Health Status of Young Girls in Selected Area of Bangladesh

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Abstract

Background: Adolescence, a period of transition between childhood and adulthood, occupies a crucial position in the life of human beings. Hence, it is essential to improve health status through interventions.

Objective: To assess and compare nutritional status of adolescent school girls in nutritional intervention and non-intervention area.

Methods: A cross-sectional analytic study was conducted at Laxmipur sadar upazila as nutrition intervention area & neighboring Chatkhil upazila as non–nutrition intervention area. A total of 367 adolescent girls of age 10-19 years were selected purposively of them 177 and 190 were selected from intervention and non-intervention area respectively. Anthropometric data of the study subjects were collected by using standard techniques. Body mass index (BMI) and anemia were classified according to WHO cut off levels.

Results: Study reveals that hemoglobin status was 72.3% normal, 20.3% mild anemia and 7.3% moderate anemia in intervention area and 51.6% normal, 43.7% mild anemia and 4.7% moderate anemia in non-intervention area. Significant difference was found both BMI and hemoglobin status among intervention and non-intervention area. Significant difference was found between intervention and non-intervention area of different illness, typhoid and jaundice.

Conclusion: This study concludes that health status was better in intervention area than non-intervention area so community-based intervention is effective for better health status of young girls.

Key words: health status; young girls; nutritional intervention

Introduction

Adolescence is a significant period of human growth and maturation, unique changes occur during this period and many adult patterns are established [1]. World Health organization (WHO) considers adolescence to take place between the ages ten to nineteen [2]. There are 28 million adolescents in Bangladesh, 13.7 million of them are girls [3]. In spite of impressive gain in the field of health, significant proportions of young people in developing countries are under-nourished. The effect of earlier insult is visible in the adolescent age particularly in girls. Often health status of adolescent girls are direct reflection of the cumulative effects of physical growth, the onset of menarche and increase in fat and muscle mass which place extra nutrition requirements on them [4]. Adolescence is a time of accelerated growth in stature, after which final height is achieved. So adolescent's girls need special care in view of their role in shaping the health and wellbeing of the present as well as future generation. It is very much true that the growth and prosperity of a nation depends heavily on the status and development of adolescent girls as they not only constitute one tenth of its population but also influence the growth of the remaining population. This type of study has not yet been done in this particular area previously however this study helps to find out the impact of the intervention either it was effectiveness for the improvement of the health status of adolescent girl's or not.

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Methods

A cross-sectional analytic study was conducted among adolescent girls in intervention & non- intervention area. This study was conducted at Laxmipur sadar upazila & neighboring Chatkhil upazila. This area was conveniently selected for data collection. The study period was of one year duration from March 2012 to March 2013. Study population was 367 adolescent girls age of 13 to 19 years of interview in selected intervention & non-intervention area. Purposive sampling technique was used during data collection. Sample were selected conveniently and included for the study according to the fulfillment of the inclusion criteria. Data were collected by face to face interview technique using a semi-structured questionnaire. Weight was recorded by weight measuring scale to the nearest 0.1kg and height was measured by standing height, using appropriate scales to the nearest 0.5cm. Hemoglobin measurement, blood was drawn by finger prick with lancer after sterilization of the site with 70.0% alcohol. The hemoglobin test was done by using Sahli haemometer. After collection, data were checked thoroughly for consistency and completeness. Data were checked after collection of data to exclude any error or inconsistency. Collected data were analyzed by using appropriate statistical technique. Statistical tests were considered significant at p-value =5% (0.05). Frequencies were calculated for descriptive analysis. Chi-squared tests were performed on categorical data to find the relationships between variables. Multivariate logistic regression was performed to identify the predictors of nutritional status. All statistical analysis was performed with the software SPSS 20.0 for windows.

Results

Comparison of nutritional status of the study population (Table-1)

This table revealed that BMI according to proposed for the Asian people, BMI was found 46.3% normal, 47.5% underweight and 6.2% were increased risk but no girls were in high risk group in intervention area and 27.4% were normal, 64.7% were under weight and 6.3% were increased risk but 1.6% were in high risk. According to the western cutoff value (WHO), BMI status was found 51.4% normal, 47.5% underweight and 1.1% overweight but no girls were found in obese in intervention area and 32.1% were normal, 64.7% were under weight and 2.6% were overweight but 0.5% was obese in non-intervention area. The table reveals that Hemoglobin status was found 72.3% normal, 20.3% mild anemia and 7.3% moderate anemia in intervention area and 51.6% normal, 43.7% mild anemia and 4.7% moderate anemia in non-intervention area. Significant difference was found both BMI and hemoglobin status among intervention and non- intervention area (p<0.001).

