DOI: 10.14260/jemds/2015/1810

ORIGINAL ARTICLE

A STUDY OF THE MORBIDITY PROFILE, PERSONAL HYGIENE AND NUTRITIONAL STATUS OF SCHOOL CHILDREN IN RURAL AREAS OF DISTRICT GHAZIABAD IN UTTAR PRADESH

Ravi Kant Sehgal[1], Rinku Garg[2], Sharmila Anand[3], Paramjit Singh Dhot[4], Parul Singhal[5]

HOW TO CITE THIS ARTICLE:
Ravi Kant Sehgal, Rinku Garg, Sharmila Anand, Paramjit Singh Dhot, Parul Singhal. "A Study of the Morbidity Profile, Personal Hygiene and Nutritional Status of School Children in Rural Areas of District Ghaziabad in Uttar Pradesh". Journal of Evolution of Medical and Dental Sciences 2015; Vol. 4, Issue 72, September 07;
Page: 12574-12580, DOI: 10.14260/jemds/2015/1810

ABSTRACT: BACKGROUND: As part of the rural outreach programme and school health programme of Santosh Hospital, medical examination of school children, studying in Government Primary and Middle Schools of the nine villages where the outreach programme was in progress, was carried out. **AIMS AND OBJECTIVES:** The aim of this study was to find out the morbidity profile, nutritional status and level of personal hygiene of the school children. **MATERIAL AND METHODS:** A team of doctors examined all the students of the concerned schools on a fixed date. Health status was assessed by detailed clinical history and thorough check-up by resident doctors in Ophthalmology, ENT, Pediatrics and Dentistry. Level of personal hygiene was assessed by checking the cleanliness of clothes, hair, nails, face and freedom from any skin infections. Nutritional status was assessed by calculating Body Mass Index (BMI) and the weight status was then classified according to WHO BMI for AGE classification. The study was conducted between 04 August 2014 to 21 November 2014 and a total of 421 students were examined. **RESULTS:** Maximum (41.33%) children were found to have dental caries, followed by anemia in 11.64% students. Fever and upper respiratory tract infections were found in 9.5% children and defective vision in 3.09% students. Complaints of pain abdomen was given by 2.38% children and 2.85% of them gave history of worm infestation. A number of students were found to be suffering from skin infections like pyoderma (4.99%), scabies (3.09%) and fungal infections (2.61%). **CONCLUSIONS:** The government health department should regularly carry out school health check-up as well as health education sessions to educate the children, parents as well as school teachers on various preventive measures including improvement in nutritional status and personal hygiene.

KEYWORDS: Morbidity Profile, Nutritional Status, Personal Hygiene.

INTRODUCTION: School children, who constitute around 25% of the total population in the country, are the nation's greatest asset.[1] The health of these children impacts their cognition and subsequently affects their educational achievements. In India, the school health services were started in 1909 and the medical examination of school children was started for the first time in Baroda city,[2] School health services are being provided on regular basis by Santosh Medical College and Hospital in Ghaziabad District of Uttar Pradesh covering both urban as well as rural areas. The main objective of the programme is early detection and prompt treatment of undetected health problems of the school children. The present study was conducted as a part of Rural Outreach Programme of Santosh Hospital in the Government schools of nine villages in the outskirts of Ghaziabad.[3] The study was conducted with the following objectives:

a. To study the morbidity profile of the school children.
b. To find out the nutritional status and level of personal hygiene of these students.
c. To ensure early detection and prompt treatment of the health problems of the school children.

DOI: 10.14260/jemds/2015/1810

MATERIALS & METHODS: Santosh Hospital has been conducting its Rural Outreach Programme in nine villages in the outskirts of District Ghaziabad since 04 August 2014. A team of doctors visits these villages so that every village is covered on a fixed day every week. During these visits to the villages, School Health Survey was carried out in all the government Primary and Middle Schools in these villages. The team of doctors visited the school on a fixed date and all the students present on that day were examined. Those students who were absent on that day were asked to come to the outreach clinic during the next visit to the village. Each and every child underwent a thorough check up including detailed clinical history. Every student was examined by a resident in Ophthalmology, ENT, Pediatrics and Dentistry. Vision was checked by using Snellen's chart and ears were examined with an auroscope. Dental inspection was done to check presence of dental caries, cavities, calculus and malocclusion. Clinical diagnosis of anemia was made on the basis of pallor of conjunctiva/tongue.

