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Under Nutrition among Children of Chanasma City

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Abstract:

Large segments of world's population live under condition where the availability and intake of food are inadequate. Mal nutrition is an ecological problem that occurs in conjunction with poverty, disturbed family structure, ignorance and despair. Although dietary supplements are important, the condition is larger than diet alone. Malnutrition is found enmeshed in the circumstances of a deprived environment and it is impossible to eradicate it without substantial social and economic reform. Insufficient food intake leads to chronic malnutrition condition especially under nutrition. Under nutrition among infants and children of preschool age continue to be a problem of most of the developing countries of the world. Nutritional status is a sensitive indicator of community, health and nutrition. Under nutrition is reflected in impairment of growth and therefore a useful indicator of nutritional status. Growth retardation is an important quantifiable manifestation of under nutrition. The objective of this study was to assess the under nutrition among children of under five years of Chanasma city of Patan district. The study was community based, experimental and survey carried out. Anthropometric measurement were taken and compared with standards. The children were examined for their habits of hygiene. In the present study, remarkable numbers of children were in under nutrition condition. The finding revealed that prevalence of under nutrition among children of selected area is high. These children required special dietary and health services for the improvement of health and nutritional status.

Key words: Under nutrition, children

Introduction:

In India, 20 per cent of children fewer than 5 years of age suffer from wasting due to acute under nutrition. More than 1/3rd of the world's children who are live in India. India accounts for more than 3 out of every 10 stunted children in the world(CNSG-2014)[1]. In 2014,

1 CNSG (2014). Comprehensive Nutrition Survey in Gujarat, 2014.

prevalence of underweight (too thin for age) in Gujarat is estimated to be at 10.4 per cent whereas wasting(too thin for height) is estimated to be at 11.4 per cent. Stunting (too short for age) is estimated to be at 37.2 per cent. Under nutrition occurs worldwide, usually in association with poverty. Under nutrition is a major public health problem in developing countries. Children and the elderly, as well as victims of war and natural disasters are at greatest risk for under nutrition. Chronic and recurrent infections play an important role in promoting under nutrition (Manaray and Solomons-2004)[2]. The children under five extremely vulnerable. Children succumb readily where the diet is poor in quality and quantity and infectious diseases and infestations are widespread. The growth and development of children depend to large measures on the adequacy of the diet consumed by them. Frequent attack of infectious diseases further increase the requirement of various nutrients (Swaminathan-1974)[3]. There are two clinical syndrome of severe under nutrition which is also known as (Protein Calorie Mal nutrition): Marasmus and Kwashiorkor. Marasmus is characterized by extreme wasting; those suffering from marasmus appears to be just " skin and bones". Marasmus is the physiological adaptation to marked restriction of dietary energy. There is marked reduction in fat and subcutaneous tissue, as well as atrophy of visceral tissues. Those suffering from marasmus limit their physical activity and have decreased rates of metabolism and protein turnover in an effort to conserve nutrients. Marasmic people are more susceptible to infections. Kwashiorkor is the clinical constellation of edema and under nutrition. This is the most commonly seen in children under five years of age and is usually associated with irritability, anorexia and ulceration of skin. The irritability is a pathological mental status change. The metabolic derangements are more severe in kwashiorkor, and the case fatality rate is higher than in marasmus.

Definition of different types of under nutrition

1. Underweight: Weight- for-age<2 SD below the international standard
2. Marasmus : Weight- for-age< 60 % the international standard
3. Kwashiorkor: The presence of oedema and weight for age< 80 % of the International standard.
4. Marasmic Kwashiorkor: The presence of oedema and weight for age < 60 of the international standard.
5. Wasting: Weight for height <2 SD below the international standard
6. Stunting: Height for age < 2 SD below the international standard.
7. Chronic Energy Deficiency: Body Mass Index [weight (kg) / height (m2)]<18.5.

