

Original Research Article

A study on nutritional status among primary school children and related co-morbidities in peri urban rural setting of India

Prashant Bhoir¹, Swati M. Patki², Manoj B. Patki^{2*}, Jidnyasa Bhoir³

¹District Hospital Thane, Government of Maharashtra, India

²Department of Community Medicine, Zoram Medical College, Falkawn, District-Aizawl, Mizoram, India

³Gopiratan Hospital and ICU, Kalher, Bhiwandi, District Thane, Maharashtra, India

Received: 18 April 2021

Revised: 04 May 2021

Accepted: 07 May 2021

*Correspondence:

Dr. Manoj B. Patki,

E-mail: drmbpatki@yahoo.co.in

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Objective of the research was to study the nutritional status of children and related co-morbidities among primary school children in peri-urban rural setting of Thane district of Maharashtra.

Methods: A cross sectional study with primary data collection from government primary school in peri-urban rural setting was conducted with total study duration of one year. Children between 6 and 12 years were included in study from primary school. Schools selected using lottery system and all children present on day on examination were included. Sample size estimation by formula $n=4pq/l2$ which was 336, but study enrolled 402 children. Anthropometric data (BMI) was analyzed using Centers for Disease Control and Prevention (CDC) growth charts. Data was analyzed using Microsoft Excel, statistical package for the social sciences (SPSS)-17, differential and inferential statistics calculated and represented using tables and charts. Chi square test was used for statistical significance and finding association with various factors.

Results: The prevalence of overweight ($\geq 85^{\text{th}}$ percentile) among children was 20.83% (male), 20.95% (female) and prevalence of obesity ($> 95^{\text{th}}$ percentile) was 14.06% (male), 17.62% (female). Prevalence of underweight was 4.17% (male), 4.29% (female). Female children were at greater risk of being overweight and obese.

Conclusions: Childhood obesity is a problem in peri-urban rural Thane and requires timely intervention for its control.

Keywords: Childhood obesity, Overweight, Underweight, Thane, School children

INTRODUCTION

Children represent the future and ensuring their healthy growth and development ought to be a prime concern of all societies. Nutrition of the child will go long way in determining the health during adulthood.

Children are vulnerable to malnutrition and infectious diseases, many of which can be effectively prevented or treated. School-age children are affected by serious, yet easily treatable and preventable, illnesses, which inhibit their ability to learn.

Obesity and under-nutrition are the two ends of the spectrum of malnutrition. Nutritional deficiencies are common in children of developing countries like India.

Worldwide Asia and Africa bear the greatest share of all forms of malnutrition.¹

Government of India through Ministry of women and child development and Ministry of education is running several programs to prevent Malnutrition in children. In spite of these efforts, the nutritional status of children is not satisfactory.

Presently through School health check-up under Rastriya Bal Swasth Karayakram (RSBK) screening children of age group, 06-18 years is done for early detection of congenital diseases and prevention of various morbidities.

Need for study

In a study conducted in south India, Telangana, 29.3% school children were underweight.²

Another study done in Karnataka (Mandya) district, overall prevalence of underweight was 30.3% and stunting was 27.9% whereas a study in Vijayapura shows 26% of boys were underweight.^{3,4}

In a study conducted in Ahmedabad, Gujarat, 29.44% of school children were underweight.³

A study done in 2015 in rural Maharashtra showed 36.2% under-weight children among school children.⁴ Whereas another study done in tribal area of Maharashtra, showed 30% malnutrition among school children.⁵

Under-nutrition impairs the child's immune system and weakens the defences against other diseases. Whereas over-nutrition contributes to childhood obesity and leads to the early onset of hypertension, diabetes mellitus, coronary heart diseases, orthopaedic disorder and other respiratory diseases.

Under-five children health and nutrition is important for determining the development of country. So, lot of studies and efforts to improve have been made. But school children's health and nutrition is also a concern for their scholastic development and adulthood nutritional status and health.

Thus, the present study was conducted to understand the nutritional status among school children of peri urban rural setting of Thane district, Maharashtra, India.

Aim and objectives

Aim

Aim was to assess nutritional status of government primary school children aged 6-12 years in peri-urban rural setting of Thane district, Maharashtra.

Objectives

Objectives were: to find prevalence of overweight and obese children among the government primary school children aged 6-12 years in peri-urban rural Thane, Maharashtra; to find prevalence of underweight children among the government primary school children aged 6-12 years in peri-urban rural Thane, Maharashtra; and to study the morbidities viz. anaemia, dental caries, respiratory infections, and gastrointestinal infections/infestations,

among the government primary school children aged 6-12 years in peri-urban rural Thane, Maharashtra.