Nutritional status was assessed by calculating Body Mass Index (BMI) and the weight status was then classified according to WHO BMI for Age classification.[4]

A pre-structured health card was used to record information about each student which included height, weight and findings of check-up carried out by Pediatrician, Ophthalmologist, ENT specialist and Dentist besides the clinical history and personal particulars of the child.

Weight: Weight was recorded without foot wear by using weighing machine having 0.5kg accuracy. Accuracy of the weighing scale was verified from time to time against known weights.

Height: For measurement of height, one of the walls was calibrated using a measuring tape. The students were made to stand against the wall barefooted with their feet close to each other and the buttocks and the heels touching the wall. The height was measured to nearest 0.5cm.

The study was carried out between 04 August 2014 and 21 November 2014. All the children who were found to be suffering from some health problem were provided free transportation and consultation at Santosh Hospital besides treatment facilities at concessional rates.

Personal Hygiene Status of the Students were Assessed Considering the following Parameters:

a. Clothing of the students were checked. Those with clean clothing scored "1'' and those with dirty uniform scored "0".
b. Nails were checked. Children with clean and trimmed nails were given "1'' and those with dirty and untrimmed nails were given "0" marks.
c. Hair of students were checked. Those children who had clean and combed hair scored "1'' and those whose hair were dirty and not combed properly were given "0".
d. Face of the students was checked. Those with eye discharge, running nose and wax in ears were given "0" and others "1" mark.
e. General Hygiene was assessed separately. Those with skin infections e.g. Boils, Scabies and Fungal Infections etc. were given "0" and students free from these problems scored ''1" mark. Thus the total score of personal hygiene status ranged from 0 to 5. Hygiene status of students with a score 4 and 5 was assessed as "Good" and of those with a score of 2 to 3 was labelled as "Good". Those students with a score of 0 to 1 were considered to have "poor" personal hygiene.

Inclusion Criteria: All students who were present during the visit of medical team and those who reported thereafter to the outreach clinics for their medical examination were included in the study.

DOI: 10.14260/jemds/2015/1810

Exclusion Criteria: All students who were absent on the day of visit to the school and also did not report for their check up after that were excluded from the study.

Statistical Analysis- Statistical analysis was done by using Pearson's Chi-square (x^2) statistical test and percent ratios wherever applicable. The level of significance was set at 5% ($p<0.05$).

Limitations: The study had a limitation in that the laboratory investigations such as blood for hemoglobin and stool examination which could have resulted in exact diagnosis were not carried out.

Strength: The main strength of the study is the fact that medical examination of each child was carried out by all specialists and all students studying in the school were covered in the study.

RESULTS: A total of 421 school children were examined during the present study. Distribution of the children according to age and sex is given in Table-1. Among these 235(55.82%) were girls and 186(44.18%) were boys. Majority (38.48%) of children were in the age group of 8-10 years followed by 29.22% in 5-7 years and 24.22% in 11-13 years age group.

The distribution of morbidity cases according to sex is given in Table-2. Amongst all children examined, 305(72.45%) were suffering from some disease or other which included 146(78.49%) boys and 159(67.66%) girls. The prevalence of health problems was more amongst boys than girls and this difference was statistically significant ($x^2=6.06$, df=1, $p<0.05$).

The distribution of children according to their nutritional status (BMI) is given in Table-3. Only 10(2.38%) students were found to be overweight. Majority (74.11%) of children had normal weight and 23.51% of them were underweight. Amongst the boys, 40(21.5%) were underweight and 6(3.23%) were overweight and amongst the girls, 59(25.11%) were underweight and 4(1.7%) were overweight but this difference was statistically not significant ($x^2=1.69$, df=2, $p>0.05$).

The gender-wise distribution of students according to the health problems detected is shown in Table-4. Maximum (41.33%) children were found to have Dental Caries followed by Anemia (Pallor) which was detected in 12.11% children and Wax in the Ears which was found in 11.64% students. Skin infections were noticed in a number of children which included Pyoderma in 4.99%, Scabies in 3.09% and Fungal infections in 2.61% of students. Fever and Upper Respiratory Tract Infections were noticed in 9.5% children. Defective vision was observed in 3.09% of children examined.

Complaints of Pain in Abdomen were given by 2.38% children and 2.85% of them gave history of Worm Infestation. Chronic Supportive Otitis Media (CSOM) with ear discharge was detected in 2.85% students.

Gender-wise distribution of students as per their personal hygiene status is given in Table-5. Only 15.44% of all school children had poor personal hygiene which was found to be fair among 33.02% and good among 51.54% of the children. There was no statistically significant difference in the personal hygiene amongst boys and girls ($x^2=0.16$, df=2, $p>0.05$).

