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## Research Article

### NUTRITIONAL STATUS AND ITS DETERMINANTS IN SCHOOL GOING CHILDREN OF KANCHEEPURAM DISTRICT

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School-age Children; Underweight;  
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#### ABSTRACT

**Objective:** To assess the nutritional status of school going children in Rural Blocks of Melmaruvathur. **Methods:** School children from various primary and middle level educational facilities from a rural health block were surveyed during the School Health Program. Height and weight was measured following standard procedures. MS Excel and Interactive statistics page were used for analysis of data. **Results:** Out of 428 students 288 (67.2%) were underweight 151 (52.4%) girls and 137 (47.6%) were boys and 60(14%) (40 boys and 20 girls) stunted. The overall prevalence of under nutrition was 67%. The maximum underweight was seen in the age group of 10years.girls were more underweight than boys. **Conclusion:** The nutritional status of school age children is considerably low in this health block, poverty and other factors also contribute to the under nutrition.

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## INTRODUCTION

Protein Energy Malnutrition is one of the most important nutritional problem around the world.<sup>1</sup>The problem is more severe in third world countries affecting children of all ages especially the under fives. Nutritional deprivation is rampant in children of school age particularly primary school children ranging in magnitude from 20-80%.Since deficient physical growth is naturally reflected in their suboptimal mental achievement,<sup>2</sup>

In Southern Asia, 60% of the children in the poorest families are underweight, compared to about 25% in the richest households.<sup>3</sup> In India, 22% of the burden of malnutrition is among school going children.<sup>4</sup>Primary school age is a dynamic period of physical growth and mental development of the child. Research strongly suggests that health problems due to malnutrition among primary school – age children are among the most common causes of low school enrolment, high absenteeism, early dropouts and unsatisfactory educational performance.<sup>5</sup> the assessment of nutritional status of this segment of population is essential for making progress towards improving overall health of the school age children.NFHS-3 conducted recently has not reported on nutritional status of children in school age group. A number of studies have been conducted to assess the nutritional status of children in which different classifications like IAP, Gomez, Waterloo's etc have been used; the most commonly used being the IAP

classification. Since different cutoff values for normality have been used in different systems therefore these cannot be used universally.<sup>6</sup> Government schools in collaboration with Anganwadis can provide a practical platform to deliver an integrated package of interventions such as nutritious meals, micronutrient supplementation or fortification, infection control, health promotion and life skills education to improve the health and nutrition of school children.<sup>7</sup>

The high levels of under nutrition in children in South Asia pose a major challenge for child survival and development. Besides poverty, there are other factors that directly or indirectly affect the nutritional status of children. Several studies showed that maternal education emerges as a key element of an overall strategy to address malnutrition.<sup>8</sup>In the present study, an attempt was made to find the prevalence of malnutrition among school children in 5–12 year age group in Melmaravathur district of Tamil nadu. This age group is on the threshold of adulthood on whom the progress and welfare of the nation depends. The current study further explores the role of socio-demographic characteristics of mother on the nutritional status of the child.

#### Method of Collection of Data

After obtaining authorized consent from the management, the school was visited and the data was collected using readymade proforma. All children between 5-12 years of age as determined using school records were included in the study. The data was collected by interviewing and examining the

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children with the help of class teacher. The children were assessed for nutritional status by clinical examination and by measuring height (cm), weight (kg) which was compared with the NCHS (National Center for Health Statistics) Standards and the standards given by ICMR (Indian Council of Medical Research). Weight was measured using a floor type weighing scale with due respect to the standardization of the equipment and procedure. The measurements are taken to the nearest 0.5 Kg. Height was measured using a measuring tape applied to the wall. The measurements are taken with children barefoot with their back of heels, buttocks and head touching the wall. Readings are taken to the nearest 0.5 cm.

## RESULTS AND DISCUSSION

A total of 428 children were studied belonging to the age group 5 to 12 years (Table 1). Out of the 428 students, 224 (52%) were boys and 204 (48%) were girls.

### Prevalence of Underweight

The overall prevalence of underweight in the studied school children was 67.2% (288). The prevalence of underweight in boys was 47.6% (137) and in the girls, it was 52.4% (151).

### Prevalence of Stunting

The overall prevalence of stunting in the under study school children was 14% (60) (Table 4). The prevalence of stunting in boys was (40) while in girls it was (20). The prevalence of stunting was more in boys as compared to girls.