METHODS

Study design

A cross sectional descriptive epidemiological study.

Setting of the study

Location

The study was conducted in selected government primary schools of peri-urban rural Thane district, Maharashtra.

Study population and sample size

Study was conducted in Bhiwandi taluka of Thane district. Two schools of Bhiwandi taluka were selected by simple lottery method.

Sample size

The prevalence of malnutrition estimated in previous studies was around 30%.

The sample size was estimated using the formula

$$n = 4pq/L^2$$

Where "n" is the sample size, "p" is the prevalence, "q" is (1-p) and "L" is precision.

Thus, the calculated sample size was 336.

If 10% is added as non-respondent then the sample size was 370.

Inclusion criteria

Age group 06-12 years male and females. All the students present on the day of examination.

Exclusion criteria

All students less than 6 years of age and above 12 years of age and students absent on the day of examination.

Study duration

The duration of the study was one calendar year.

Method of data collection

Prior permission from school authorities was sought for data collection and examination of children, along with informed consent of the parents. Children were assessed for nutritional status by clinical examination as well as

anthropometric assessment. A semi-structured questionnaire was used to collect individual child's data and history related to recent infections/infestations. Thorough clinical examination of each student was done to detect signs of malnutrition and morbidities.

Nutritional status assessment

Height and weight is measured by anthropometry.

Height was measured in centimetres using a standard measuring tape.

Weight was measured using a standard digital weighing scale and is measured in kilograms.

Weight and height recorded was used to calculate body mass index (BMI).

The chart in Figure 2 was used as standards for comparing the BMI categorizing it into 4 category: underweight, healthy/normal weight, overweight, and obese/obesity.

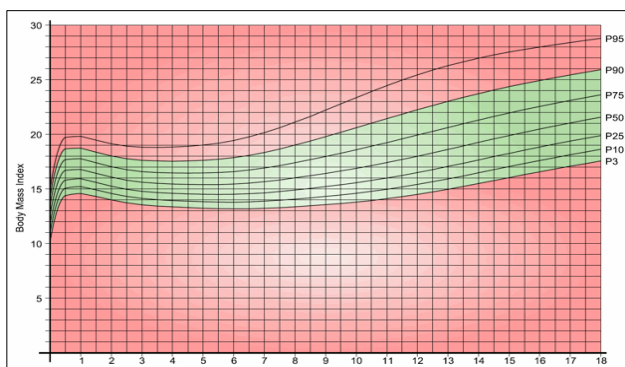


Figure 1: BMI recording chart.

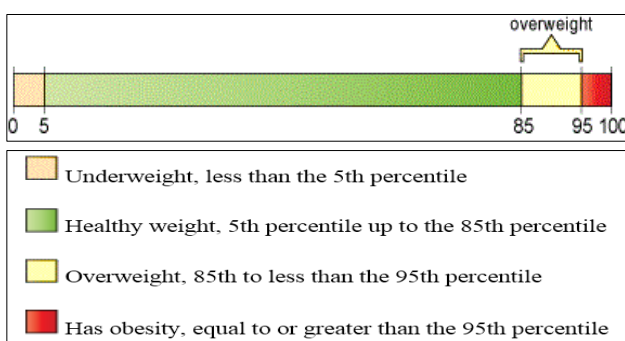


Figure 2: Standards for comparing the BMI categorizing.

Clinical examination

It reveals the anatomical changes due to malnutrition that can be diagnosed by performing a head-to-toe examination.

Changes in hair, skin, bones (skeletal system), eyes, oral cavity clinically reveal signs of malnutrition.

Anaemia was diagnosed by the presence of pallor observed over the tongue, nail beds or conjunctiva.

Dental caries diagnosed by thorough oral examination revealing mottling and caries in teeth.

Respiratory infections was diagnosed on history of cold, cough, fever in last 15 days gastrointestinal infections was detected by history of loose motions more than 3 times a day in last one month.

Worm infestation was diagnosed on history of passing worms in stools.

Data analysis procedures

Data collected was entered in Microsoft excel and analysed using statistical package for the social sciences (SPSS) version 17. Differential and inferential statistics was calculated and represented in form of tables and chart.

Chi square test was used for testing statistical significance to find association between various factors.

