# Early Childhood Malnourishment and its Associated Factors - Uttarakhand

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## Abstract

Malnutrition, a word which seems to shake our roots and disturb our future. Today the underdeveloped and many developing countries are battling this threat in many ways. The reason behind malnutrition is the determinants which make it prevail in our neighborhood and our country on the whole. Malnutrition possess a very serious threat to the future of our country especially the children between (1 – 3) years of age. This paper attempts to identify the existing prevalence of malnutrition in Uttarakhand, to explore the predisposing factors contributing to it in under five children and compare the prevalence with the selected neighboring states. An in – depth survey of all the related literatures and published articles in the selected area was made. It has been reported in recent times about the hike in India's hunger problems and the number of reported cases of stunting and wasting has also rocketed though underweight has slightly reduced. The only way to curb malnutrition is by; breaking the shackles of the determinants, thorough regular surveys and screenings, improved and adequate health care services, reaching out to the needy and spreading awareness among the masses.

***Keywords:*** *Malnutrition, Stunting, Wasting, Underweight, Children*

## Introduction

Children; the purest souls, are the most vulnerable section of a society. They are considered to be the future of any country and the pillars upon which the country projects its existence. Therefore, it becomes imperative for any country to focus more on this vulnerable section of the society. Only a healthy child can help in building a healthy country of the future.

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A person's demands for nutrition varies according to his age. [1] Nutrition is one important aspect in child's development apart from genetic and environmental factors. It plays a very significant role in early years of child development. It not only prepares the child to combat opportunistic infections and diseases, but lays a strong foundation for a healthy future. Child's development begins from conception itself thereby emphasizing nutrition importance during pregnancy which affects the overall child development too. [2] In most literature studied, under nutrition is used synonymously with malnutrition.

Malnutrition refers to deficiencies, excesses, or imbalances in a person's intake of energy and/or nutrients. It refers to three broad groups i.e. under

nutrition (weight for age), stunting (Height for age) and wasting (weight for height). [3] Malnutrition cause is multifaceted in early childhood and is also related to socioeconomic and sociodemographic factors. [4]Globally in the year 2020 it was found that 149.2 million children under the age of 5 years of age were stunted, 45.4 million wasted, and 38.9 million overweight. [5]

According to recent reports, there has been a tremendous surge in levels of hunger and stunting inspite of India's economic growth. In Global Hunger Index 2020, India ranked 94th among 107 countries. [6] According to NFHS-4, 36% under-five children are underweight, 43.3% are stunted and 24.5% are wasted. In Uttarakhand, the prevalence of underweight, stunting, and wasting as per NFHS-4 is 26.6%, 33.5%, and 19.5%, respectively and is more in rural than in urban areas. [7] The hilly state Uttarakhand is located in northwestern part of the country. It has varied topography and is divided into two regions i.e. Garhwal and Kumaon. It has total of nine districts [8] and the population is sparsely distributed, majority being rural. [9] Subject to the terrain the health services are not as good as other parts of India. Uttarakhand state was found to be ranked 18th among 29 states, an indication of its indifferent health and was found to perform worse in health. [10] The present review focuses on the prevalence and predisposing factors causing malnutrition in early childhood years specifically in the age group of (1-3) years in Uttarakhand. This review will help to consolidate the available published literature on prevalence and factors contributing to malnutrition which may help to strengthen the programs and spread awareness to counter the menace of malnutrition in children.

## Methodology

The literature regarding prevalence and factors associated to malnutrition was collected from Google search engine, Google Scholar, Pubmed and Published reports and articles. The objectives of the review were: existing prevalence of malnutrition in Uttarakhand, to explore the predisposing factors contributing to it in under five children and compare the prevalence with the selected neighboring hilly states. The neighboring states were Himachal Pradesh and Jammu and Kashmir.

Only open accessed articles were retrieved. The keywords used for search were: "malnutrition", "under nutrition", "under five children", "factors", "Uttarakhand". The literature published form 2011 till date was searched. About 518 articles were shortlisted from the electronic database. After assessment of title and abstract 514 articles were excluded. The reference list also was examined. In addition 4 studies were added from other sources. The relevant studies included for the final review based on inclusion and exclusion criteria were 7 studies. The inclusion criteria for review were: Original research studies published between 2011 to 2021, cross sectional and epidemiological studies, study conducted among children below five years of age in Uttarakhand. All the papers used the height for age, weight for height and height for age criteria for assessment of nutritional status in under five children. The process of study selection is shown in below mentioned Fig.1.