2 Manary M.J. and Solomons N.W. (2004). Public health aspects of under nutrition. C.F. Gibney M.J., Margetts B.M., Kearney J.M. and Lenore Arab(2013). Public health aspects of Under nutrition. Public Health Nutrition. ISBN: 978-81-265-4063-4

3 M. Swaminathan (1974). Essential Of Food and Nutrition. Vol.-1

Etiology: determinants and conditioning factors for under nutrition

There are five possible mechanisms that result in nutrient deficiency, mechanisms that alone or in combination can reduce nutritional status:

- Decreased nutrient intake, e.g. famine or the anorexia of chronic illness such as anorexia nervosa.
- Decreased nutrient absorption, e.g. generalized carbohydrate and amino acid mal absorption in cholera from rapid intestinal transit times or the mal absorption of sugars after diarrhea induced lactase deficiency.
- Decreased nutrient utilization in the body, e.g. concomitant ingestion of antimalarial drugs which interfere with float metabolism, and congenital enzyme deficiencies that partially block nutrient metabolic pathway, such as those in phenyleketonuria.
- Increased nutrient losses (most commonly through the gastrointestinal tract, but also through the skin or urine), e.g. the protein losing enteropathy of inflammatory bowel diseases and the loss of nutrients through denuded, burned skin.
- Increased nutrient requirements (through pathophysiological states such as chronic inflammation), e.g. the increased metabolic rate with fever or hyperthyroidism.

Growth assessment best defines the health and nutritional status of children, because disturbances in health and nutrition, regardless of their etiology, invariably affect child growth and hence provide an indirect measurement of the quality of life of an entire population (De onis et.al.-1993)[4]. Anthropometry is widely recognized as one of the useful techniques to assess the growth and nutritional status of an individual or population(Gorstein et.al.-1994)[5]. One of the basic reason is that anthropometry is highly sensitive to under nutrition (Jellife D.B.-1966)[6]. It is possible to use variety of anthropometric measures to assess the growth of a child. Among the most studied are: weight, height, arm circumference, head circumference and skin fold thickness. There are many factors responsible for under nutrition of children less than five years are, poor hygienic habits, insufficient food intake, and lack of food availability, illiteracy, socio-economic and cultural factors. The objective of this study was to study about prevalence of under nutrition by anthropometric measurement of children of Chanasma city.

Methodology

The study was carried out in different area of Chanasma city of Patan district of North Gujarat. It was a community based, experimental and survey among this area. The children were selected by purposive random sampling. A house to house

4 De onis et.al. (1993) The world wide magnitude of protein energy malnutrition, an overview from the WHO global database on child growth.Bulletin of WHO, 71,703-712 (1993).

5 Gorstein et.al. (1994), Issues in assessment of nutritional status using anthropometry. Bulletin of WHO, 72 : 272-283 (1994)

6 Jelliffe D.B. (1966), Assessment of the nutritional status of the community, Monograph series, No-53, WHO, Geneva

survey was conducted in study to examine the children. The sample size of children was 100 (N=100) of 1-5 years of age. Anthropometric measurements in the form of height and weight were taken using standard techniques. The body weight of each child was measured by using lever balance. The height of the children who are not able to stand, were measured in a lying posture and height of those who are able to stand were measured in a standing posture without shoes and 4 parts of their body (heel, scapula, back of the head) were attached to the wall. The heights and weights of each child were compared with National Center for Health Statistics (NCHS) references. The body mass index (BMI) of children were calculated using following formula. **BMI = Weight (kg) / Height2 (m).** For the analysis of data, the children were grouped into girls and boys. The nutritional status (weight for age, height for age, & weight for height) were expressed in percentage.

Results and Discussion

Table 1 revealed the data related to personal and socio economic information. In the present study, 19 per cent respondents were girls and 16 per cent boys having age of 1-2 years. Overall, 35 per cent respondents were having age of 1-2 years. 31 per cent girls were having age between 3-5 years, and 34 per cent boys having age between 3-5 years. Overall, 35 percent were girls and 65 per cent were boys.

Table: 1 Personal and socio-economic information of children.

Variables	Girls F (%)	Boys F (%)	Overall F (%s)
Age			
• 1-3 years	19	16	33
• 3-5 years	31	34	65
Caste			
• General	02	02	04
• OBC	25	28	53
• SC/ST	23	20	43
Income			
• BPL	23	13	36
• Middle	16	21	37
• Higher	11	16	27
Types of House			
• Kaccha	06	01	07
• Semi Pakka	13	13	26
• Pakka	31	36	67

Table 1 also revealed caste wise distribution of respondents. 2 per cent girls and 2 per cent boys belongs to General caste. 25 per cent girls and 28 per cent boys belongs to OBC and overall, 53 per cent respondents belongs to OBC. 23 per cent girls and 20 per cent boys belongs to SC/ ST caste. Overall, 43 per cent respondents belong to SC/ST.