Age Group (years)	Boys No. (%)	Girls No. (%)	Total No. (%)
5-7	54(12.83)	69(16.39)	123(29.22)
8-10	76(18.05)	86(20.43)	162(38.48)
11-13	40(9.50)	62(14.72)	102(24.22)
>14	16(3.80)	18(4.28)	34(8.08)
Total	**186(44.18)**	**235(55.82)**	**421(100.00)**

Table 1: Distribution of School Children according to Age and Sex

DOI: 10.14260/jemds/2015/1810

Morbidity	Boys No. (%)	Girls No. (%)	Total No. (%)
Present	146(78.49)	159(67.66)	305(72.45)
Absent	40(21.51)	76(32.34%)	116(27.55%)
Total	**186(100.00)**	**235(100.00)**	**421(100.00)**

Table 2: Distribution of Morbidity cases according to Sex

Chi-Square=6.06; Degree of freedom= 1; $p<0.05$.

Nutritional Status	Boys No. (%)	Girls No. (%)	Total No. (%)
Underweight(BMI <5th percentile)	40(21.50)	59(25.11)	99(23.51)
Normal weight(BMI 5th to 85th Percentile)	140(75.27)	172(73.19)	312(74.11)
Overweight/Obese	6(3.23)	4(1.70)	10(2.38)
Total	**186(100.00)**	**235(100.00)**	**421(100.00)**

Table 3: Distribution of School Children according to their Nutritional Status (BMI)

Chi-square =1.69; Degrees of Freedom=2; p-value > 0.05

Health Problem	Males (n=186) No. (%)	Females (n=235) No. (%)	Total (n= 421) No. (%)
Dental Caries	80(43.01)	94(40.00)	174(41.33)
Wax in Ear	16(8.60)	33(14.04)	49(11.64)
CSOM	6(3.23)	6(2.55)	12(2.85)
H/O Worm Infestation	5(2.69)	7(2.98)	12(2.85)
URTI/Fever	17(9.14)	23(9.79)	40(9.50)
Anaemia	19(10.21)	32(13.62)	51(12.11)
Defective Vision	6(3.23)	7(2.98)	13(3.09)
Scabies	7 (3.76)	6(2.55)	13(3.09)
Pyoderma	9(4.84)	12(5.11)	21(4.99)
Fungal Skin Infection	5(2.69)	6(2.55)	11(2.61)
Pain Abdomen	5(2.69)	5(2.13)	10(2.38)

Table 4: Distribution of School Children according to gender and Health Problems

Personal Hygiene Status	Boys No. (%)	Girls No. (%)	Total No. (%)
Good (4-5)	95(51.07)	122(51.92)	217(51.54)
Fair (2-3)	61(32.80)	78(33.19)	139(33.02)
Poor (0-1)	30(16.13)	35(14.89)	65(15.44)
Total	**186(100.00)**	**235(100.00)**	**421(100.00)**

Table 5: Sex-wise distribution of students as per their Personal Hygiene

Chi-Square=0.16; Degree of freedom=2; $p>0.05$.

DISCUSSION: In the present study, 72.45% of children were suffering from some health problems. These figures were higher than those reported by Talukdar et al,[5],[6](57.4%) but lower than those reported by Amit Kaushik et al,(85.3%). The present study found that many children were suffering from more than one health problem.

DOI: 10.14260/jemds/2015/1810

The present study found 23.51% children who were underweight. Somewhat higher incidence of underweight children were reported in other studies carried out by Harish Chandra Tiwari et al,[7],[8] (28.6%), Palash Das et al.,[9] (31.1%), Kaushik Talukdar et al.,[6] (31.25%) and Aditya S Berad et al.,[10](31.66%).

Dental Caries was the commonest health problem detected and was found in 41.33% of children. These findings were similar to those found by Amit Kaushik et al.,[7](46%). The incidence was lower than that reported by M S Mhaske et al.,[11](65.1%) but higher than that reported by V Rani et al.,[12](36.25%), S Ananthakrishnan et al.,[13] (27.9%), P Panda et al.,[14](23.1%) and Shakya et al., [15] (19.8%).

In our study, Anaemia was found among 12.11% students. This was similar to study by M Shinde et al.,[5] who detected Anaemia among 15.7% students of rural area in Madhya Pradesh. However, the prevalence of anaemia in our study was lesser than that reported by Harish Chandra Tiwari et al.,[8](33.9%), Semwal et al (28.4%),[16] Panda et al.,[14](26%), Chandra et al.,[17](25.5%) and Hassan et al.,[18](24.8%). In our study, more girls were found to be anaemic than boys and similar findings were reported in all other studies as well.