Ethical clearance

IEC YCMOU approval was obtained. Permission was taken from headmasters of the selected government primary schools of rural Thane for data collection. Informed consent was sought from parents of the children enrolled in the study prior to the study.

RESULTS

A total of 402 between ages 6-12 years studying in govt. primary school participated in the study.

Table 1: Age and gender wise distribution of study participants.

Age (years)	Male (%)	Female (%)	Total (%)
6	32 (58)	23 (42)	55 (100)
7	37 (52.2)	30 (47.8)	67 (100)
8	42 (45.7)	50 (54.3)	92 (100)
9	32 (44.4)	40 (55.6)	72 (100)
10	22 (39.3)	34 (60.7)	56 (100)
11	25 (48.1)	27 (51.9)	52 (100)
12	2 (25)	6 (75)	8 (100)
Total	192 (47.7)	210 (52.3)	402 (100)

Of the 402 students, majority belonged to age 8 years (92), followed by 9 years (72), then 7 years (67), 10 years (56), 6 years (55), 11 years (52) and only 8 students were 12 years old.

Table 2 shows age and gender wise distribution of BMI among the 402 study participants. Of the total 402 study participants, 17 (4.23%) were underweight, 237 (58.95%) were normal weight, whereas 84 (20.9%) were overweight and 64 (15.92%) were obese. Children belonging to age group 06-10 years were found to be underweight.

Table 3 shows that of the total 192 males study participants, 8 (4.17%) were underweight, 117 (60.94%) were normal weight, 40 (20.83%) were overweight and 27 (14.06%) were obese. Among 210 female study participants, 9 (4.29%) were under weight, 120 (57.14%) were normal weight, 44 (20.95%) were overweight and 37 (17.62%) were obese.

Table 4 shows that of the 192 male study participants, only 8 were under-weight, and among 210 female study participants 9 were underweight. It was found that underweight among female study participants was statistically significant ($p < 0.05$).

Table 5 among 192 male study participants, 40 were overweight, and among 210 female study participants, 44

were overweight. It was found that overweight was statistically significant among female study participants ($p < 0.05$).

Among the 192 male study participants 27 were obese, and of the 210 female study participants 37 were obese, but there was no statistical significance found associated with either gender ($p > 0.05$) (Table 6).

Among the total 402 study participants, most common morbidity was dental caries seen among 276 (68.7%) children, followed by 230 (57.5%) had history of cold, cough and fever in last 15 days, the commonest morbidity seen among children. Worm infestation was seen among 70 (17.2%) study participants, and around 114 (28.35%) study participants showed signs of pallor on examination (Table 7).

Also 118 (28.9%) study participants had skin pigmentation. Dental caries and skin pigmentation was more common among overweight and obese study participants. No respiratory, cardio-vascular and abdominal morbidity observed among study participants.

Table 2: Distribution of study participants according to age, gender and BMI.

Age (years)	Under-weight (%)		Normal weight (%)		Over-weight (%)		Obese (%)		Total (%)
	M	F	M	F	M	F	M	F	
6	4 (7.3)	4 (7.3)	24 (43.6)	13 (23.6)	4 (7.3)	4 (7.3)	0	2 (3.6)	55 (13.7)
7	1 (1.5)	2 (3)	26 (38.8)	23 (34.3)	6 (8.95)	3 (4.5)	4 (5.97)	2 (2.98)	67 (16.7)
8	2 (2.2)	2 (2.2)	29 (31.5)	31 (33.7)	8 (8.7)	9 (9.8)	3 (3.3)	8 (8.7)	92 (22.9)
9	0	0	17 (23.6)	23 (31.9)	8 (11.1)	9 (12.5)	7 (9.7)	8 (11.1)	72 (17.9)
10	1 (1.8)	1 (1.8)	10 (17.5)	13 (23.2)	8 (14.4)	12 (21.4)	3 (5.4)	8 (14.4)	56 (13.9)
11	0	0	11 (21.2)	14 (26.9)	4 (7.6)	4 (7.6)	10 (19.2)	9 (17.3)	52 (12.9)
12	0	0	0	3 (37.5)	2 (25)	3 (37.5)	0	0	8 (1.99)
Total	8 (2)	9 (2.24)	117 (29.1)	120 (29.9)	40 (9.9)	44 (10.9)	27 (6.7)	37 (9.2)	402

Table 3: Gender wise distribution of the nutritional status (BMI) among the study participant.