23 per cent girls and 13 per cent boy's parents had below poverty line income category that is they earn less than 49000 /- rupees yearly. Overall, 36 per cent respondent's parents had BPL income category. 16 per cent girls and 21 per cent boys lies middle income group. Overall, 37 per cent respondents had middle income group. 11 per cent girls and 16 per cent boys had higher income group category. Overall, 27 per cent had higher income group category.

6 per cent girls and 1 per cent boys lived in kachha house. Overall, 7 per cent lived in kachha house. 13 per cent girls and 13 per cent boys lived in semi pakka house. Overall, 26 per cent respondents lived in semi pakka house.31 per cent girls and 36 per cent boys lived in pakka house. Overall, 67 per cent respondents lived in pakka house.

Age in years	Gender N= 100	Weight (kg)	Height (cm.)	BMI (Wt.(kg)/ht2(m))
1-3	Girls (19)	9.08	74.79	16.49
	Boys (16)	9.91	79.31	15.75
3-5	Girls (31)	11.82	92.81	14.19
	Boys (34)	13.29	96.33	14.31

Values are with mean

Table 2 provides information regarding mean anthropometric measurements of girls and boys. Mean weight of girls of 1-3 years of age is 9.08 kg, and weight of 3-5 years age is 11.82 kg , which was lower than the standard weight. Mean weight of boys of 1-3 years of age is 9.91 kg, and weight of 3-5 years age is 13.29 kg, which was lower than the standard weight.

Mean height of girls of 1-3 years of age is 74.79 cm and height of 3-5 years age is 92.81 cm, which was lower than the standard height. Mean height of boys of 1-3 years of age is 79.31 cm and height of 3-5 years age is 96.33 cm, which was lower than the standard height.

Mean BMI of girls of 1-3 years of age is 16.49 and BMI of 3-5 years of age is 14.19. Similarly, mean BMI of boys of 1-3 years is 15.75 and 3-5 years of age is 14.31 which is also lower than the standard BMI. Thus, it can be concluded that majority of children were mal nourished as per weight, height and BMI.

Table 3 depicted nutritional status of selected children. In the present study, 4 per cent girls and 24 per cent boys had normal BMI. Overall, 28 per cent respondent had normal BMI. 35 per cent girls and 24 per cent boys were under weight and overall, 59 per cent were under weight. 11 per cent girls and 2 per cent boys were obese and overall, 13 per cent were obese which a sign of mal nutrition is. Thus, it can be concluded that majority of children were under weight.

Table: 3 Nutritional statuses of children

Parameters	Girls F (%)	Boys F (%)	Overall F (%)
Body Mass Index			
• Normal	04	24	28
• Under weight	35	24	59
• Obese	11	02	13
Weight /Age			
• Normal	01	04	05
• Under Weight	49	46	95
Height / Age			
• Normal	13	09	22
• Stunted	37	41	78
Weight /Height			
• Severely under weight	11	08	19
• Under weight	09	16	25
• Normal	30	26	56

As far as weight for age criteria, 1 per cent girl and 4 per cent boys were normal and overall, 5 per cent were normal. 49 per cent girls and 46 per cent boys were underweight and overall, 95 per cent were under weight that is children having less body weight as per their age.

Height for age criteria concerned, 13 per cent girls and 9 per cent boys were normal and overall, 22 per cent were normal. 37 per cent girls and 41 per cent boys were stunted and overall, 78 per cent children were stunted that is having less height as per their age in comparison with standard.

Weight for height criteria concerned, 11 per cent girls and 8 per cent boys were severely under weight and overall, 19 per cent were severely under weight. 9 per cent girls and 16 per cent boys were under weight and overall, 25 per cent were under weight. 30 per cent girls and 26 per cent boys were normal weight with their height and overall, 56 per cent children were normal weight and height. Thus, it can be concluded that majority of children had poor nutritional status.