	Boys	224	52%
Girls	204	48%	
Total	428	100%	

Out of 428 students 288 (67.2%) were underweight 151 (52.4%) girls and 137 (47.6%) were boys. and 60(14%) (40 boys and 20 girls) stunted

**Table-2** Age wise distribution among girls and boys

age	boys		girls		total	
	No	%	No	%	No	%
5	23	10%	23	11%	46	11%
6	27	12%	27	13%	54	13%
7	30	13%	29	14%	59	14%
8	28	13%	24	12%	52	12%
9	29	13%	25	12%	54	13%
10	27	12%	23	11%	50	12%
11	32	14%	29	14%	61	14%
12	28	13%	24	12%	52	12%
total	224	100%	204	100%	428	100%

A maximum of female children (56) were observed among the 6-7 year age group while male children (60) were more among the 11-12 year age group as shown in Table 2.

### Prevalence of Underweight among age wise

age	boys		girls		total	
	No	%	No	%	No	%
5	10	43%	16	70%	26	9%
6	14	52%	17	63%	31	11%
7	18	60%	19	66%	37	13%
8	17	61%	14	58%	31	11%
9	19	66%	18	72%	37	13%
10	21	78%	21	91%	42	15%
11	18	56%	24	83%	42	15%
12	20	71%	22	92%	42	15%
total	137	100%	151	100%	288	100%

A Maximum number of underweight children are seen in higher age groups both in girls and boys

**Table -3** Prevalence of Stunting among boys and girls

age	boys		girls		total	
	No	%	No	%	No	%
5	4	17%	2	9%	6	10%
6	6	22%	4	15%	10	17%
7	7	23%	2	7%	9	15%
8	3	11%	3	13%	6	10%
9	5	17%	4	16%	9	15%
10	6	22%	2	9%	8	13%
11	6	19%	1	3%	7	12%
12	3	11%	2	8%	5	8%
total	40	100%	20	100%	60	100%

Highest prevalence among boys is seen in age group of 6-7 years, while in girls it was between 8-9 years.

**Table-4** Determinants of nutritional status

	No	%	
socioeconomic status			
	2	159	37%
	3	137	32%
	4	76	18%
	5	56	13%
Father's education			
	illiterate	203	47%
	Primary	106	25%
	High school	74	17%
	Hsc and above	45	11%
Mother's education			
	illiterate	231	54%
	Primary	96	22%
	High school	63	15%
	Hsc and above	38	9%
Father's Occupation			
	AgriculturalLabour	196	46%
	Business	67	16%
	Skilled Labour	46	11%
	Unskilled Labour	119	28%
Mother's Occupation			
	AgriculturalLabour	91	21%
	Business	49	11%
	Un Skilled Labour	54	13%
	Home maker	234	55%
Family status			
	Joint	303	71%
	Nuclear	125	29%
Junk food			
	Regularly	163	38%
	Sometimes	30	7%
	Not at all	235	55%

## Height

age	boys		girls		total	
	No	%	No	%	No	%
5	23	108.56±1.26	23	106.51±0.26	46	11%
6	27	112.34±1.22	27	108.34±2.36	54	13%
7	30	118.45±2.48	29	121.45±4.27	59	14%
8	28	126.71±6.14	24	128.82±5.41	52	12%
9	29	129.85±5.99	25	130.53±2.68	54	13%
10	27	130.01±7.45	23	131.11±5.63	50	12%
11	32	139.31±7.37	29	142.30±4.78	61	14%
12	28	143.27±2.71	24	143.27±8.84	52	12%
total	224		204	0%	428	100%

**Weight**

age	boys		girls		total	
	No	%	No	%	No	%
5	23	15.56±2.12	23	16.15±0.47	46	11%
6	27	14.12±4.26	27	16.74±1.17	54	13%
7	30	18.45±3.41	29	18.54±3.24	59	14%
8	28	21.67±1.74	24	19.80±4.51	52	12%
9	29	22.29±8.37	25	23.31±3.13	54	13%
10	27	23.01±6.23	23	24.49±3.72	50	12%
11	32	25.91±9.35	29	26.12±3.30	61	14%
12	28	32.41±1.27	24	34.17±3.24	52	12%
total	224		204	0%	428	100%

age	Normal		Underweight		total	CHI SQUARE
	No	%	No	%		
5	20	43%	26	57%	46	17.51* P=0.0144
6	23	43%	31	57%	54	
7	22	37%	37	63%	59	
8	21	40%	31	60%	52	
9	17	31%	37	69%	54	
10	8	16%	42	84%	50	
11	19	31%	42	69%	61	
12	10	19%	42	81%	52	
	140		288		428	

