



Publisher homepage: www.universepg.com, ISSN: 2663-7529 (Online) & 2663-7510 (Print)

<https://doi.org/10.34104/ejmhs.01018>

European Journal of Medical and Health Sciences

Journal homepage: www.universepg.com/journal/ejmhs



Nutritional Status of the Adolescent Boys of a Recognized Charitable Orphanage in Dhaka City, Bangladesh

Ropak Chandra Roy^{1*}, Md. Sahabuddin², Sumon Chandra Debnath³, Md. Jakir Hosaain⁴, Md. Azmol Hossain⁵, Sentu Chandra Barman⁶, Anamul Hasan⁷, Mahbub Jubayer⁸, Jamal Uddin⁸, Md. Habibur Rahman⁸, Md. Sherajul Haque¹, and Banosree Saha⁸

¹Dept. of Physiotherapy, Gono Bishwabidyalay, Dhaka, Bangladesh; ²Dept. of Biotechnology and Genetic Engineering, BSMRSTU, Gopalganj, Bangladesh; ³Civil Surgeon Office, Chattogram, Bangladesh; ⁴Dept. of Biochemistry and Microbiology, North South University, Dhaka, Bangladesh; ⁵Eastern care hospital Ltd, Dhaka, Bangladesh; ⁶New Medi Fair diagnosis centre, Dhaka, Bangladesh; ⁷MAYFAIR Wellness Clinic Ltd, Dhaka, Bangladesh; ⁸Dept. of Microbiology, Jahangirnagar University, Dhaka, Bangladesh; ⁸Gonoshasthya Samaj Vittik Medical & College Hospital, Dhaka, Bangladesh

*Correspondence: ropak.mph111@gmail.com

ABSTRACT

This cross-sectional study was conducted for the determination of nutritional status among adolescent boys of a selected recognized charitable orphanage in Dhaka city, Bangladesh. The sample size of the study was 100. This study found the mean age of the sample population as 9.93 ± 2.392 years and means Body Mass Index (BMI) were 14.48 ± 2.385 . Among them of 60% of the respondents were illiterate and 40% had a primary level of education. Of the respondents, 100% were taken vegetables, and rice. Among them 92%, 89%, 64%, 47%, and 4% of the respondents were taken chicken, fast food, beef, bread, and mutton respectively. Among them, 96% were taken enough food and 4% taken insufficient food daily. The present study shows that 96% were taken education from Madrasha, 4% were taken general education. The present study also showed that 92% of the respondents had information about personal hygiene and 8% had not, and among them, 84%, 80%, 76% and 70% of the respondents were maintained personal hygiene by nail and hair trimming, hand washes practicing by soap after toileting, use toothbrush and paste everyday and hand wash practicing by soap after taking food respectively. Of them, 57%, 53%, 49%, 16% and 2% of the respondents had information about personal hygiene by doctors, friends, television, radio, and poster respectively. There was a statistically significant association between age with the amount of food, information about personal hygiene and BMI was (0.016, 0.022 and 0.000).

Keywords: Adolescent Boys, Nutritional Status, Charitable Orphanage, Deficiency, and Hygiene

INTRODUCTION

Deficiency of calories and certain micronutrients are known to cause growth retardation in children and adolescents. During adolescence, lifelong dietary and related habits are established, presenting a unique opportunity to instill positive health behaviors

(Sawyer *et al.*, 2012). The extent of variations in intake of nutrients occurring in a homogenous population provides useful information (Shafiee S. *et al.*, 2015). Nutritional status is the condition of the body in those respects influenced by the diet; the levels of nutrients in the body and the ability of those

levels to maintain normal metabolic integrity (Beaudry M. *et al.*, 2004). Food choices in low-resource settings are constrained by high levels of poverty, leading to food insecurity, poor diet diversity, and lack of access to nutritious food (Akseer N. *et al.*, 2017). Boys also have increased nutritional requirements for adequate physical growth and development such as muscle mass accumulation, and they experience a high burden of malnutrition (Bundy *et al.*, 2018).