Ear discharge was detected among 2.85% children in our study which was similar to that reported by S Ananthakrishnan et al.,[13](3.1%) but much less than that reported by Amit Kaushik et al.,[7](13.6%) and Harsh Chandra Tiwari et al.,[8](21.5%).

Prevalence of Defective vision was found to be 3.09% in the present study. Similar findings were reported by M Shinde et al.,[5] (2.3%) and Ibeinmo Opubiri et al.,[19] (2.2%). Other studies by Harish Chandra Tiwari et al.,[8](12.4%), KV Pani Madhavi et al.,[20](11.38%) and Kaushik Talukdar et al.,[6](10%) reported higher prevalence of defective vision.

History of worm infestation was observed among 2.85% children in the present study which was similar to that reported by Aditya S Berad et al.,[10](2.8%) but it was less than that reported by L K Khanal et al.,[21][22] (17.6%) and Kaushik Talukdar et al.,[6](7%)

Cases of Pyoderma were observed among 4.99% school children in our study. These findings were similar to those observed by Amit Kaushik et al.,[7](7.4%) and Aditya S Berad et al.,[10] (6.7%). Cases of Scabies were found among 3.09% of students which was similar to the prevalence of the disease detected by Aditya S Berard et al.,[10](2.8%) and Sambo MN et al.,[22] (2.9%).

In our study, Fungal skin infection was found among 2.61% of students which was much less than that found by Amit Kaushik et al.,[7](12.9%).

CONCLUSION: The leading causes of morbidities amongst the school students were Dental Caries, Anemia, Wax in the Ears, Defective Vision, CSOM, Pain in Abdomen, Worm Infestation, Pyoderma, Scabies, Fungal Skin Infection and Upper Respiratory Tract Infection. To improve the health status of the school children, education of the community about these conditions and their prevention and treatment is important. Education of school teachers, who in turn can guide the children about importance of personal hygiene will go a long way in improving the quality of life of these children. The government health department should regularly carry out school health check-up as well as health education sessions to educate the children, parents as well as school teachers on the various preventive measures including improvement in nutritional status and personal hygiene. In addition, school teachers can also be trained to screen the children for dental caries and for vision testing.

ACKNOWLEDGMENT: We are thankful to the subjects as well as all the doctors who participated in the study.

REFERENCES:

1. Government of India, Ministry of Health and Family Welfare, Department of Family Welfare: Family Welfare Programme of India, Year Book 1995-96, Table A4: 24.
2. Park K.Textbook of Preventive and Social Medicine, M/S Banarsidas Bhanot, 1167 Prem Nagar, Jabalpur. 20th Edition, 2009, p 498.
3. Sehgal RK, Garg R, Anand S, Dhot PS. The analysis of Outreach Programme of a Tertiary Care Hospital in Ghaziabad and the Morbidity Profile of out-patients attending the programme. Journal of Evolution of Medical and Dental Sciences 2015; 4(55): 9561-9567.
4. WHO|BMI for age (5-19 years) assessed by URL: http:www.whoint/growthref/who 2007_bmi_for_age/en/index.htm.
5. Shinde M, Trivedi A, Joshi A. Morbidity pattern among school children of rural area of Obaidullaganj block of Raisen District of Madhya Pradesh. Int J Adv Med 2015; 2: 144-6.
6. Kaushik Talukdar, Rupali Baruah. "Health Status of Primary School Children: A Community Based Cross Sectional Study in Rural Areas of Kamrup District, Assam". Journal of Evolution of Medical and Dental Sciences 2015; Vol. 4, Issue 13, February 12; Page: 2093-2100, DOI: 10.14260/jemds/2015/301
7. Kaushik A, Bansal A, Jain PK, Kumar S, Yadav RK, Singh SP. Morbidity pattern and their socio-demographic co-relates among rural primary school children in eastern Uttar Pradesh: A cross-sectional study. Ind J Comm Health. 2014; 26(1): 30-36
8. Harish Chandra Tiwari, Anju Gahlot, Richa Mishra. "Health profile of primary school children: study from a rural health block of Kanpur". Journal of Evolution of Medical and Dental Sciences 2013; Vol2, Issue 36, September 9; Page: 6941-6945.
9. Palash Das, Mausumi Basu, Gautam Dhar, Sarmila Mallik, Ranabir Pal. Nutritional status and morbidity pattern of government primary school children in north Kolkata of West Bengal, India. South East Asia Journal of Public Health 2012; 2(1): 13-17.
10. Aditya S Berad, B Chandra Sekhar Reddy, BP Ravi Kumar, Venu Bolisetti. "Study of personal hygiene, nutritional and morbidity profile of school children in rural area of Khammam district, Andhra Pradesh". Journal of Evolution of Medical and Dental Sciences 2013; Vol2, Issue 34, August 26; Page: 6402-6405.
11. Maske MS, Khismatrao DS, Kevin F, Pandve HT, Kundapn R. Morbidity pattern and personal hygiene in children among private primary school in urban area. Area the trends changing ? J Family Med Primcare 2013 Jul-Sep; 2(3): p 266-69.
12. Rani V, Srivastava DK, Jain PK, Kumar S, Singh NP, Dixit AM. Morbidity pattern among primary school children in a rural area of Uttar Pradesh. Natl J Community Med 2014: 5(4), 392-6.
13. Ananthakrishnan S,Pani S and Nalini P.A comprehensive study of morbidity in school age children. Ind. Paediatr 2001; 38 : 1009-17
14. Panda P, Benjamin A, Zachariah P. Health status of school children in Ludhiana city. Ind J Comm Med 2000; 25 (4): 150-55
15. Shakya SR, Bhandary S, and Pokharel PK: Nutritional status and morbidity pattern among government primary school children in eastern Nepal. Kathmandu University Medical Journal, 2004, 2(4): 307-314.
16. Semwal J, Srivastava A.K, Gupta S, Kishore S, and Chandra R: Nutritional status of school children in rural areas of Dehradun district. Indian J. Prev. Soc. Med, 37, (1&2), 2006: 76-81. 11.

