparse, Brown Hair	70
Edema	1
Pot Belly	3
Normal	23

Table 3. Distribution of children with grading of malnutrition by their mid-arm circumference.

Grading of malnutrition	No. of Children
Normal	23
Mild-moderate	48
Severe	29

Table 4. Evaluation of Associated risk factors contributing to malnutrition among children.

Associated risk factors	Total children (n=100)	Children with Malnutrition (n=77)
Low birth weight	41	29
Multiple and closely spaced birth	67	43
Recurrent infection	74	70
Poverty	83	77
Unhygienic sanitation	81	75

Table 4 shows the risk factors associated with the malnutrition among the study population. The major risk factor for the malnutrition among the study population is poverty (77) followed by unhygienic sanitation (n=75) and recurrent infection (n=70). Almost all the malnutrition children were belonging to the low income group i.e. they are living below poverty line. It leads to the other complications. The unhygienic conditions among the study population results diarrhoea and also it leads to recurrent infection.

Malnutrition is the biological disproportion between the supply of sufficient nutrients and energy for the body's need to assure the maintenance of their particular growth and functions. Undernutrition is the primary communal problem and remains to be a cause of premature death and health issues among children (under 5 years) in India and other developing countries (Nandy *et al.,* 2005).

Pre-school children represent approximately 18% of the general population. The risk of malnutrition accounts for about 70% of deaths in India. Growth is an essential sign of child health and the community's dietary conditions; growth failure is a regular issue and is the primary indication of PEM and poor health. The government of India and other organizations involved must make different decisions on how to expand and reform existing nutrition programs or introduce new one (Gupta & Shukla 1992). Integrated and Child Development Services was first developed in 1975 and is the world's largest national community-based nutritional program, this program mainly focuses on children under 6 years of age, pregnant and nursing mothers (15-44yrs) (Sachdev & Dasgupta 2001).

Anthropometry is the most widely used diagnostic tool for identifying muscle wasting in children under 5 years of age, worldwide. It is the most simple and convenient way to identify PEM (Protein- Energy Malnutrition). As per the IAP classification developed in 1972, Malnutrition is graded as normal (> 80), Grade I (71-80) mild malnutrition, Grade II (61-70) moderate malnutrition, Grade III (51-60) Severe malnutrition, Grade IV (>50) very severe malnutrition.

A study done in Pondicherry by Kavita Vasudevan et al., in children under five years of age with malnutrition who have serious long-term consequences shows that the prevalence of underweight, stunting and wasting in study population was 18.3%, 31.6% and 20.1% respectively (Vasudevan & Udayashankar, 2019).

A study done in Rims, Ranchi by Vivek Kashyap et al., in children under five years. The present study aims to describe socio-demographic profile and categorization of children on the basis of malnutrition, attending the Anganwadi centers. This was the record based descriptive study. Three Anganwadi centers (Chakla, Dardag, and Jhiri) were randomly selected in field practice area of Rajendra Institute of Medical Sciences, Ranchi. Duration of study was three months (May 2017 to July 2017). Total sample size was 196. Out of 196 under 5 children, 42.8% were found to be malnourished. Moderate malnutrition was present in 39.7% (78) children while severe malnutrition was present in 2 children Take-Home. Jhiri AWC reported 68.75% (55) moderately malnourished children with highest number despite supply of Rations (THR) (Kujur *et al.,* 2020).

CONCLUSIONS

From this study, it was concluded that among the study population, more than half of the children were more prone to malnutrition because of their inappropriate lifestyle due to poverty, inappropriate diet of the child and the nursing mother, family history and other co morbidities. In order to reduce these risk factors, the government is providing different kinds of nutritious foods and other supplements via different Anganwadi centers. By conducting several surveys like these, government should be able to know the number of children who were affected or who were prone to malnutrition. Thereby, they can easily provide sufficient therapeutic food and other vital supplements (ORS, Vitamin A paediatric oral solution, Albendazole tablets, Zinc sulfate Tablets, Iron and Folic Acid) to respective Anganwadi thereby to children in different rural areas.

FUTURE SCOPE

This study can be extended to other areas of the district including both rural and urban areas and the differences between this also be identified.

Acknowledgement. The authors are grateful to Dean, and the Medical Superintendent of VMKV Medical College, Salem for the permission to conduct the study. We thank all the anganwadi workers, mothers and children who have extended their co-operation during the period of study.

Conflict of interest. None.

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How to cite this article: Arul B., Shankar. R., Jansalna Jamal, Jesna Raji George, Jincy P. James and Kothai R. (2023). Prevalence of malnutrition among children under five years in rural areas of Salem district, Tamilnadu. *Biological Forum – An International Journal*, *15*(6): 777-780.