Gender	BMI				Total (%)
	Underweight (%)	Normal (%)	Overweight (%)	Obese (%)	
Male	8 (4.17)	117 (60.94)	40 (20.83)	27 (14.06)	192 (100)
Female	9 (4.29)	120 (57.14)	44 (20.95)	37 (17.62)	210 (100)

Table 4: Association between under-weight and gender.

Nutritional status	Under-weight (%)	Not under-weight (%)	Total (%)
Male	8 (4.17)	184 (95.83)	192 (100)
Female	9 (4.3)	201 (95.7)	210 (100)
Total	17 (4.23)	385 (95.77)	402 (100)

df = 1; Chi square value = 0.003

Table 5: Association between overweight and gender.

Nutritional status	Overweight (%)	Not overweight (%)	Total (%)
Male	40 (20.83)	152 (79.17)	192 (100)
Female	44 (20.95)	166 (79.05)	210 (100)
Total	84 (20.9)	318 (79.1)	402 (100)

df = 1; Chi square value = 0.00085

Table 6: Association between obesity and gender.

Nutritional status	Obese (%)	Not obese (%)	Total (%)
Male	27 (14.06)	165 (85.94)	192 (100)
Female	37 (17.62)	173 (82.38)	210 (100)
Total	64 (15.92)	338 (84.08)	402 (100)

df =1; Chi square value=0.95

Table 7: Distribution of study participants according to symptoms/morbidities.

Age group (years)	H/o cough, cold and fever	H/o diarrhoea	H/o worm infestation	H/o gum bleeding-toothache	Dental caries/mottling	Conjunctival - pallor	Tongue pallor	Skin pigmentation	H/o major illness in past	Bone deformity
6-7	97	2	25	8	127	32	10	49	1	2
7-8	33	3	16	7	67	11	7	36	-	-
8-9	32	4	10	4	38	16	4	17	-	1
9-10	42	1	11	6	24	11	6	10	1	1
10-11	26	2	8	3	11	12	5	4	-	1
11-12	2	1	1	2	2	1	2	2	-	-
Total (%)	230 (57.5)	13 (3.2)	70 (17.2)	30 (7.5)	276 (68.7)	81 (20.15)	33 (8.21)	118 (28.9)	2 (0.5)	5 (1.24)

DISCUSSION

The present study was conducted to assess the nutritional status among the school going children aged 6-12 years.

A total of 402 children participated in the study of which, 192 (47.8%) were males and 210 (52.2%) were females.

Of the total 402 study participants, 17 (4.23%) were underweight, 237 (58.95%) were normal weight, whereas 84 (20.9%) were overweight and 64 (15.92%) were obese.

Where as in a study conducted by Patel et al (5) in 2015 at Gujarat found that of the 28,256 children screened, 8319 (29.44%) children were underweight while only 221 (0.78%) children were either overweight or obese.⁵ Another study conducted by Vaidya et al, in 2015, in Maharashtra observed the prevalence of underweight, stunting and thinness were 36.2%, 23% and 32.1% respectively.⁶

In a study conducted by Ganganahalli et al in 2016, showed that 19.9% of private school children were undernourished, 8% were grade I short/stunted whereas 10.2% were overweight and 5.7% obese.⁷

Another study conducted by Selvaraj et al in Tamil Nadu found that the prevalence of obesity was 6%; overweight 10.9%, thinness 13%; severe thinness 5% and stunting 19.8%.⁸

Another study conducted by Dey and Nath, nutritional status of school going children (6-15 years) in a semi-urban area of Cachar district, Assam, found that, of the 216 school children screened, 53, 31 and 111 were

stunted/severely stunted, underweight/severely underweight, and thin/very thin, respectively.⁹

In a study titled, study of childhood obesity among school children aged 6 to 12 years in union territory of Puducherry conducted by Mahajan et al at Puducherry in 2011 found that the prevalence of overweight (≥ 85 percentile) among children was 4.41% and prevalence of obesity (>95 percentile) was 2.12%.¹⁰ Mahe region had the highest prevalence of overweight (8.66%) and obesity (4.69%). Female children from private schools and urban areas were at greater risk of being overweight and obese.

Whereas in a study done by Shaikh et al in Telangana found that 29.3 per cent rural children were underweight as compared to 22.2 per cent urban children.² Similarly, 21.5 per cent children were stunted in rural and 16 per cent from urban areas.

