International Journal of Science and Research (IJSR)
ISSN: 2319-7064
Impact Factor 2024: 7.101

A Cross-Sectional Study to Assess the Prevalence of Malnutrition and Risk Factors Associated with Malnutrition among Under-Five Children (18 Months-5 Years) in the Selected Urban Areas of Vellore Town

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Abstract: ***Objective**: The study aimed to assess the prevalence of malnutrition among under-five children (18 months-5 years) in the selected urban areas of Vellore town and to determine the association between risk factors that are associated with malnutrition among under-five children and the clinical variables. **Methodology**: A cross-sectional study design with quantitative research approach was conducted for period of six weeks. Multi-stage sampling technique was used and samples included were the children and their mothers who fulfilled the inclusion criteria and totally 170 children were selected. Questionnaire prepared by the investigator was used for the study. Frequency and percentage were used for descriptive statistics; Chi-square test was used to find the association between risk factors of malnutrition and the clinical variables. **Results**: Findings showed that out of 170 children, 21.17% children were under-weight, 53.5% children were stunted and 7.7% children were wasted. The study showed statistically significant association between children who were not given colostrum after birth and children being under-weight. Birth weight had statistically significant association with stunting. No significant association was found between the risk factors and wasting. **Conclusion**: The findings voice that it is very important that routine nutritional screening is conducted by nurses during home visits in the community to identify the prevalence and risk-factors associated with malnutrition.***

Keywords: Under-five children, prevalence, risk factors associated with malnutrition

1. Introduction

"Investing in early childhood nutrition is a surefire strategy. The returns are incredibly high"

~Anne M. Mulcahy~

Children are an asset to families. Most families celebrate the birth of a child, and kids are revered as God's gifts. Mothers, in particular, and parents in general, are crucial to the growth and development of children. Mothers' care and the family's child-rearing methods reflect the children's nutritional and physical health. "Malnutrition" is one of the main health issues that children face during their formative years.

Every age benefits from proper nutrition, but in this situation, child nutrition is more crucial. To grow up healthy and strong, kids require the right kind of nutrition. Children's nutrition can lay the groundwork for developing a healthy eating lifestyle. Proper nutrition opens up various opportunities for growth from early childhood to early adulthood, from the formation of strong bones. The term "malnutrition" describes deficiencies, excesses, or imbalances in a person's nutrient- and/or energy-intake. Malnutrition refers to two major categories of diseases. The first is "under-nutrition," which is characterised by stunting (low height for age), wasting (low weight for height), underweight (low weight for age), and micronutrient deficiencies or insufficiencies (a lack of critical vitamins and minerals). The other is non-communicable diseases associated with being overweight or obese, including diabetes, heart disease, and stroke (WHO, 2020). The diet of children under the age of five is crucial because this is the time when our lifetime health, strength, intelligence, and vigour are built. It is commonly established that a child's diet has a direct impact on their growth and development, health, academic performance, preparedness for school, and social and future contributions to society (Nicklas and Johnson, 2004).

The nutritional health of a child is greatly influenced by a number of elements, including environmental factors, hygienic practices, the child's birth history, health status, and maternal factors, including the mother's knowledge, attitude, and behaviour. To preserve children's nutritional needs and establish a solid foundation for their future health, mothers' knowledge is essential in preserving the nutritional condition of the children. In reality, the Covid epidemic has caused a large number of families in the affected areas to lose their jobs, which has a direct effect on the nutritional quality of the child because the families' income has diminished and

they are now unable to give the children enough food. Another element affecting a child's nutritional condition is family income. Therefore, this study is being conducted in order to evaluate the risk factors associated with malnutrition among children under the age of five, as well as the prevalence of it.

2. Review of Literature

The investigator carried out an extensive review of literature on the research topic in order to gain an in-depth knowledge in to the problem of malnutrition among under-five children and to collect maximum relevant information for building the foundation of the study. Malnutrition, according to the World Health Organization (WHO), is the cellular mismatch between the body's supply of nutrients and energy and its needs for development, maintenance, and particular functioning. Malnutrition, which typically refers to any deviations from an adequate and optimal nutritional status in newborns, children, and adults, suggests under-nutrition. Under-nutrition in children shows up as underweight, stunting (short stature), and wasting (Firman G. 2010). Stunting, wasting and over-weight in children aged under 5 years are included as primary outcome indicators in the core set of indicators to monitor progress towards reaching Global Nutrition Targets 1, 4 and 6. These three indicators are also included in WHO's Global Reference List of 100 core health indicators. These indicators are defined as follows:

- Stunting: height-for-age <-2 SD of the WHO child growth standards median
- Wasting: weight-for-height <-2 SD of the WHO child growth standards median
- Over-weight: weight-for-height >+SD of the WHO child growth standards median
- Under-weight: weight-for-age <-2 SD of the WHO child growth standards median.

