

ASSESSMENT OF NUTRITIONAL STATUS AND FOOD INTAKE PATTERN OF THE SELECTED ADOLESCENT INDUSTRIAL FEMALE WORKERS IN BANGLADESH

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ABSTRACT

A cross sectional study was carried out among the selected 100 adolescent female workers from different industries located in Dhaka and Tangail, Bangladesh to assess their nutritional status and food intake pattern. The mean age of the respondents was 15.5 ± 1.2 years. A well designed semi structured questionnaire was developed and pretested for the data collection regarding quantitative food frequency questionnaire, anthropometric measurements and measurement of hemoglobin level by Sahli's method. The hemoglobin level of the workers were very poor (33.7 % of the workers were mild anemic, 59.8% were moderate anemic and 6.5% were severe anemic) compared to national prevalence of anemia. Moreover, the nutritional knowledge of the workers was not satisfactory level, only 15% of the workers were known about proper nutritional knowledge. About 76% of the workers suffered from different diseases, among them 33% were suffered from fever and 21% of them from cold. Food frequency questionnaire analysis revealed that their diet were monotonous, i.e. all most all of the workers were taking rice three times daily without or with little amount of meat, fish, egg or other good sources of nutrients. The overall dietary intake pattern revealed that the nutritional status of the female workers were very poor due to their low income level and lack of nutritional knowledge. According to CDC Growth Charts analysis, it was found that 60% of the workers were underweight. In conclusion, the assessment shows a poor nutritional status of the adolescent female workers in Bangladesh.

Key words: Adolescent, Industrial female workers, Food intake pattern, Hemoglobin level, CDC Growth Charts

Introduction

Female workers are those who participate in social production. The character of their participation is determined by the socioeconomic structure of the society. Adolescent

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female worker (from Latin: *adolescere* meaning "to grow up") is a transitional stage of physical and psychological human development generally occurring during the period from puberty to legal adulthood (age of majority) (Larson & Wilson, 2004)

The term youth encompasses ages 10 to 24 years, while the adolescents as defined by WHO (1986) includes persons aged 10-19. Adolescence is an important stage of physical growth and development in the lifespan.

Unique changes that occur in an individual during this period are accompanied by progressive achievement of biological maturity. Growth occurs in skeleton, in the muscle, and in almost every system and organ of the body in adolescence except the brain and the head (Gong, 1994). During adolescence, more than 20% total growth in stature and up to 45% of adult bone mass is achieved, and weight gained during the period contributes about 50% to adult weight (Ahmed *et al.*, 1998).

Bangladeshi female contribute substantially to their households and to the country's economy. The majority of female workers in Bangladeshi garments are primarily involved in the informal sector of the economy. Within the formal sector, a large number of female work in export-oriented industries (e.g., garments), the source of 70 percent of Bangladesh's foreign exchange. A significant number of women also work as teachers, lawyers, journalists, government employees, and for nongovernment organizations (NGOs). Their activities, in turn, contribute to the transformation of traditional values and gender roles of Bangladeshi female. RMG sector has been playing an important role in enhancing Bangladesh economy. The sector draws global attention for its quality production and huge employment female workers. From decades after decades we have seen the dependence on Garment industry growing in Bangladesh. In 1983, there were about 50 garment factories in the country. By 2004, this number had jumped to 4,000. In the Year 2009, almost there are 4500 garment factory. Currently, this sector employs approximately 2.2 million workers, of whom almost 80% are women. (Statistical Year Book of Bangladesh, 2008 edition) It is fair to say that this sector has created enormous economic opportunities for the country's female, who until the late 1970's were almost non-existent in the labor force (Tanner, 1992; Story, 2000)

Materials and Methods

Subject Selection: The study group comprised 100 adolescent female workers, aged 12-19 years, working in three readymade garment factories and two food industries spread over the Dhaka and Tangail. The factories were selected purposively.

Study type: A cross sectional study was carried out among 100 adolescence female worker. The dietary pattern, nutritional status, and hemoglobin level were determined.

Anthropometric assessment

Weight: Weight machine was used to measured body weight. The weight was recorded bare footed and the scale was calibrated to zero marking every time before use. The weight was recorded in kilogram.

Height: Height of the study population were measure in standing position with hanging by the side and bare footed, relaxed way, the vertebral column touching the scale. Height was measured to the nearest 0.1 cm.