Adolescence is a period of rapid growth and maturation in human development (Maiti *et al.*, 2011). There has been a worldwide significant change in the nutritional status of adolescents during the past 2 decades because of global economic development and urbanization (Wang *et al.*, 2009). Adolescents' malnutrition, an alarming public health problem worldwide (Chen W. *et al.*, 2013) is imposing a great threat to the future generation via a vicious cycle. In Malaysia, a moderately high prevalence of anemia has been reported amongst infants, young children and women of childbearing age (Foo LH *et al.*, 2004). It is a vulnerable time, particularly for girls who have increased nutritional requirements due to menstruation and often have restricted access to nutritious food, education, and economic opportunities due to gendered cultural norms (Ivers *et al.*, 2011; Shahen MZ *et al.*, 2019). In this trial, frequent standardized hand rubbing with ethanol-based disinfectant did not reduce the weekly prevalence of either type of infections (Hovi T. *et al.*, 2017).

MATERIALS AND METHODS

Study Design and Population - It was a descriptive type of cross-sectional study. The sample population has consisted of adolescence boys living in a Mirpur-6 charitable orphanage.

Study Area and Site - The study was conducted in the Mirpur area of Dhaka city. The site was in Mirpur charitable organization –

Location Mirpur-6, Dhaka, Bangladesh

Number of adolescent boys - 600

Rates of malnutrition in Bangladesh are among the highest in the world, with six million children estimated to be chronically undernourished. The proportion of thinness was significantly higher among subjects who suffered from iron deficiency anaemia (Kurniawan YA *et al.*, 2006). Surprisingly, 73.8% of the participants were not aware of the sources of iron-rich foods (Kabir Y. *et al.*, 2010).

Factors associated with the increased use of iron supplements were related to awareness of the boys about extra nutrients and their access to mass media and education (Alam N. *et al.*, 2010). Many Iranian adolescent boys are Fe-deficient, but it is unclear whether Fe deficiency is associated with other nutritional risk indicators. Anemia was more prevalent among overweight Fe-deficient adolescents than among those Fe-deficient and at risk for overweight or normal weight (34.1 % v. 28.8 % v. 27.8 %, respectively; P < 0.001) (Eftekhari M. *et al.*, 2014). There is a need to improve their hemoglobin status through dietary modification along with preventive supplementation and nutrition education (Choudhary A. *et al.*, 2006). The main objectives of the studies to assess the nutritional status among the adolescent boys of a selected recognized a charitable organization in Dhaka city, and to find out the socio-demographic factors, nutritional status, charitable organization related variables of the respondents, and to evaluate the association between education and BMI of the respondents.

Facilities- Boarding, Education, Food, Dress, Medical facilities

Study Period and Sample Size - The study will be conducted from 1st June 2018 to 30th September 2018. Following formula was used to determine the sample size.

$$n = \frac{z^2 pq}{d^2}$$

Here

n = the desired sample size

z = the standard normal deviate usually

set at 1.96 which corresponds to 95% confidence level

$$p = 49\%^{14} \text{ (Estimated prevalence)}$$

$$q = 1-p = 1-0.49$$

$$q = 0.51$$

d = degree of accuracy desired, usually set at 0.05%.

Now, the required a sample size

$$n = \frac{z^2 pq}{d^2}$$

$$n = \frac{(1.96)^2 \times 0.49 \times 0.51}{(0.05)^2}$$

$$= 384.006$$

So, required the sample size is 384.

The researcher took 100 samples by kind permission of Guide due to financial and time limitation.

Inclusion and Exclusion criteria:

Inclusion Criteria - Those who were willing to give consent and participate in the study. Stayed in the orphanage for more than 2 years.

RESULT AND DISCUSSION

The cross-sectional type of descriptive study was conducted for nutritional status among the adolescent boys of a selected recognized charitable organization in Dhaka city with a sample size of 100. A pre-tested modified interviewer administrated semi-structured questionnaires was used to collect the information. Section A contains socio-demographic related

Table 1: Distribution of the respondents by age (n=100)

Age (years)	Frequency	Percentage (%)
<10 years	60	60
11-13 years	36	36
14 years and above	4	4
Total	100	100
Mean ± SD	9.93 ± 2.392	

Exclusion Criteria - Mentally or physically handicapped.

Sampling technique and Data collection tools - Non-randomized purposive sampling technique was applied to collect the data. A semi-structured pretested, modified questionnaire will be used to collect the data.

Data management and analysis - After the collection of data of the respondents were organized. Data was entered into the computer into a data base in the software package. Statistical package for social science (SPSS) Version 16.0 (Polar engineering and consulting, Chicago) using descriptive statistics such as frequency, distribution, range, mean, and percentage.

