



“IMPACT OF HEALTH EDUCATION ON MORBIDITY PROFILE OF PRIMARY SCHOOL CHILDREN IN URBAN AREA”

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ABSTRACT Mortality in young children is low however morbidities constitute heavy burden. Extensive surveys to find out malnutrition status have been carried out in different parts of the country. These suggest that sickness, morbidity and mortality rates in India are among the highest in the world. Common morbidities include infectious diseases, intestinal parasites, diseases of skin, eye, ear and dental caries. Its linked to slow cognitive development, underweight, wasting, impaired resistance to infections , stunting of growth,reduced work capacity , poor mental and social development. The study was conducted to assess impact of this health education on morbidity of 180 primary school subjects (6–11 yr old) residing in an urban area. Medical health check up of children was initially conducted to find out prevalence of morbidities at school. Health education was given to children. Impact of this health education was assessed after 1 year. Nutritional morbidities related to hair, skin and mouth showed statistically significant improvement after intervention .However morbidities related to ear, eyes, gums, face and nails didn't show significant improvement. Sustained periodical health education sessions regarding correct hygienic practices with active involvement of parents/teachers can lead to reduced morbidities of children.

KEYWORDS : Morbidity, Health education, Primary school children.

INTRODUCTION

Malnutrition is one of important public health problems. 90% of undernourished people reside in developing countries .Its linked to slow cognitive development, poor academic performance, underweight, wasting, impaired resistance to infections and stunting of growth, growth retardation, reduced work capacity , poor mental and social development.

PROBLEM STATEMENT

WORLD:

- 2 billion people in the world suffer from various forms of malnutrition.¹
- Its an underlying cause of death of 2.6 million children each year – which accounts to a third of child deaths globally.²
- Paediatric malnutrition is a risk factor for 16% of the global burden of disease.(2005)²

INDIA

- One in every 3 malnourished children in the world lives in India.
- Paediatric malnutrition is a risk factor for 22.4% of India's burden of disease.²
- India stands 25th on the Global hunger Index with 46 per cent of underweight children below 5 years of age. (State of World Children, 2008).
- National Family Health Survey - 3 reported that both acute and chronic under nutrition was high in many states.
- Prevalence of malnutrition in primary school children was in the range of 50%-60%³
- Sickness, morbidity and mortality rates in India are among the highest in the world.²

Common morbidities include infectious diseases, intestinal parasites, diseases of skin, eye, ear and dental caries.⁴ Its prevalent in all the states in India. ⁵Various factors contributing to under nutrition include poverty and lack of resources ,economy of a nation , culture, environment, diseases ,poor sanitation and personal hygiene, low socioeconomic status, overcrowding,illiteracy etc. Infection and malnutrition constitute vicious cycle .

Children living in rural areas of India suffer more from under nutrition as compared with their urban counterparts.⁶ United Nations educational scientific and cultural organization (UNESCO) states 6-11 years as primary school age. The WHO Expert Committee noted that “to learn effectively,children need good health”. Malnutrition is an important cause of low school enrolment, high absenteeism, early dropouts and poor classroom performance. WHO developed 10 recommendations for school health, and initiated a global school

health initiative in ten countries, of which 8 were developing countries(1997)².

With this background the current study had been conducted to assess the existing nutritional status ,morbidity and impact of this health education programme on the same among the primary school children in urban area.

OBJECTIVES

- To study morbidity profile of primary school children
- To assess impact of health education on personal hygiene and morbidity profile of primary School children

METHODS

The Prospective Interventional study was conducted in a primary school in urban area for 18 months.

The study has been conducted in two phases.

First phase :Medical health checkup of children was conducted.

Second phase:After one year , impact of health education on school children was assessed .

$$\text{Sample Size}(n)=4PQ/d^2$$

n= a minimum sample size required.

p=Assumed to be 50% in this study

q = 100-50= 50%

d = 15 % of the assumed/expected prevalence of morbidity

Calculated Sample size = 178 (Total= 180 children)

ETHICAL CLEARANCE

It was obtained from the Institutional Scientific Review Committee and Ethical Committee.