DOI: 10.14260/jemds/2015/1810

17. Chandra Pravin KR, Uma M P, Sadashivappa T, and Prabhakara GN: Nutrition Assessment Survey of School Children of Dharwad and Haliyal Taluks, Karnataka State India. Kathmandu University Journal of Sci., Eng. and Tech. II (1), Feb.2006: 1-6.
18. Hassan M. A, and Khalique N: Health Status and Anthropometric Profile of School Going Children (5-15 years) in Aligarh City. Souvenir; 29th Annual Conference of IAPSM and 9th Annual Conference of Maharashtra Chapter of IAPSM; 2002: 125 10.
19. Ibeinmo Opubiri, Chinyere Pedro-Egbe. Screening for refractive error among primary school children in Bayelsa state, Nigeria. The Pan African Medical Journal. 2013; 14: 74. 16.
20. KV Phani Madhavi, B Anil Kumar. "A study on morbidity pattern of school children aged 5-15yrs in an urban area of Guntur". Journal of Evolution of Medical and Dental Sciences 2013; Vol2, Issue 34, August 26; Page: 6566-6572
21. . LK Khanal, DR Choudhury, SK Rai, J Sapkota, A Barakoti, R Amatya and S Hada. Prevalence of intestinal worm infestations among school children in Kathmandu, Nepal. Nepal Med Coll J 2011; 13(4): 272-274.
22. Sambo MN, Idris SH, Umar AA, Olorukooba AA. Prevalence of scabies among school-aged children in Katanga rural community in Kaduna state, Northwestern Nigeria. Ann Nigerian Med 2012; 6: 26-9. 17.

AUTHORS:

1. Ravi Kant Sehgal
2. Rinku Garg
3. Sharmila Anand
4. Paramjit Singh Dhot
5. Parul Singhal

PARTICULARS OF CONTRIBUTORS:

1. Associate Professor, Department of Community Medicine, Santosh Medical College and Hospital, Ghaziabad.
2. Associate Professor, Department of Physiology, Santosh Medical College and Hospital, Ghaziabad.
3. Assistant Professor, Department of Pharmacology, Santosh Medical College and Hospital, Ghaziabad.
4. Professor, Department of Pathology, Santosh Medical College and Hospital, Ghaziabad.
5. Associate Professor, Department of Pathology, Santosh Medical College and Hospital, Ghaziabad.

NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:

Brig. Dr. Ravi Kant Sehgal,
1420, Sector 29,
Noida-201301,
Uttar Pradesh.
E-mail: docrksehgal@yahoo.com

FINANCIAL OR OTHER COMPETING INTERESTS: None

Date of Submission: 21/08/2015.
Date of Peer Review: 22/08/2015.
Date of Acceptance: 02/09/2015.
Date of Publishing: 05/09/2015.