Scores and percentages were computed and presented in tabular form, charts, and graphs as appropriate. Further, it was analyzed with the help of the chi-square test and P-value. Finally, the data was interpreted on the basis of the study findings.

variables, Section B contains nutritional related variables, Section C contains charitable organization related variables and Section D contains IEC related variables. All the data were entered and analyzed by using Statistical packages for social science (SPSS) software version 16.0 (Chicago).

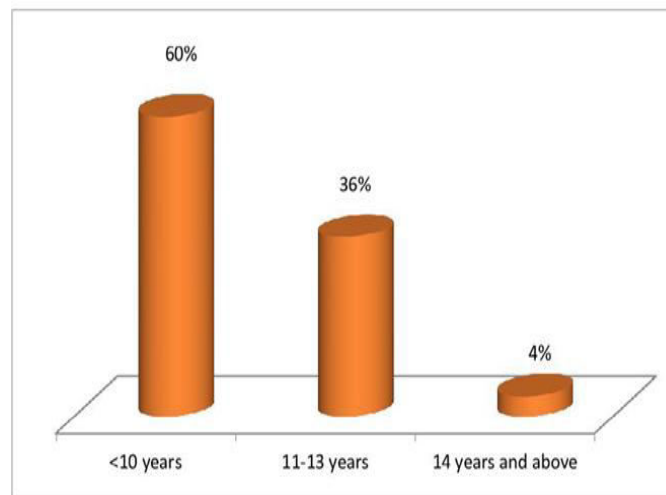


Fig 1: Distribution of the respondents by age.

As shown in **Table 1**, 60%, 36% and 4% of the respondents belong to <10 years of age, 11-13 years and 14 years respectively with the mean age 9.93 ± 2.392 years (**Fig 1**).

Table 2: Distribution of the respondents by education (n=100)

Education	Frequency	Percentage (%)
Illiterate	60	60
Primary	40	40
Total	100	100

Table 3: Distribution of the respondents by height (n=100)

Height	Frequency	Percentage (%)
<122 cm	31	31
123-152 cm	59	59
>153 cm	10	10
Total	100	100

Table 4: Distribution of the respondents by body weight (n=100)

Body weight	Frequency	Percentage (%)
<20 kg	37	37
21-40 kg	57	57
>41 kg	6	6
Total	100	100
Mean ± SD		

Table 2 shows that 60% of the respondents were illiterate and 40% were primary. **Table 3** found that 59%, 31% and 10% of the respondents were 123-152 cm, <122 cm and were >153 cm respectively. **Table 4** shows that 57% of the respondents were 21- 40 kg, 37% were <20 kg and 6% were >41 kg respectively with mean body weight were 24.92 ± 8.199 kg. **Table 5** reveals that 59% of the respondents were underweight

Table 5: Distribution of the respondents by BMI (n=100)

BMI	Frequency	Percentage (%)
Underweight (<14)	59	59
Normal (14-20)	41	41
Total	100	100
Mean ± SD	14.48±2.385	

Table 6: Distribution of the respondents by type of charitable organization (n=100)

Type of the Charitable organization	Frequency	Percentage (%)
Orphanage	100	100
Christian missionary	0	0
Hindu ashram	0	0
Total	100	100

Table 7: Distribution of the respondents by funding organizations of the orphanage (n=100)

Funding organizations of the orphanage	Frequency	Percentage (%)
Government	0	0
NGO	0	0
Trusty board	0	0
Privet company	100	100
Total	100	100

and 41% were normal with the mean BMI were 14.48 ± 2.385 kg. These findings are similar to the finding of a study carried out by Alam N. *et al.*, 2010. **Table 6** revealed that 100% of the respondents were living in the orphanage. **Table 7** shows that 100% of the respondents had funding organizations of the orphanage were Private Company.

Table 8: Distribution of the respondents by types of food (Multiple responses)

Types of food	Frequency	Percentage (%)
Vegetable	100	100
Chicken	92	92
Mutton	4	4
Beef	64	64
Rice	100	100
Bread	47	47
Fast food	89	89

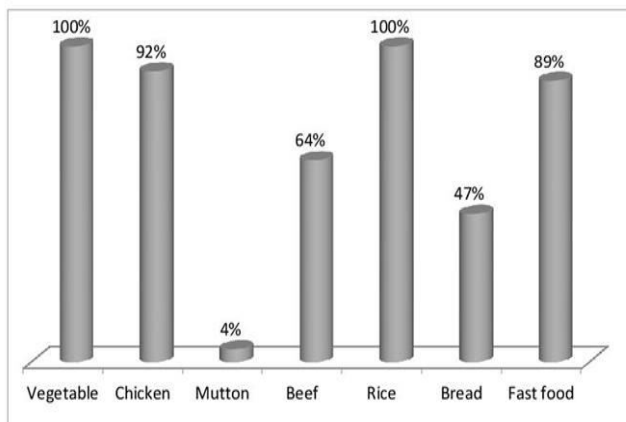


Fig 2: Distribution of the respondents by types of food (Multiple responses).