According to a community-based cross-sectional study conducted for children under five in pastoral villages in Ethiopia, malnutrition is one of the country's most critical public health issues and the biggest worldwide. Families with five or more members, pre-lacteal feeding, and recent diarrhoea were all connected with wasting in a favourable way (Gebre A. et al., 2019). According to a 2019 research study conducted in Iran, analyzing nutrition policy effectively and addressing children's concerns can lessen the impacts of malnutrition. The burden of malnutrition in children under five can be reduced with greater focus on the scarcity of some micronutrients, accurate execution of breastfeeding programmes, supplemental programmes for children and mothers, and better cooperation between organisations and their policies. (Mohseni M, 2019). In a research study conducted in rural and urban slum areas of Maharashtra, information was gathered by interviewing mothers of children under the age of five in house-to-house surveys. According to the study's findings, the nutritional condition of children is greatly influenced by factors such as the child's sex, birth order, exclusive breastfeeding, family economic situation, acute diarrhoea, and maternal education. In addition, the community's economic situation has to be improved. The prevalence of wasting, stunting, and underweight was also discovered to be higher in urban slums than in rural areas. (Murarkar S et al., 2020).

According to Ramli et al. (2009), a study conducted on the prevalence and risk factors for stunting and severe stunting among children under the age of five in the Indonesian province of North Maluku, the rates were 29% and 14.1% for infants aged 0-23 months and 38.4% and 18.4% for infants aged 0-59 months, respectively. The study came to the conclusion that programmes designed to reduce stunting in Indonesia's north Maluku province should concentrate on male children under the age of two who come from low-income families.

In a Delhi colony, a descriptive study on malnutrition among children aged 6 months to 2 years was carried out. All 1661 of the children who attended the Well Baby Clinic at Urban Health Centres between the ages of 6 months and 2 years were included in the study. To learn more about socio-demographic elements, breastfeeding and weaning behaviours, the moms were interviewed. According to the findings, 60.7% of children were underweight. It was still common practice to discard the colostrum, prolong weaning, dilute top milk, use a bottle or nipple to feed the children, and not solely breastfeed the child until they were at least 4 months old. Another descriptive study by Ander on the risk factors of malnutrition and acceptance of ready-to-use therapeutic food in 2009 discovered that the majority of malnourished children were between the ages of 1-4 years. The majority of families with monthly incomes of less than $1,000 were also those with malnourished children.

Sonika and Nida conducted a study in 2019 to assess mothers' knowledge, attitudes, and behaviours related to under-five child nutrition and malnutrition prevention. The majority of the women included in the study had fair to good KAP in terms of under-five nutrition and malnutrition prevention, according to the study's findings (Sangra S, Nowreen N; 2019).

In contrast to the results of the aforementioned study, Shettigar et al. reported that moms had a very low level of understanding. The cause may be because the two study populations' populations differ in terms of sociodemographics and literacy levels (Shettiger D. et al., 2013).

In a study by M Edith and Lakshmi Priya, it was discovered that the majority of mothers (112, or 56%) had a favourable attitude toward dietary habits in preventing malnutrition (2016). The researchers of the study found that mothers' attitudes and behaviours that can help avoid childhood malnutrition are improved when they have sufficient awareness of the food habits of children under the age of five.

A favourable and significant association between knowledge and attitude as well as knowledge and household food security in complementary feeding was discovered in a descriptive analytical study conducted in Iran. According to the study's findings, mothers' attitudes and knowledge about food security had an impact on their children's weight and risk of obesity, as well as their own knowledge and attitudes.

Out of 400 children, 71.5% had normal weight, 26% were obese or overweight, and just 2.5% had lost weight. The three children each weighed 10.47 kilogrammes on average. (Yeganeh S et al., 2016)

Using a standardized road to health chart, the weight of 100 children in a chosen area of Punjab was compared in an explanatory study to determine the prevalence and severity of malnutrition. It was discovered that, out of 100 youngsters, 43% were of normal weight and 57% were undernourished. Out of these, 46% of the male youngsters and 54% of the female children who were malnourished.

3. Methodology

A descriptive cross-sectional study design with quantitative research approach was used to assess the prevalence of malnutrition and risk factors associated with malnutrition among under-five children (18 months-5 years) in the selected urban areas of Vellore town. The study was conducted in the urban areas of Ramanayakanpalayam that is served by the College of Nursing, Christian Medical College (CMC), Vellore. The study was conducted for a period of six weeks (27/6/2022 till 6/8/2022). A total of 170 children from 170 families residing in Ramanayakanpalayam were selected for the study. Sample included for the study were the children and also their mothers who fulfilled the inclusion criteria of the study. Multi-stage sampling technique was used for the study. A structured questionnaire was used to assess prevalence of malnutrition and risk factors associated with malnutrition among under-five children. Data was collected through interview technique.