Characteristics	Intervention area (n=175)	Non-intervention area (n=175)	p *value*
	n (%)	n (%)	
BMI (For Asian people)			
Underweight	84(47.5)	123(64.7)	0.001
normal	82(46.3)	52(27.4)	
Increased risk	11(6.2)	12(6.3)	
High risk	0(0.0)	3(1.6)	
BMI (For western people)			
Underweight	84(47.5)	123(64.7)	0.002
normal	91(51.4)	61(32.1)	
Overweight	2(1.1)	5(2.6)	
Obese	0(0.0)	1(0.5)	
Hemoglobin level			
Normal	128(72.3)	98(51.6)	0.001
Mild anemia	36(20.3)	83(43.7)	
Moderate anemia	13(7.3)	9(4.7)	

Results were expressed as number (%); χ^2test was performed and p<0.05 was level of significance.

Table 1: *Comparison of nutritional status of the study population (n=367).*

Health status of study subjects both intervention and non-intervention area (Table 2)

The occurrence of illness of the study population in last 14 days from the visiting date, were more in intervention area than non-intervention area such as 17.9%, 50.0%. The occurrences of diarrhea, ARI, typhoid fever and jaundice of the study subjects within 14 days were 0.6%, 1.1%, 11.3% and 9.6% in intervention area and 1.1%, 2.6%, 0.5% and 1.6% in non- intervention area. Suffer from typhoid fever in non-intervention area like 11.0% and ARI in non-intervention area like 2.6%. Majority of the subjects were not found problem of menarche age in both areas such as 89.3% in intervention area and 86.8% in non-intervention area. Significant difference was found between intervention and non-intervention area of different illness, typhoid and jaundice (p<0.001).

Characteristics	Intervention area (n=177)	Non-intervention (n= 190)	p *value*
	n (%)	n (%)	
suffered illness in last 14 days			

Yes	32(17.9)	95 (50%)	0.001
No	145(82.1)	95 (50%)	0.710
Diarrhea			
Yes	1(0.6)	2(1.1)	0.604
No	176(99.4)	188(98.9)	
ARI			
Yes	2(1.1)	5(2.6)	0.293
No	175(98.9)	185(97.4)	
Typhoid fever			
Yes	1(0.6)	21(11)	0.001
No	176(99.4)	169(89)	
Jaundice			
Yes	3(1.6)	18(9.6)	0.001
No	174(98.4)	172(90.4)	
Menstruation problem			
Yes	19(10.7)	25(13.2)	0.317
No	158(89.3)	165(86.8)	

Results were expressed as number (%); χ^2 test was performed and $p<0.05$ was level of significance.

Table 2: *Health status of study subjects both intervention and non-intervention area (n=367)*

Nutritional status with health condition of study population (Table-3)

The table shows that 55.3% were underweight who was suffering from illness and 57.0% who was not suffering from any illness in last 14 days, suffering from ARI 100% participants were in underweight group. No significant association was found between nutritional status and illness, ARI, typhoid, jaundice and menstrual problem.

Health condition	Nutritional status				χ^2	p value
	Underweight	Normal	Increased risk	High risk		
	n (%)	n (%)	n (%)	n (%)		
Suffer illness					3.0	0.633
Yes	68(55.3)	47(38.2)	8(6.5)	0(0)		
No	139(57.0)	87(35.7)	15(6.1)	3(1.2)		
Suffer ARI						
Yes	7(100.0)	0(0)	0(0)	0(0)	3.0	0.138
No	200(55.6)	134(37.2)	23(6.4)	3(0.8)		
Suffer typhoid						
Yes	12(57.1)	8(38.1)	1(4.8)	0(0.0)	3.0	0.964
No	195(56.4)	126(36.4)	22(6.4)	3(0.9)		
Suffer Jaundice						
Yes	8(40.0)	12(60.0)	0(0.0)	0(0.0)	3.0	0.127
No	199(57.3)	122(35.2)	23(6.6)	3(0.9)		
suffer menstruation problem						
No start	34(77.3)	10(22.7)	0(0.0)	0(0.0)	6.0	0.058
Yes	111(52.4)	84(39.6)	16(7.5)	1(0.5)		
No	62(55.9)	40(36.0)	7(6.3)	2(1.8)		

Results were expressed as number (%); χ^2 test was performed and $p<0.05$ was level of significance.