Table: 4 Health problems prevalence among children.

NO	Diseases	Girls F (%)	Boys F (%)	Overall F (%)
1	Fever	23	13	36
2	Sneezing and Cough	19	13	32
3	Head ache	01	02	03
4	Diarrhea	07	04	11
5	Vomiting	06	01	07

Table 4 depicted the data related to prevalence of health problems among selected children. In the present study, 23 per cent girls and 13 per cent boys were suffering from fever and overall, 36 per cent children were suffering from fever. 19 per cent girls and 13 per

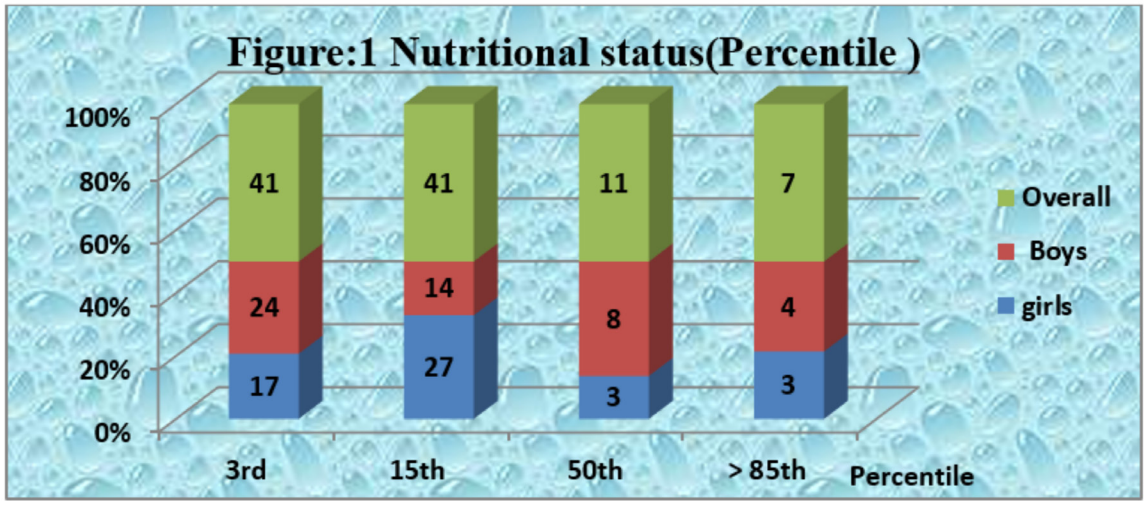
cent boys were suffering from sneezing and cough and overall, 32 per cent children were suffering from sneezing and cough. 1 per cent girls and 2 per cent boys were suffering from headache and overall, 3 per cent children were suffering from headache. 7 per cent girls and 4 per cent boys were suffering from diarrhea and overall, 11 per cent children were suffering from diarrhea. 6 per cent girls and 1 per cent boys were suffering from vomiting and overall, 7 per cent children were suffering from vomiting. Thus, it can be concluded that majority of girls were highly prevalent in health problems as compared to boys and infectious diseases were highly prevalent.

Table: 5 Life style of children

No.	Life style	Girls F (%)	Boys F (%)	Overall F (%)
1.	Daily tooth brushing	37	39	76
2.	Daily bath	46	48	94
3.	Using Soap	49	49	98
4	Separate towel	41	39	80
5	Clean cloth	50	48	98
6	Hand wash • Before meal • After defecation	 50 48	 48 48	 98 96
7.	Open defecation	03	02	05
8.	Use of handkerchief	41	40	81