In the present study, children belonging to age group 06-10 years were found to be underweight, similar to above Shaikh et al study.²

In the present study, overweight was statistically significant among female children. Similarly in a study conducted by Mahajan et al in Puducherry, female children from private schools and urban areas were at greater risk of being overweight and obese.¹⁰

In the present study, among the total 402 study participants, most common morbidity was dental caries seen among 276 (68.7%) children, followed by 230 (57.5%) had history of respiratory infection. Worm infestation was seen among 70 (17.2%) study participants, and around 114 (28.35%) study participants showed signs

of pallor on examination and 118 (28.9%) study participants had skin pigmentation.

Similar results were found in a study conducted by Gokhale et al in a tribal area of Maharashtra, and by Asghar et al in Lucknow, where dental caries was the commonest morbidity found among school children.^{11,12}

Similarly in a study conducted by Mittal et al in peri urban rural Gurgaon (2014), prevalence of dental caries was 37.5%, dental fluorosis was 76.04% among 12 year old children.¹³

Another study by Ramesh et al in a rural area of Bengaluru, in 2017 found similar results where most common comorbidities were dental caries/oral conditions (28.2%), URTI (13.4%), skin diseases (6.3%) and anaemia (5.3%).¹⁴

And also in a study by Rani et al (15), among school children of Uttar Pradesh, main problems observed were dental problems (35.78%), wax in the ear (33.91%), nutritional anaemia (26.90%) and poor personal hygiene (34.5%).¹⁵

Whereas in study conducted by Kausar et al the prevalence of nutritional deficiency diseases was the most common 52.27% followed by respiratory infections 15.34% and then infective and parasitic diseases 12.78%.¹⁶ Ear discharge was present in 7% of children. The prevalence of dental caries was 6.66% in boys and 5.34% in girls. Lymphadenopathy was present in 4.2% of children.

Another study conducted by Mehrotra et al in Bareilly district, 65% of the children were observed to suffer mild Angular Stomatitis and close to 17.5 % had marked angular stomatitis.¹⁷ 4.5 per cent of them had bleeding gums. 44% of the rural children had chalky teeth confirming the deficiency of calcium, 26.5% had discoloured teeth which could be a result of poor dental care. 51% had dull hair or hair without lustre. 13.5% of the respondents had discoloured and dry hair and 21.5 per cent had sparse and brittle hair.

Limitations

Interpretation of the findings of this study should be done with careful evaluation of the methodology. First, the study sample was simple lottery, but systematic randomisation would have been better choice. Also, the number of schools should have been more for more representativeness. Socio-economic history or background along with parent education would have given scope for further analysis of the nutritional problems.

CONCLUSION

In this study of the total 402 school children belonging to 06-12 years, 192 were males and 210 were females. Of the total 402 study participants, 17 (4.23%) were underweight, 237 (58.95%) were normal weight, whereas 84 (20.9%)

were overweight and 64 (15.92%) were obese. Underweight was seen among children belonging to age group 06-10 years. Overweight was statistically significant among female children. The most common morbidity was dental caries seen among 276 (68.7%) children, followed by 230 (57.5%) had history of respiratory infection (cold, cough and fever in last 15 days). Worm infestation was seen among 70 (17.2%) children, and around 114 (28.35%) children showed signs of pallor on examination (anaemia). 118 (28.9%) children had skin pigmentation. Nutritional status of children depends on the food intake and exercise of children. Children are at risk of non-communicable diseases during adulthood due to childhood obesity. Promoting healthy eating habits and optimum physical activity for good amount of time is necessary. Poor intake of micronutrients could be reason for pallor indicating anaemia among these children. The primary school children spend considerable amount of time in the school, and overcrowding results in spread of respiratory infection. Unhygienic practices could be the reason of high prevalence of morbidities like worm infestation and dental caries. Many studies have shown that obesity among school children is increasing. Dual burden of undernutrition and overweight and obesity is observed in our country. This study is adding body of evidence for the fact that overweight and obesity is on rise among the adolescent school children especially in peri-urban- rural setting, which necessitates urgent intervention.

Recommendations

Though, the mid-day meal programme in the schools caters the nutritional need of children, micronutrients deficiency needs to be taken care. Awareness among children and their parents regarding adequate nutrition including micronutrients, food hygiene, personal hygiene and proper exercise for children will help to curb the nutritional deficiency, morbidities and malnutrition disorders.

The present, school health programme which includes screening for diseases, should also have more emphasis on health education and nutritional education.

Follow up studies or longitudinal studies with educational intervention are needed among children to assess impact of primordial prevention by healthy lifestyles inculcation for non-communicable diseases prevention in their adulthood.