INCLUSION CRITERIA

- Children(either sex) of age group of 6- 11 years.
- Children whose parents/guardians gave consent to participate in this study.

EXCLUSION CRITERIA

- Children who are having chronic/serious Illness.
- Children absent for more than 1 month

Simple random sampling technique was used for selection of school. A list of 56 private aided schools of study area (F/N ward) was prepared. Out of these 56 schools, 1 school was selected randomly using lottery method. The study was initiated after taking permission from school authorities. Participants were informed in detail about the

study .Written informed consent of parents of participating children was obtained Sampling units were 6-11 years old primary school children. Simple random sampling was used to select children. There were 240 children in 1st to 4th standard. Each standard consisted of 60 children. Out of these 240 children, those present on the day of survey fulfilling all the inclusive criteria were selected randomly to achieve desired sample size. From 1st standard 47, 2nd standard 43, 3rd standard 44 and 4 th standard 46 Children were selected. Remaining children were excluded from study for various reasons including absenteeism for more than 1 month, chronic/serious illness ,drop outs /shifting of parents within a year etc. Children from 5th standard were excluded from the initial study as they wouldn't be available for follow up as they would then graduate to the next standard and would fall out of the sampling age group. Absent children were examined on the last day of the study.

INTERVIEW OF CHILDREN

Interviewer collected data using a predesigned, pretested, semi-structured interview schedule by direct interview method. Interviewer explained the purpose of the study to Parents/teachers by using student information sheet.

CLINICAL EXAMINATION

GENERAL PHYSICAL EXAMINATION:

NUTRITIONAL DISORDERS :

HAIR

Sparse and thin: Protein, Zinc, Biotin deficiency
Easily Pluckable: Protein deficiency

MOUTH

Glossitis: Riboflavin, Niacin, Folic Acid, B 12 deficiency
Bleeding gums: Vit. C,A, K, Folic Acid and niacin deficiency Angular stomatitis, Cheilosis and fissured tongue: Vit. B 2, B6 and Niacin deficiency

LEUKOPLAKIA

Vit.A,B12, B-complex, Folic Acid and Niacin deficiency
Sore mouth and tongue: Vit. B12,B6, C, Folic Acid, Niacin and Iron deficiency

EYES

Bonet's spots, conjunctival xerosis, Night blindness, xerophthalmia: Vitamin A deficiency
Photophobia,-blurring of vision: Vit. B2 and Vit.A deficiencies

NAILS

Spoonng: Iron deficiency
Transverse lines: Protein deficiency

SKIN

Pallor: Folic Acid, Iron, B12 deficiency
Flaking dermatitis: PEM, Vit B2, Vitamin A, Zinc and Niacin deficiency Pigmentation, desquamation: Niacin deficiency and PEM
Bruising, purpura: Vit K, Vit C and Folic Acid deficiency

BONE

Rickets: Knock-knees and bowed legs

ANAEMIA

Diagnosed clinically by presence of pallor of mucous membranes, Conjunctiva, tongue, nail beds and creases of palm.

EYE EXAMINATION

Visual acuity was measured by Snellen's chart.

EAR EXAMINATION

Chronic suppurative otitis media (CSOM)
Diagnosed by history of mucopurulent discharge (Otorrhoea), hearing loss, with or without pain for more than three weeks duration.
Acute suppurative otitis media (ASOM)
Diagnosed by the above symptoms but the duration of illness reported was less than three weeks.

SYSTEMIC EXAMINATION

Appropriate treatment was given to children .Children requiring specialist's intervention were referred to higher Centre. During intervention phase , weekly lectures and demonstrations were

conducted in each class regarding personal hygiene and dietary habits .Proper training was given to all teachers. An interactive session of about 30 minutes per week was taken. Similar follow up interactive sessions were held by respective teachers in the consecutive week. Nutritional status and morbidities of children were again assessed after intervention period of one year. The health education tools were handed over to the school for educational purposes.