Table 8 found that 100% of the respondents were taken vegetables and rice. Among them, 92%, 89%, 64%, 47% and 4% of the respondents were taken chicken, fast food, beef, bread, and mutton respectively (**Fig 2**).

Table 9: Distribution of the respondents by amount of food (n=100)

Amount of food	Frequency	Percentage (%)
Sufficient	96	96
Insufficient	4	4
Total	100	100

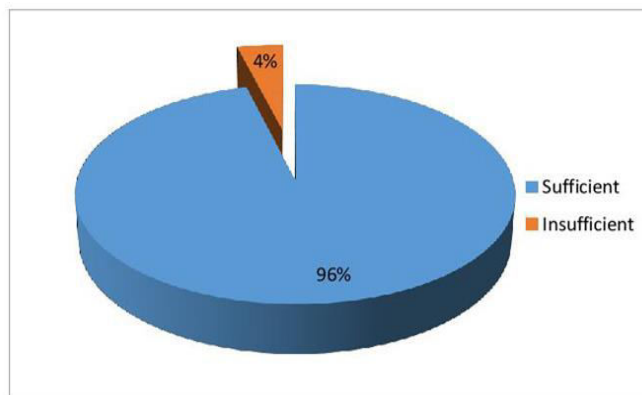


Fig 3: Distribution of the respondents by the amount of food.

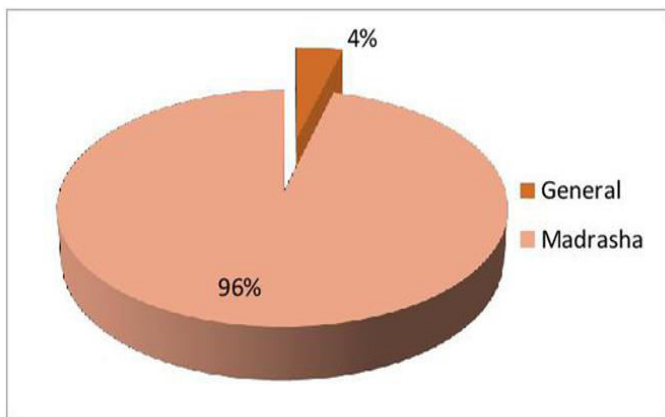


Fig 4: Distribution of the respondents by type of education.

Table 10: Distribution of the respondents by type of education (n=100)

Type of education	Frequency	Percentage (%)
General	4	4
Madrasha	96	96
Total	100	100

Table 9 found that 96% of the respondents were taken sufficient food whereas 4% had insufficient food intake (**Fig 3**) and **Table 10** found that 96% of the respondents were took education from Madrasha, and 4% took general education (**Fig 4**).

Table 11: Distribution of the respondents by information about personal hygiene (n=100)

Information about personal hygiene	Frequency	Percentage (%)
Yes	92	92
No	8	8
Total	100	100

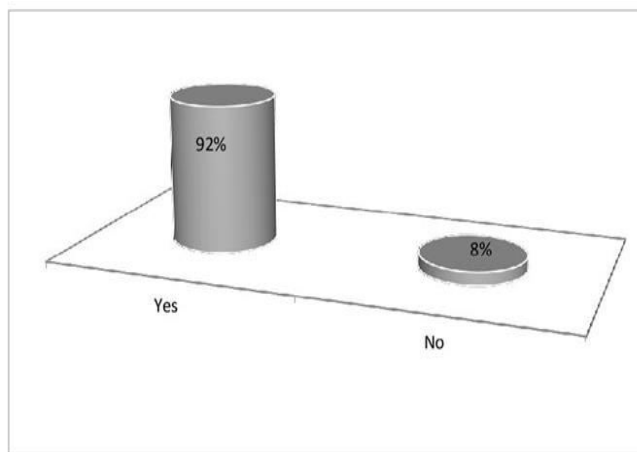


Fig 5: Distribution of the respondents by information about personal hygiene.



Fig 6: Distribution of the respondents by type of personal hygiene (Multiple responses).