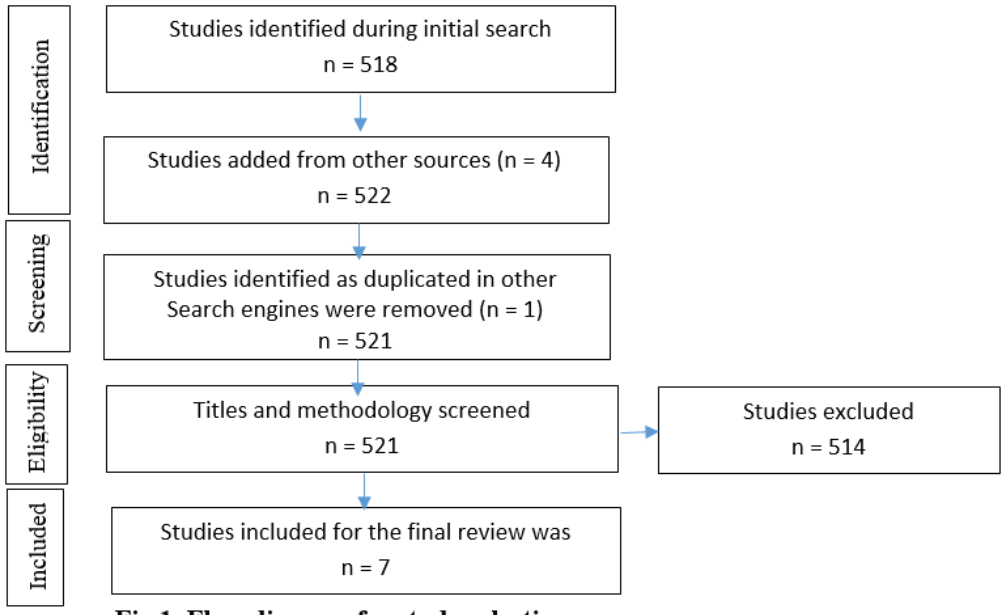


**Fig.1. Flow diagram for study selection process**

The review is presented in the following headings: prevalence of malnutrition in Uttarakhand, factors predisposing to malnutrition in under-fives and comparison of prevalence with the selected neighboring hilly states.

**Prevalence of malnutrition in under-fives of Uttarakhand:**

The studies on prevalence of malnutrition in under-five children was evaluated and results found were: in Rishikesh underweight, stunting and wasting was 37.3%, 43.3% and 24.5% respectively[11], in Haridwar 44.82% stunted and 51.72% were underweight[12], in Kashipur it was found that about 27.27% and 54.55% children in the age group of (0-5) years were found malnourished in mild to moderate category[13] and in Dehradun it was found that 200 (52.5%) children having exclusively breast fed were undernourished[14]. In another study conducted in Dehradun among toddlers regarding socio economic correlates and under nutrition it was found that 61.78% children belonging to lower socio economic status were undernourished, 75.50% of undernourished children had uneducated fathers and 73.30% had illiterate mothers. [15] A study of co- morbidities in children conducted in Dehradun found that 298 (59.6%) children with co morbidities were under nourished [16] and in study conducted in rishikesh it was found 27.38% children were under weight for their age, 52% were stunted and 17.84% were wasted [17].

As per swasth report of Uttarakhand, it was found that there has been 10.9% drop in cases of stunting in children under 5 years of age. Also there has been 11.9% decline of underweight in children below 5 years. But there has been minor increase of 0.7% in wasting cases of NFHS -4 data when compared with NFHS – 3 data.[18] It is not only the intake of diet which will help to solve this problem of under nutrition in early years of life but also other contributing factors. Table 1. Summarizes the prevalence of under nutrition in children under 5 years of age.

**Table.1. Prevalence of under nutrition in children under five years of age.**

| Ref. No. | Year | Setting | Sample size | Design | Identified Prevalence |
|---|---|---|---|---|---|
| 1. | 2020 | Rishikesh | 400 | Community-based Cross-sectional | Urban vs rural areas: Underweight (40.5% vs 35.0%) and 46.5% vs 40.0%, respectively. Wasting more in urban (27% V/s 22.0%) than rural areas |
| 2. | 2018 | Haridwar | 85 | Epidemiological Study | 44.82% stunted and 51.72% were underweight |
| 3. | 2016 | Kashipur | 100 families and 33 children (0-5) years | Cross-sectional | Out of 33 children in 0-5 age group 27.27% and 54.55% were malnourished in mild to moderate category. |
| 4. | 2016 | Dehradun | 381 | Cross- sectional | About 47.5 % children exclusively breast fed were well nourished whereas 52.5% were undernourished. |
| 5. | 2016 | Dehradun | 507 | Cross- sectional | Children belonging to lower class were undernourished (61.78%), maximum (88.44%) proportions of children living in poor environment were found to be undernourished |
| 6. | 2014 | Dehradun | 500 | Cross- sectional | Out of 500 children, 202 (40.4%) were well nourished and 298(59.6%) were under nourished with or without co morbidities |
| 7. | 2012 | Rishikesh | 695 | Cross- sectional | About 27.38% children were under weight, 52% were stunted and 17.84% showed wasting |

**Predisposing factors of Malnutrition:**

A varying number of factors lead to malnutrition in children. The studies reviewed in Uttarakhand depicted several factors that affect the nutritional status of children under five years of age. The factors have been categorized into socio demographic factors, child related factors and environmental factors.