STUDY TOOLS

It included consent forms, information sheets, school registers, a predesigned, pretested schedule in vernacular language to record the socio-demographic and economic information,check list for recording unhealthy practices regarding personal hygiene and dietary habits, weighing machine,measuring tape,teaching modules with colourful charts,flipchart and posters.

ANALYSIS OF DATA

Data was collected and compiled using Microsoft Excel 2013 and analysed using SPSS 21.0 version and Open Epi Software Version 2.3.

RESULTS

Morbidities	Boys	Percent	Girls	Percent	Total	Percent
Ear Wax	13	14.8	12	13.0	25	13.9
Dental caries	7	7.9	8	8.7	15	8.3
Diarrhoea, fever, Upper RTI	2	2.3	3	3.3	5	2.8
History of worm infestation	1	1.1	0	0.0	1	0.6
None	65	73.9	69	75.0	134	74.4
Total	88	100.0	92	100.0	180	100.0

26.1% of the boys and 25% of the girls were suffering from one or more morbidities. Most common morbidity among both boys and girls was ear wax(13.9%). Ear wax (14.8%), followed by Dental caries (7.9%), Diarrhoea, Fever, URTI (2.3%) and worm infestation (1.1%) were the most common morbidities detected in boys. While morbidities detected in girls were ear wax (13.0%), followed by Dental caries (8.7%), Diarrhoea, Fever, andURTI (3.3%).

Clinical Signs	Category	Boys	Percent	Girls	Percent	Total	Percent
Pallor	Yes	1	1.1	2	2.2	3	1.7
	No	87	98.9	90	97.8	177	98.3
Hair	Normal	79	89.7	84	91.3	163	90.6
	Loss of Lustre	7	8.0	7	7.6	14	7.8
Skin	Thin and Sparse	2	2.3	1	1.1	3	1.6
	Normal	79	89.7	84	91.3	163	90.6
Ear	Loss of Lustre	7	8.0	7	7.6	14	7.8
	Pigmentation, Desquamation	2	2.3	1	1.1	3	1.6
Eye	Ear discharge absent	87	98.9	91	98.9	178	98.9
	Ear discharge present	1	1.1	1	1.1	2	1.1
Normal	Conjunctival Xerosis	2	2.3	3	3.3	5	2.7
	Bitot's Spots	1	1.1	0	0.0	1	0.6
Blurring Of Vision In Night	6	6.8	5	5.4	11	6.1	
	Normal	79	89.8	84	91.3	163	90.6
Refractive Error	Yes	10	11.4	8	8.7	18	10.0
	No	78	88.6	84	91.3	162	90.0
Mouth	Normal	79	89.8	84	91.3	163	90.6
	Angular Stomatitis	4	4.5	5	5.4	9	5.0
Pale And Atrophied Tongue	3	3.4	0	0.0	3	1.6	
	Cheilosis	2	2.3	2	2.2	4	2.2
Sore Mouth and Tongue	0	0.0	1	1.1	1	0.6	

Gums	Normal	83	94.3	91	98.9	174	96.6
	Bleeding and Spongy Gums	2	2.3	1	1.1	3	1.7
	Pyorrhoea	3	3.4	0	0.0	3	1.7
Face	White Patches	7	8.0	7	7.6	14	7.8
	Diffuse Depigmentation	2	2.3	1	1.1	3	1.6
	Normal	79	89.7	84	91.3	163	90.6
Nails	Spooning	2	2.3	1	1.1	3	1.6
	Transverse Lines	7	8.0	7	7.6	14	7.8
	Normal	79	89.7	84	91.3	163	90.6
Bone	Normal	88	100.0	92	100.0	180	100.0

Pallor: 1.1% of boys & 2.2% girls had pallor.

Hair: 8% of boys and 7.6% girls had dull hair. 2.3% of boys and 1.1% girls had thin and sparse hair. Thus, 9.5% of the subjects indicated a significant deficiency of protein.