Table 5 gives information regarding life style of selected children. In the present study, 37 per cent girls and 39 per cent boys were daily brushing teeth and overall, 76 per cent children were daily brushing teeth. 46 per cent girls and 48 per cent boys were taking daily bath and overall, 94 per cent children were daily taking bath. 49 per cent girls and 49 per cent boys were using soap daily for bathing and overall, 98 per cent children were using soap daily for bathing. 41 per cent girls and 39 per cent boys were using separate towel for bathing and overall, 80 per cent children were using separate towel for bathing. 50 per cent girls and 48 per cent boys wear clean clothes and overall, 98 per cent children wear clean cloths. 50 per cent girls and 48 per cent boys had hand wash before meal and overall, 98 per cent children had hand wash before meal. 48 per cent girls and 48 per cent boys had hand wash after defecation and overall, 96 per cent children had hand wash after defecation. Only 3 per cent girls and 2 per cent boys were going for defecation in open area and overall, 5 per cent children were defecating in open space. 41 per cent girls and 40 per cent boys use handkerchief while sneezing and overall, 81 per cent children use handkerchief while sneezing. Thus, it can be concluded that majority of children had good hygienic habits and good life style.

Figure: 1 Nutritional status as per percentile



The most widely used system WHO classification based on percentile and Z score. So for the present study, assessment of selected children was done with percentile also and the figure 1 depicted that 17 per cent girls and 24 per cent boys showed below 3rd percentile category which means they are severely under weight or stunted. Overall, 41 per cent children were severely under weight or stunted. Also, 41 per cent children were normal and indicated 15th percentile. 11 per cent children were normal and indicated 50th percentile. Overall, 7 per cent children were obese and indicated > 85th percentile. Thus, it can be concluded that majority of children were normal i.e. 52 per cent and 41 per cent were severely under weight or stunted as per percentile classification..

Figure: 2 Nutritional Status (Z score)

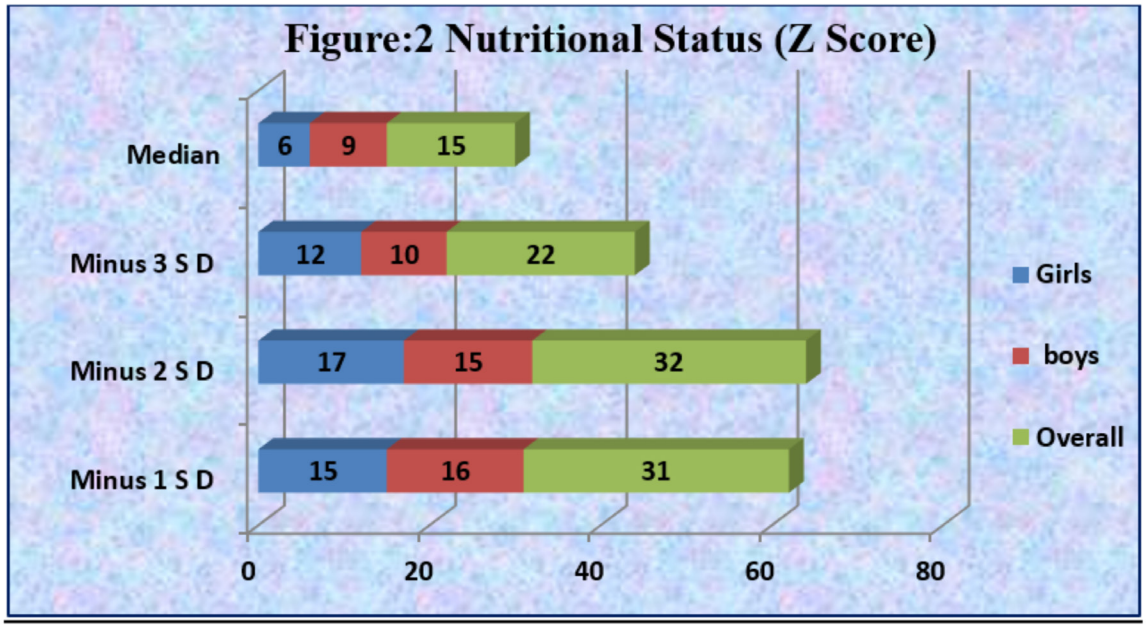


Figure 2 provide information related to assessment of nutritional status as per Z score and the data showed those 15 per cent girls and 16 per cent boys and overall, 31 per cent children were in condition of mild malnutrition. 17 per cent girls and 15 per cent boys

and overall, 32 per cent children were in condition of moderate malnutrition. 12 per cent girls and 10 per cent boys and overall, 22 per cent children were in condition of severe malnutrition. 6 per cent girls and 9 per cent boys and overall, 15 per cent children were in normal condition of nutrition. Thus, it can be concluded that 52 per cent children were mal nourished as per Z score classification of mal nutrition.