*Socio demographic factors:*

The prevalence of underweight and stunting was found higher in children belonging to families of low socio economic status i.e. 47.50% and 40%.[12,19] The educational status of parents also had a negative impact on nutritional status of children i.e. illiterate parents had more percentage of malnourished children.[11, 12,18] Occupation of parents[11,17,19] and size of family[19].

*Child related factors:*

Underweight/low birth weight and prematurely born children were found to be more malnourished[11,12],exclusive breast feeding, timely complementary feeding[14] Anemia[12,17] and birth order were other significant factors leading to malnourishment in children.[12] Birth interval between children less than 2 years, not immunized children, inadequate dietary intake and monotonous diet, worm infestations, repeated illness like diarrhea, fever and cough and cold also found to be one of the significant factors leading to malnourished children[11,17].

*Environmental factors:*

Poor physical environmental factors like housing, overcrowding, lighting and ventilation have an important effect on the health status of the child. [19] The present environmental factors identified in Uttarakhand were also found in the neighboring states i.e. A study conducted in Sirmaur district HP found that malnutrition was associated with the type of house, number of rooms, unsafe drinking water and lack of transport facilities.[20] Another study conducted in Jammu and Kashmir in Doda district highlighted the significant environmental factors: nature of house, type of cooking area, cooking fuel and toilet facility at home as significant factors related to malnutrition

in children.[21]

**Comparing prevalence with the neighboring hilly states:**

The available data regarding prevalence of malnutrition in under-five children of Uttarakhand is very less. Very few studies on malnutrition in children have been undertaken in this area and when it is compared with another hilly state it was found that the status of malnutrition is almost similar when compared with Himachal Pradesh. A study conducted in Sirmaur district of Himachal Pradesh found that 40% of under-five children were Stunted, 19.5% were Wasted and 10.48% were Stunted and Wasted.[20] Another study conducted in Kinnaur district of Himachal Pradesh found that prevalence of Underweight, Stunting and wasting was 21.4%, 27.4% and 11.1% respectively in under-five children. [22] A study in the state of Jammu and Kashmir found the prevalence of malnutrition 20.87% in under-five children of which 14.56% had Grade I, 5.83% and Grade II malnutrition.[23] Another study conducted in the Gujars population of Jammu and Kashmir found that 10.75% of children were suffering from Grade I malnutrition, 17.5% with Grade II, 19.91% with Grade III and even 2.21% with Grade IV.[24] The prevalence reported in these studies when compared with the above mentioned studies in Uttarakhand can be interpreted that in Uttarakhand the percentage of malnutrition in children under-five is higher compared to Himachal Pradesh and Jammu and Kashmir. But according to NFHS - 4 data 2015-16, the prevalence of malnutrition in Uttarakhand for Underweight, Stunting, and Wasting reported was 26.6%, 33.5%, and 19.5%, for Himachal Pradesh it was 36.5%, 38.6% and 19.3% [25] and for Jammu and Kashmir was 16.6%, 23.2% and 13.7% [26] respectively. Thus, it can be summed up that the status of malnutrition is more or less in the same alarming and despairing situation.

The data regarding malnutrition in under five children specifically in hilly areas is very less but the data reported by NFHS says a lot. The studies conducted in Uttarakhand were limited to only prevalence and factors. There are many more hilly terrains that needs to be accessed and the status of child's nutrition needs to be assessed. The factors identified and reported in the above studies conducted in Uttarakhand are the factors which can be modified through various awareness programmes. But along with the awareness programs it also necessary to have in depth identification of other factors grounded in the culture and beliefs which thou cannot be changed easily but through constant visiting and education campaigns can be modified. Also, it should not the mother who should be involved but the entire family.

## Conclusion

The first 1000 days in child's life is considered to be an important phase. In this phase steps can be taken to combat malnutrition thereby preventing harm in near future.[27] As the child enters the toddler phase the brain development accelerates thereby enabling the child to refine his fine motor skills and perform difficult tasks.[28] Micronutrients play a very significant role in development of brain in this early phase and iron is one of the most important of them, deficiency of which can cause depression and anxiety in later phases of life.[29-32] Though poor nutrition is one of the major cause of malnutrition there are various other predisposing factors which directly and indirectly effect the health status of child in first five years of life. The data regarding factors contributing to malnutrition in the toddler age group has not been addressed much and needs to be explored, so that it can be dealt at a very initial stage itself with proper guidance to mothers and other family members. It is very important as some factors are modifiable, which can be modified thereby preventing prevalence in older age. Socio – cultural and behavioral factors also play a significant role in increasing the incidence of malnutrition. It is difficult to change beliefs or practices, as every geographic location in India has their own characteristic which may differ from one place to another, but with a stronger integrated approach it can be dealt effectively in bringing a change. It is therefore important to develop

intervention strategies keeping in view the cultural practice and beliefs of people residing in that area which will help in reducing shackles of malnutrition in near future.

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