Skin appearance: 8% of boys and 7.6% girls had dull skin or skin without lustre. 2.3% of boys and 1.3% of girls had depigmentation or desquamation of skin.

Ear: 1.1% of both boys and girls had ear discharge.

Eyes: 2.3% of boys and 3.3% girls had conjunctival Xerosis. 6.8% of boys and 5.4% girls had blurring of vision in night.

Refractive Error: 11.4% of boys and 8.7% girls had refractive error.

Mouth: 4.5% boys and 5.4% girls had Angular Stomatitis. 3.4% of boys had atrophied tongue, 2.3% boys and 2.2% girls had Cheilosis. 1.1% of girls had sore mouth and tongue.

Gums: 2.3% of boys and 1.1% girls had bleeding gums. 3.4% of boys had pyorrhoea.

Face: 8% of boys and 7.6% girls had white patches over face.

Nails: 8% of boys and 7.6% girls had transverse lines on nails. 2.3% of boys and 1.1% girls had spooning of nails.

Table-2 Comparison Of Nutritional Morbidities Before And After Health Education

	Before	After			
	Frequency	Percent	Frequency	Percent	p value
Pallor					
Yes	3	1.7	3	1.7	1.000
No	177	98.3	177	98.3	
Hair					
Normal	163	90.6	170	94.4	0.016
Abnormal	17	9.4	10	5.6	
Skin Examination					
Normal	163	90.6	169	93.9	0.031
Abnormal	17	9.4	11	6.1	
Ear					
Abnormal	2	1.2	2	1.2	1.000
Normal	178	98.8	178	98.8	
Eye					
Abnormal	17	9.5	13	7.2	0.125
Normal	163	90.5	167	92.8	
Refractive Error					
Yes	18	10.0	18	10.0	1.000
No	162	90.0	162	90.0	
Mouth					
Abnormal	17	9.5	4	2.3	0.004
Normal	163	90.5	176	97.7	
Gums					
Abnormal	6	3.4	3	1.7	0.508
Normal	174	96.6	177	98.3	
Face					

Abnormal	17	9.5	12	6.7	0.405
Normal	163	90.5	168	93.3	
Nails					
Abnormal	17	9.5	16	8.9	1.000
Normal	163	90.5	164	91.1	
Bone					
Normal	180	100.0	180	100.0	-

Nutritional morbidities related to hair, skin and mouth improved significantly (p value <0.05) but nutritional morbidities related to pallor, ear, eyes, gums, face and nails didn't show significant improvement.

DISCUSSION

Mehrotra Monika (2011)⁸ stated that energy deficiency was exhibited by 11.3% of urban children. **Mayavati S. Mhaske et al (2013)**⁹ found that (65.1%) suffered dental caries, followed by (38.2%) having URTI, (29.9%) having ear wax and (10.0%) having myopia. **A R Dongre (2006)**¹⁰ found that the most common morbidities

were Diarrhoea, fever, upper respiratory tract infections (RTIs) (56.6%), followed by

head lice (42.8%), scabies (36.6%), multiple boils (8.9%), dental carries (8.3%) and history of worm infestation (28.9%).

Amruth M et al (2015)² found that the signs of protein deficiency such as dyspigmented hair, thin and sparse hair and easily pluckable hair were seen in 2.2%, 1.5% and 0.5% of children respectively. Signs of vitamin A deficiency such as conjunctival xerosis, Bitot's spots, follicular hyperkeratosis, cracked skin were seen in 0.5%, 0.5%, 0.7% and 1.9% of children respectively and blurring of vision during night was reported by 0.5% of children. Depigmented lesions on the face were found in 9.2% of the children caused by either protein deficiency or niacin deficiency or due to worm infestations. Bowed legs, was found in one student. (0.2%). **Mehrotra Monika (2011)**⁸

found: **Lips:** 2% of children had mild angular stomatitis. **Gums:** 1.5 % of subjects had bleeding gums. **Skin Appearance:** 0.5 % of children had dry and rough skin.