Table 12: Distribution of the respondents by type of personal hygiene (Multiple responses)

Type of hygiene practice	Frequency	Percentage (%)
Hand wash practicing by soap after taking food	70	70
Hand wash practicing by soap after toileting	80	80
Use tooth brush and pest every day	76	76
Nail and hair trimming	84	84

Table 11 shows that 92% of the respondents had information about personal hygiene and 8% had not (**Fig 5**) and **Table 12** found that 84%, 80%, 76% and 70% of the respondents were maintain personal hygiene by Nail and hair trimming, Hand wash practicing by soap after toileting, use toothbrush and pest every day and Hand wash practicing by soap after taking food respectively (**Fig 6**). These findings were similar to the finding of a study carried out by Hovi T. *et al.*, 2017

Table 13: Distribution of the respondents by information about personal hygiene by mass media (Multiple responses)

Mass media	Frequency	Percentage (%)
Radio	16	16
Television	49	49
Poster	2	2
Print media	0	0
Community health worker	0	0
Doctors	57	57
Friends	53	53

Table 14: Distribution of the respondents by the association between Age and Amount of the food (n=100)

Age	Amount of the food		Total	p-value
	Sufficient	Insufficient		
<10 years	56	4	60	0.016
11-13 years	36	0	36	
14 years and above	4	0	4	
Total	96	4	100	

Table 13 reveals that 57%, 53%, 49%, 16% and 2% of the respondents had information about personal hygiene by doctors, friends, television, radio, and poster respectively. **Table 14** finds that P- value was 0.016 which was less than 0.05 that was a statistically significant association between Age and Amount of the food (P value obtained from Pearson Chi-square (χ^2) test). **Table 15** finds that P- value was 0.022 which was

Table 15: Distribution of the respondents by the association between Age and information about personal hygiene (n=100)

Age	Information about personal hygiene		Total	p-value
	Yes	No		
<10 years	56	4	60	0.022
11-13 years	32	4	36	
14 years and above	4	0	4	
Total	92	8	100	

P value obtained from Pearson Chi-square (χ^2) test

CONCLUSION

The present study was designed to assess the nutritional status of the adolescent boys of a recognized charitable orphanage in Dhaka city and also their nutrient intake. Institutional environments play an important and necessary role in orphaned care and, at least in this setting, provide a benchmark against which community performance should be measured. The overall nutritional status among study subjects was not good. The major finding of the study was that 100% of respondents were taken vegetables and rice. Among them, 92%, 89%, 64%, 47% and 4% of the respondents were taken chicken, fast food, beef, bread, and mutton respectively. Among them, 96% were taken enough food whereas 4% had insufficient

less than 0.05 that was the statistically significant association between Age and Information about personal hygiene. **Table 16** finds that P- value was 0.000 which was less than 0.05 that was the statistically significant association between Age and BMI.

Table 16: Distribution of the respondents by the association between Age and information about BMI (n=100)

Age	BMI		Total	p-value
	<14	>15		
<10 years	45	15	60	0.000
11-13 years	12	24	36	
14 years and above	2	2	4	
Total	59	41	100	

P value obtained from Pearson Chi-square (χ^2) test

food intake. The study further showed that, 92% of the respondents had information about personal hygiene and 8% had not, and maintain personal hygiene by nail and hair trimming, hand washes practicing by soap after toileting, use toothbrush and pest everyday and hand wash practicing by soap after taking food respectively. There was a statistically significant association between age with the amount of food, information about personal hygiene and BMI was (0.016, 0.022 and 0.000). The present study concluded that nutritional status among the adolescent boys of a selected recognized charitable organization in Dhaka city was conducted and it was observed through BMI and mean nutrient intake.

ACKNOWLEDGEMENTS

This research was cordially supported with proper guidance and help for data analysis in the Dept. of Physiotherapy of the Gono Bishwabidyalay, Savar, Dhaka, Bangladesh. Heartiest thanks to the co-authors of the study to conduct the successful research work.