Summary and Conclusion

In conclusion, mal nutrition is a range of conditions occurring when intake of one or more nutrients in inadequate amount. Under nutrition is an important problem worldwide. Children and elderly are most at risk for under nutrition, as well as victims of war and natural disasters. Chronic or recurrent infection also plays an important role in promoting under nutrition. Public Health schemes led by nutritionists that draw on a variety of participants to partner with the community in effective interventions are necessary to prevent and ameliorate under nutrition. Effective interventions will be based on advances in understanding human biology, infectious diseases, agricultural science, plant genetics, hydrology, anthropology and sociology. It will be a multi task and extensive involvement of people with global perspectives in the context of better humanity.

Recommendations

- Health and Nutrition education for the community.
- Availability of suitable foods at lower cost.
- Provision of safe drinking water.
- Educating mothers for better hygienic practices.
- Improvement of environmental sanitation.
- Encouraging use of soap.
- Improvement of Nutritional status of children by helping community to better access of various program like ICDS, Chiranjivi, Bal Sakha Yojana, SNP, food fortification and Nirogi Bal Varsh Yojana.
- Education of mothers for Immunization program and better nutrition.
- Improve housing condition.

References

- Bamji M.S., Kamala Krishnaswami and G.N.V. Brahmam (2009).Mal nutrition and Psychosocial Development, Text book of Human Nutrition. Third Edition. ISBN: 978-81-204-1742-7.Oxford and IBH Publishing Company Pvt. Ltd. New Delhi.
- Bellamy (1998). The status of the world's children , Oxford university press: UNICEF-pp-208.
- CNSG (2014). Comprehensive Nutrition Survey in Gujarat, 2014.
- De onis et.al.(1993) The world wide magnitude of protein energy malnutrition ,an overview from the WHO global database on child growth.Bulletin of WHO ,71,703-

712 (1993).

- G. Kaur et.al.,(2005),Nutritional status; Anthropometric perspective of preschool children ,Anthropologist,7(2) : 99-103 (2005).
- GCSRA, Malnutrition Information pack.gcsra.org>images>pdf. IP-Malnutrition.
- Gibney M.J., Margetts B.M., Kearney J.M. and Lenore Arab(2013). Public health aspects of Under nutrition. Public Health Nutrition. ISBN: 978-81-265-4063-4.
- Gorstein et.al. (1994), Issues in assessment of nutritional status using anthropometry. Bulletin of WHO ,72 : 272-283 (1994).
- http://unicef.in/Story/1124/Nutrition# sthash.dwN121tS7.dpuf
- Jelliffe D.B. (1966), Assessment of the nutritional status of the community, Monograph series ,No-53, WHO ,Geneva.
- M. Lathia (1997). Major issues in Food and Nutrition Science. 9-124, Kanishka publishers ,Jaipur-3,New Delhi-2.
- M. Swaminathan (1974). Essential Of Food and Nutrition. Vol.-1.
- Manary M.J. and Solomons N.W. (2004). Public health aspects of under nutrition. C.F. Gibney M.J., Margetts B.M., Kearney J.M. and Lenore Arab(2013). Public health aspects of Under nutrition. Public Health Nutrition. ISBN: 978-81-265-4063-4.
- NCHS: Source: Indian Council of Medical Research ,Ready Rockner on Fruits and Vegetables preservation and Nutrition , New Delhi,70.
- Olsen (2006).Failure to thrive still a problem of definition, Clin. pediatr. (phila), 4.
- Rao et. al. (2005). Under nutrition and children morbidities among tribal preschool children, Indian J. Med. Res. 122,July 2005 pp-43-47.
- Rao et.al. (1986) Critical limits of some anthropometric measurements and indices for the assessment of nutritional status, J. Nutr.Dietet.23:88-99.
- Vazir Shahnaz (2009). Mal nutrition and Psychosocial Development. C.F. Bamji et.al. (2009) Text Book on Human Nutrition. Pp. -205-219.
- Vijaykumari Kaushik (1997). Problems of Nutrition and child care, pointer publishers Jaipur.