(note: Young age children more Underweight than the older one)

Gender	Normal		Underweight		total	CHI SQUARE
	No	%	No	%		
Boys	87	39%	137	61%	224	8.021* p=0.005
Girls	53	26%	151	74%	204	
	140	33%	288	67%	428	

note: Girls were more Underweight than the Boys

socio economic	Normal		Underweight		total	CHI SQUARE
	No	%	No	%		
2	30	19%	129	81%	159	40.422* P<0.001
3	41	30%	96	70%	137	
4	35	46%	41	54%	76	
5	34	61%	22	39%	56	

Lower income is more affected.

socio economic	Normal		Underweight		total	CHI SQUARE
	No	%	No	%		
Joint	98	32%	205	68%	303	0.064
Nuclear	42	34%	83	66%	125	P=0.801

\*Non significant

Junk food	Normal		Underweight		total	CHI SQUARE
	No	%	No	%		
Regularly	30	18%	133	82%	163	17.915*
Sometimes	12	40%	18	60%	30	P<0.0001
Not at all	88	37%	147	63%	235	

\* Those are taking junk food they were more chance of underweight

**DISCUSSION**

School children suffers from various health problems among them malnutrition accounts for the majority. Malnutrition is associated with about half of all child deaths worldwide. Malnourished children have lowered resistance to infection; they are more likely to die from common childhood ailments like diarrheal diseases and respiratory infections; and for those who survive, frequent illness saps their nutritional status, locking them into a vicious cycle of recurring sickness, faltering growth and diminished learning ability. It is imperative that these disorders in children are efficiently and timely assessed and corrective measures employed accordingly. Assessment of nutritional status in school children is one such endeavor. In the present survey we observed a comparatively

higher prevalence of under nutrition (67.2%,14% for underweight, stunting) than that reported by G K Mendhi *et al*<sup>9</sup> from Assam in 6-8 year old children stunting 47.4% and underweight 51.7%. Bandopadhyay *et al*<sup>10</sup> from Navinagar Mumbai reported prevalence for wasting 17.0%, stunting 16.8%, and underweight 42.3%. Mitra *et al*<sup>11</sup> from Chatisgarh reported prevalence of underweight 90.0% and stunting 47.5%. Similarly Chowdhary *et al*<sup>12</sup> from Puriliya West Bengal also reported figures of underweight 33.7%, and stunting 17.0%.The prevalence of underweight and stunting did not show a definite trend across various age groups, similar observation has been reported by Mendhi *et al*.<sup>9</sup> Though prevalence of wasting was observed to increase from lower to higher age. We found a higher prevalence of underweight, stunting in females than males (52.4% & 47.6%). Other studies reported by Mukherji *et al*<sup>13</sup> from Pune (p> .05). There are many factors that directly or indirectly cause malnutrition among children. Women's educational and social status, national per capita, food availability, and access to safe water are important underlying determinants of child malnutrition.<sup>14</sup>

Some studies suggested that high prevalence of low birth weight, poor hygiene, inadequate child care and feeding practices, and the low status of women in society are key factors that explain high rates of child malnutrition.<sup>15</sup> The present study shows highly significant association of maternal literacy, occupation, income and diet knowledge on child malnutrition. Economic status of the household is associated with the general health and development status of the family.

Literate mothers adopt many improved behaviors related to maternal and child health care, feeding and eating practices which ultimately affect the nutritional status of children. The present study shows that 54% of mothers of malnourished children did not have adequate knowledge regarding the diet requirements of the child and the nutritional value of food items. This finding is also similar to the findings from other studies such as NMIS (Nepal Multiple Indicator Surveillance) from Nepal,<sup>16,17</sup> and NFHS (National Family Health Survey) from India.<sup>18</sup> What we suggest to improve the scenario is to implementing nutritional monitoring of school children as part of school health program, improvement in school environment, making foods available at affordable prices especially for weaker sections canbe instrumental in bringing a much needed improvement.

**CONCLUSION**

Malnutrition among children is a major public health problem. Besides poverty, there are other factors that directly or indirectly affect the nutritional status of children. Literacy and social status of mother are key factors contributing to malnutrition in children. The present study highlights the prevalence of malnutrition among school going children is more and the prevalence can be reduced by increasing awareness in mother regarding the nutritional intake of the child. Also, there is a great need to focus the attention of policy-makers on the nutritional status of children asone of the main indicators of development and as a precondition for the socioeconomic advancement of societies in the long term.

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