REFERENCES

1. Akseer, N., Al-Gashm, S., Mehta, S., Mokdad, A., & Bhutta, Z. A. (2017). Global and regional trends in the nutritional status of young people: a critical and neglected age group. *Ann N Y Acad Sci.* **1393** (1), 3-20.
2. Alam N, Roy SK, Ahmed T, Ahmed AM. (2010). Nutritional status, dietary intake, and relevant knowledge of adolescent boys in rural Bangladesh. *J Health Popul Nutr.* **28** (1): 86-94
3. Beaudry M, Hamelin A-M, Delisle H. (2004). Public nutrition: an emerging paradigm. *Canadian J. of Public Health.* **95** (5): 375-7
4. Bundy, D. A. P., de Silva, N., Horton, S., Patton, G. C., Schultz, L., & Jamison, D. T. (2018). Investment in child and adolescent health and development: key messages from Disease Control Priorities, 3rd Edition. *Lancet*, **391** (10121), 687-699.
5. Chen W., and Shi Z. (2013). The Trend in gender disparities of BMI and height between 2004 and 2011 among adolescents aged 17-18 years in Changzhou China. *Asia Pacific J. of clinical nutrition.* **22** (3): 466-73
6. Choudhary A, Moses PD, Mony P, Mathai M. (2006). Prevalence of anaemia among adolescent boys in the urban slums of Vellore, South India. *Trop Doct.* **36** (3): 167-169
7. Eftekhari M, Mozaffari-Khosravi H, Shidfar F. (2009). The relationship between BMI and iron status in iron-deficient adolescent Iranian boys. *Public Health Nutr.* **12** (12): 2377-2381
8. Foo LH, Khor GL, Tee ES, Prabakaran D. (2004). Iron status and dietary iron intake of adolescents from a rural community in Sabah, Malaysia. *Asia Pac J Clin Nutr.* **13** (1): 48-55
9. Hovi T, Ollgren J, Savolainen-Kopra C. (2017). Intensified hand-hygiene campaign including soap-and-water wash may prevent acute infections in office workers, as shown by a recognized-exposure –adjusted analysis of a randomized trial. *BMC Infect Dis.* **17** (1): 47
10. Ivers, L. C., & Cullen, K. A. (2011). Food insecurity: special considerations for women. *Am J Clin Nutr.* **94** (6), 1740-1744.
11. Kabir Y, Shahjalal HM, Saleh F, Obaid W. (2010). Dietary pattern, nutritional status, anaemia and anaemia-related knowledge in urban adolescent college boys of Bangladesh. *J Pak Med Assoc.* **60** (8): 633-638
12. Kurniawan YA, Muslimatun S, Achadi EL, Sastroamidjojo S. (2006). Anaemia and iron deficiency anaemia among young adolescent boys from the peri-urban coastal area of Indonesia. *Asia Pac J Clin Nutr.* **15** (3): 350-356
13. Maiti, S., Ali, K. M., De, D., Bera, T. K., Ghosh, D., Paul, S., Jana, K. (2011). A Comparative Study on Nutritional Status of Urban and Rural Early Adolescent School Girls of West Bengal, India. *J. of Nepal Paediatric Society.* **31** (3), 169-174
14. Sawyer, S. M., R. A., Bearinger, L. H., Blakemore, S. J., Dick, B., Ezech, A. C., &

CONFLICTS OF INTEREST

The authors declare that they have no competing interests with respect to the research.

- Patton, G. C. (2012). Adolescence: a foundation for future health. *Lancet*. **379** (9826), 1630-1640
15. Shafiee S, Mesgarani M, Begum K. (2015). Assessment of nutritional status among adolescent boys in an urban population of South India. *Glob J Health Sci*. **7** (3): 40865
16. Shahen MZ, Mahmud S, Rony MH, Sohana SN, Imran MAS, Al Maruf MA, Azim MAA, Islam MM, Islam MR, Uddin ME and Alam MS. (2019). Effect of Antibiotic Susceptibility and Inhibitory Activity for the Control of Growth and Survival of Microorganisms of Extracts of *Calendula officinalis*. *Europ. J. of Med. and Health Sci*. **1** (1), 1-9 <https://doi.org/10.34104/ejmhs.019>
17. Wang, Y., Chen, H. J., Shaikh, S., & Mathur, P. (2009). Is obesity becoming a public health problem in India? Examine the shift from under- to overnutrition problems over time. *Obesity Reviews*. <http://dx.doi.org/10.1111/j.1467-789X.2009.00568.x>

Citation: Roy RC, Sahabuddin M, Debnath SC, Hosain MJ, Hossain MA, Barman SC, Hasan A, Jubayer M, Uddin J, Rahman MH, Haque MS, and Saha B. (2019) Nutritional Status of the Adolescent Boys of a Recognized Charitable Orphanage in Dhaka City, Bangladesh. *Europ. J. of Med. and Health Sci.*, 1 (3), 10-18. <https://doi.org/10.34104/ejmhs.01018>