ACKNOWLEDGEMENTS

Authors would like to thank Rakesh Patil, Associate Professor of Community Medicine and Dr. Vasantrao Pawar Medical College, Hospital and Research Centre, Nashik for guiding the study. They would also like to thank the Department of Health and Family Welfare, Government of Maharashtra for allowing to collect data, primary school headmasters, teachers, parents and children of selected primary school for consenting and cooperating to collect data.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. UNICEF/WHO/The World Bank Group Joint child malnutrition estimates - levels and trends in child malnutrition-Key findings of the 2018 edition. Available at: http://www.who.int/nutrition/publications/jointchildmalnutrition_2018_estimates/en/. Accessed on 01 September 2018.
2. Shaikh MK, Kamble N, Bhawnani D, Bele S, Rao SR. Assessment of nutritional status among school children of Karimnagar, Telangana, India. *Int J Res Med Sci*. 2016;4(10):4611-61.
3. Shivaprakash NC, Joseph RB. Nutritional Status of Rural School-Going Children (6-12 Years) of Mandya District, Karnataka. *Int J Sci Stud*. 2014;2(2):39-43.
4. Yankanchi SG, Ganganahalli P, Udgiri R, Patil SS. Assessment of nutritional status of primary school children in urban field practice area, Vijayapura. *Int J Comm Med Public Health*. 2018;5(2):779.
5. Patel N, Gunjana G, Patel S, Thanvi R, Sathvara P, Joshi R. Nutrition and health status of school children in urban area of Ahmedabad, India: Comparison with Indian Council of Medical Research and body mass index standards. *J Nat Sci Biol Med*. 2015;6(2):372-7.
6. Vaidya V, Gaware SD, Murarkar SK, Mishra A, Banerjee A. Nutritional Status of Rural Indian School Children of Maharashtra. *IJHSR*. 2015;5(5):17-21.
7. Ganganahalli P, Tondare MB, Dur-gawale PM. Nutritional Assessment of Private Primary School Children in Western Maharashtra: A Cross-sectional Study. *Ntl J Community Med*. 2016;7(2):97-100.
8. Selvaraj V, Sangareddi S, Velmurugan L, Muniyappan U, Anitha FS. Nutritional status of adolescent school children in a semi-urban area based on anthropometry. *Int J Contemp Pediatr*. 2016;3:468-72.
9. Dey AK, Nath AB. Nutritional status of school going children (6-15 years) in a semi-urban area of Cachar district, Assam. *J Evolution Med Dent Sci*. 2017;6(54):4057-62.
10. Mahajan PB, Purty AJ, Singh Z, Cherian J, Natesan M, Arepally S, Senthilvel V. Study of Childhood Obesity Among School Children Aged 6 to 12 Years in Union Territory of Puducherry. *Indian J Comm Med*. 2011;36(1):45-50.
11. Gokhale CN, Borgaonkar CA, Shanbhag SS, Solanki MJ, Rasal MM. Morbidity pattern among primary school children in a tribal area of Maharashtra. *Int J Comm Med Public Health*. 2018;5(1):165-9.
12. Asghar SA, Gupta P, Srivastava MR, Srivastava JP, Zaidi ZH. Health status of primary school children: study from a rural health block of Lucknow. *Int J Comm Med Public Health*. 2017;4:2498-501.
13. Mittal M, Chaudhary P, Chopra R, Khattar V. Oral health status of 5 years and 12 years old school going children in rural Gurgaon, India: An epidemiological study. *J Indian Soc Pedod Prev Dent*. 2014;32:3-8.
14. Ramesh Masthi NR, Madhusudan M, Gangaboraiah. Nutritional status of school age children (6-15 years) using the new WHO growth reference in a rural area of Bengaluru, South India. *Nat J Res Comm Med*. 2017;6(2):144-50.
15. 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 Comm Med*. 2014;5(4).
16. Kausar H, Sambutwad RC, Shafee M. Prevalence of morbidity and morbidity pattern among primary school children in rural area of Jalna, Maharashtra, India. *Int J Comm Med Public Health*. 2016;3:1623-7.
17. Mehrotra M, Arora S, Nagar V. Nutritional Health status of primary school children- A study in Bareilly district. *Indian Educ Rev*. 2011;48(1).

Cite this article as: Bhoir P, Patki SM, Patki MB, Bhoir J. A study on nutritional status among primary school children and related co-morbidities in peri urban rural setting of India. *Int J Community Med Public Health* 2021;8:2785-91.