Table 3: *Nutritional status with health condition of study population (n=367)*

Discussion

The second decade of life is a period of rapid growth and personal development without which individuals cannot acquire the competence needed to adapt to a diverse and changing world. The social environment can provide and present hazards to health and obstacles to development. The nutritional status of adolescents plays a dominant role in determining the rate of growth and development (WHO 1997) [5]. Adolescence is a period which includes puberty spurt during which maximum growth in terms of weight and height takes place by Ghai OP [6]. According to some

studiesby Agrawal KN, Saxena A et al [7], high under-nutrition at earlier age of adolescence has been reported. Adolescent girls belonging to 10-12 years were suffering from under-nutrition / chronic energy deficiency grade III maximally. Factors which may contribute to this phenomenon may be the earlier nutritional insult during pre-school period as well as adverse dietary practices during 5-9 years of age period. The results of the study revealed that, in rural Bangladesh, the prevalence of thinness and stunting among the adolescent girls aged 13-19 years was widespread and persistent. Severe thinness was 9% lower than 16% found in schoolgirls aged 10-16 years in Dhaka city by Abdullah M, Wheeler EF et al [8]. BMI according to proposed for the Asian people, was found 46.3% normal, 47.5% underweight and 6.2% was increased risk but no girls were in high risk group in NNP area and 27.4% was normal, 64.7% was under weight and 6.3% was increased risk but 1.6% was in high risk. According to the western cutoff value (WHO) [9], BMI status was found 51.4% normal, 47.5% underweight and 1.1% overweight but no girls were found in obese in NNP area and 32.1% was normal, 64.7% was under weight and 2.6% was overweight but 0.5% was obese in non NNP area. Of the pre-pubertal girls, 58% was thin, suggesting that undernutrition had delayed puberty in Bangladesh Nurul Alam, Roy SK et al [10]. One third (36.49%) of the urban Bangladeshi adolescents was undernourished, Mukhopadhyah A, Bhadra M et al at Kolkata [11]. The extent of under nutrition was slightly higher to those among Nepali refugees, reported at 1999 [12] (34%); and higher than those observed among rural African adolescents was (23%). However, the rate of undernutrition of another study those of rural Nepalese were (36%) [13]. Saha Sudip Kumar et al [14] reported, 32.3% urban school girls were in the normal range while 65.3% were overweight or obese. In the present study 48.3% of the adolescents were normal, nobody was overweight or obese and 51.7% were undernourished [15]. The extent of undernutrition was higher than those among Nepali refugees reported by Woodruff et al [13], but lower than those reported by one Indian study (53%) and two Kenyan studies chokson ST et al (61%)[16] and (57%) [17]. Hemoglobin status was found 72.3% normal, 20.3% mild anemia and 7.3% was moderate anemia in NNP area and 51.6% was normal, 43.7% was mild anemia and 4.7% was moderate anemia in non NNP area according to WHO [18]. Significant difference was found Both BMI and hemoglobin status among NNP and Non NNP area. Iron deficiency is common among adolescent girls in Bangladesh [8], that, compared to the NNP upazilas, intake of iron supplements was significantly higher (21% opposed to 8%) in the BINP upazilas [10]. This might be the effect of the distribution of iron and folic acid in the BINP community [19]. The prevalence of anemia was found 32.87% in Pakistan [20]. Many developing countries have the same picture. In India it is 38-72% [21], 68.8 % in Nepal and 46.6 % in Egypt. In this study, Hemoglobin is strongly associated with BMI in NNP area and non NNP area.

Conclusion

The study concludes that more than half of the adolescent girls in non-intervention area and about half of the girls in intervention area were undernourished. In non-intervention area Anemia was higher than intervention area. Significant difference was found between intervention and non-intervention area with nutritional status and anemia. So intervention is a positive impact on health status of girls.

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