Objectives of the Study

1) To assess the prevalence of malnutrition among under-five children (18 months-5 years) in the selected urban areas of Vellore town
2) To determine the association between risk factors associated with malnutrition among under-five children with the clinical variables.

Hypothesis

H: There is a significant association between risk factors associated with malnutrition among under-five children and clinical variables.

Tools: The tools used for this study are as follows:
Section1: Demographic data of children and mother
Section2: Anthropometric measurement of children using the WHO Anthro Survey Analyzer
Section 3: Dietary assessment
Section4: Questionnaires related to risk factors associated to malnutrition among under-five children.
Section5: Food security

4. Result and Discussion

Data were analyzed using Statistical Package for Social Science version 21.0 (SPSS 21.0). Tables, figures and graphs were used to present the results of the analysis. Descriptive statistics were used to present the findings of this study. Chi square was used to find the association between risk factors and degree of malnutrition along with socio-demographic variables. A probability value less than 0.05 was considered to be statistically significant.

The prevalence of malnutrition was estimated according to the WHO classification for nutritional status and was analyzed using the WHO Anthro Survey Analyzer. As per the classification for Weight-for-Age (under-weight) by WHO which was used for this study, out of 170 children, 134 (78.8%) children were normal for Weight-for-age in which 63 (78.75%) were male and 71 (78.9%) were female. The overall prevalence of severely underweight children was 12 (7.05%) and moderately underweight was 24 (14.12%). The prevalence of severely underweight children among male and female were 4 (5%) and 8 (8.88%) respectively and moderately underweight were 13 (16.25%) and 11 (12.22%) respectively. Among the total of 170 children, 36 (21.17%) had either moderate underweight or severe underweight based on weight for age. The prevalence of either moderate underweight or severe underweight based on weight for age among male and female children were 17 (21.25%) and 19 (21.1%) respectively.

As per the classification for Height-for-Age (stunting) by WHO which was used for this study, out of 170 children, 79 (46.5%) children were normal for Height-for-age in which 32 (40%) were male and 47 (52.22%) were female. The overall prevalence of severe stunting was 48 (28.24%) and moderate stunting was 43 (25.29%). The prevalence of severe stunting among male and female were 26 (32.5%) and 22 (24.44%) respectively and moderate stunting were 22 (27.5%) and 21 (23.33%) respectively. Out of 170 children, 91 (53.53%) had either moderate or severe stunting based on height for age. The prevalence of either moderate or severe stunting based on weight for age among male and female children were 48 (60%) and 43 (47.77%) respectively.

Again, as per the classification for Weight-for-Height (wasting) by WHO which was used for this study, out of 170 children, 101 children (59.4%) had normal weight-for-height in which 46 (57.5%) were male and 55 (61.1%) were female. The overall prevalence of obesity was 11 (6.5%) and overweight was 15 (8.8%). The overall severe wasting was 4 (2.4%) and moderate wasting was 9 (5.3%). Among male and female children, the prevalence of moderate/severe wasting was 4 (5%) and 9 (10%) respectively.

In this study the risk factors associated with malnutrition among under-five children were assessed by using structured questionnaires for the mothers of the children. Out of 170 children, 4.7% children were having high risk of malnutrition, 53.53% were having moderate risk and 41.8% were having low risk of malnutrition.

In the present study it showed that there was statistically significant association between children who were not given colostrum after birth and children being under-weight based on (weight-for-age classification) ($p = 0.023$). It also showed that only birth weight had statistically significant association ($p= 0.046$) with stunting (Height-for-age classification). Out of 170 children 21 (70%) children born with weight <2.5 kg had stunting as compared to 70 (50%) children with birth weight more than >=2.5 kg. The present study also showed

that there is no statistically significant association between any variables with wasting based on (weight-for-height).

5. Conclusion

Nutritional problems continue to be one of the major global health concerns. The population who are at risk are pregnant women, lactating women, infants, pre-schoolers, adolescent girls, women and elderly. The present study was conducted to assess the prevalence of malnutrition and risk factors associated with malnutrition among under-five children (18 months-5 years) in the selected urban areas of Vellore town found out that out of 170 under-five children, 21.2% children were under-weight, 53.5% children were stunted, 7.7% children were wasted as per the WHO classification. Therefore, it is very important that routine nutritional screening is conducted by nurses during home visits in the community to identify the prevalence and risk factors associated with malnutrition. Parents, especially the mothers should be adequately educated regarding nutritional requirements and importance of good nutrition for children.

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