A R Dongre et al (2006)¹⁰ found that after intervention point prevalence of dental caries reduced from 8.3% to 5% (p>0.05). Similarly the proportion of the children having wax in ears decreased from 10.3% to 0.9%. The morbidities related to poor personal hygiene like lice infestation and scabies also reduced significantly (p<0.05). **Dibakar Haldar et al (2012)**¹¹ observed that 66.0 % children were anaemic. After intervention it was observed that 23.2% and 28.9% from study and control group were clinically anaemic (Overall 26.5%) with no significant difference.

CONCLUSION

The study was conducted to assess the effectiveness of health education programme regarding personal hygiene on reduction of morbidities of primary school children in urban area. Ear wax, dental caries, Anaemia, worm infestations, signs of vitamin deficiencies and under-nutrition were common health problems found among them. After health education sessions were conducted for a year, it was observed that nutritional morbidities related to hair, skin and mouth revealed significant improvement. Most of the morbidities and minor ailments that are seen among school children are preventable. Physical, mental and social well being of children will be improved, by early diagnosis and timely treatment of morbidities and minor ailments. The study suggests that health education plays an important role in comprehensive health of school children including improvement of personal hygiene, adaptation of healthy lifestyle and decrease in morbidities and common minor ailments.

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REFERENCES

- 1 Singh JP, Kariwal P, Gupta SB, Singh AK, Imtiaz D. Nutritional status and morbidity among school going children: A scenario from a rural India. Sch J App Med Sci 2014; vol 2(1D): p 379-83.

- 2 Amruth M, Kumar S, Kulkarni AG, Kamble SV, Ismail IM. A study on nutritional status and morbidity pattern among primary school children in Sullia town, South India. Indian Journal of Basic and Applied Medical Research; September 2015; Vol. 4 (4), p 100-112.
- 3 Sayyad Tajmul, ArunBansode, AkshaySalgar, N S Inamdar children in an urban field practice area of Pune. International Journal of Recent Trends in Science and Technology, 2016; Vol. 19(1): P. 80-84. 3
- 4 Nigudi SR, Reddy S, Kaptey R. Morbidity pattern of school children of Gulberga City. Media Innovatica, 2012; vol 1 (2): p 20-4. 4
- 5 Sunil Pal Singh. Malnutrition among Primary School Children in Hyderabad, Andhra Pradesh, India 2013" International Journal of Technical Research and Applications; 2014; Vol 2 (1), p 36-39.5
- 6 Mehrotra Monika, Arora Santosh, and Nagar Veenu. Nutritional Health Status of Primary School Children: A study in Bareilly District. Indian Educational Review, 2011; Vol. 48 (1), p 18-29. 6
- 7 Singh JP, Kariwal P, Gupta SB, Singh AK, Imtiaz D. Nutritional status and morbidity among school going children: A scenario from a rural India. Sch J App Med Sci 2014; vol 2 (1D): p 379-83. 1
- 8 24. Mehrotra Monika, Arora Santosh, and Nagar Veenu. Nutritional Health Status of Primary School Children: A study in Bareilly District. Indian Educational Review, 2011; Vol. 48, No.1. 8
- 9 Mhaske MS, Khismatrao DS, Kevin F, Pandve HT, Kundap RP. Morbidity pattern and personal hygiene in children among private primary school in urban area: Are the trends changing? J Fam Med Primary Care, 2013; Vol. 2 (3): p. 266-9. 9
- 10 A R Dongre, P R Deshmukh, BS Garg. The Impact of School Health Education Programme on Personal Hygiene and Related Morbilities in Tribal School Children of Wardha District. Indian Journal of Community Medicine, 2006; Vol. 31 (2), p 81-82.
- 11 DibakarHalder et al. a study to assess impact of school-based health and nutrition education in control of nutritional anemia among primary school children in rural West Bengal. Indian J Community Med, 2012; 37(4): p 259–262.