BMI Percentile: For children and teens, the BMI number is plotted on the CDC BMI-for-age growth charts (for either girls or boys) to obtain a percentile ranking. Percentiles are the most commonly used indicator to assess the size and growth patterns of individual children in the United States. Percentiles are used for children and teens because the amount of body fat differs between boys and girls and body fat also changes with age

Dietary information: It was measured by Food Frequency Questionnaire. Information about provision of food, consumption was obtained.

Data Analysis: The data set were first checked, cleaned and entered into the computer from the numerical codes on the form. The data was edited if there is any discrepancy and then cleaned it. The frequency distributions of the entire variables were checked by using SPSS. 14 windows program. For tabular, charts and graphical representation Microsoft word and Microsoft excel were used.

Result and Discussion

According to this table, 58% of the respondents were in the age group of 16-18 yrs, whereas only 2% of the respondents were in the age group of 10-13years. The residential backgrounds of the respondents were 88% coming from rural and 12% were from urban background. From this table we found that 39% Of the families had 4-5 members, 24% of the families had 6-7 members, whereas only 19% of the families had below 3 members. From the table found that 64% of the families earning member were only 2, 13% were the 1 member, 22% were 3 members and only 1% were 4 members.

Table 1. Socio demographic information of the respondents

Age range (Yrs)	No. of workers	No. of family member	No. of workers	No. of earning Member	No. of workers	Residential Background	No. of workers
10-11	1	2-3	19	1	13	Rural	88
12-13	1	4-5	39	2	64	Urban	12
14-15	32	6-7	24	3	22		
16-17	5	≥8	18	4	1		

Table 2. Professional information among the Studied Workers

Features	No. of workers	Percent
Working period in a day(hrs)		
8	16	16.0
12	58	58.0
10	26	26.0
Salary structure of the workers		
3000-3500	49	49.0
3600-4000	24	24.0
4100-4500	27	27.0

Data presented in Table-2 showed that 58% workers were worked for 12 hours, 26% worked for 10hour in a day, and 16% o worked for 8 hour. Table-2 also showed the worker's economic status that 49% of the worker get salary within 3000-3500Tk, 24% of the worker get salary within 3600-4000Tk, 27% within 4100-4500Tk.

Table 3. Nutritional knowledge among the workers

	Knowledge	No. of the respondent	Percentage (%)
About Vit-A deficiency	know	21	21.0
	Partially know	9	9.0
	Don't know	70	70.0
About iodine deficiency	Know	4	4.0
	Partially know	7	7.0
	Don't know	89	89.0
About iron deficiency	Know	3	3.0
	Partially know	2	2.0
	Don't Know	95	95.0

Table-3 showed the respondent's knowledge about different micro nutrient deficiency. 70% of the workers don't know about vitamin-A deficiency and their dietary requirement. 89% workers have no idea about iodine deficiency disorder and 95% are lacking of good idea about Iron deficiency anemia, which is the most prevalence in the developing countries in the world.

Table 4. Assessment of nutritional status (BMI-for-age status categories) among the adolescent workers

Weight status category	Percentile range	No. of the respondents	Percentage (%)
Underweight	Less than the 5 th percentile	60	60.0
Healthy weight	5 th percentile to less than the 85 th percentile	40	40.0
Overweight	85 th to less than the 95 th percentile	0	0
Obese	Equal to or greater than the 95 th percentile	0	0
Total		100	100

Table-4 showed the BMI-for-age weight status categories of the workers. According to this study analysis 60% of the workers were underweight and 40% of the workers were healthy weight. In this study we found that there were no overweight and obese workers in any industry.

Table 5. Status of Anemia among respondents

Condition	Cut off value of Hemoglobin (g/dl)	No. of the respondents	Percent (%)
Severe anemia	<7.0	6	6.0
Moderate anemia	7.0-9.0	55	55.0
Mild anemia	9.0-12.0	31	31.0
Normal	12.0-16.0	8	8.0
Total		100	100.0

Table-5 showed the anemic condition of the worker. According to this study analysis 6% were severe anemic, 55% were moderate anemic, 31% were mild anemic and only 8% were in normal hemoglobin level.

Table 6. Relationship between economic status and nutritional status

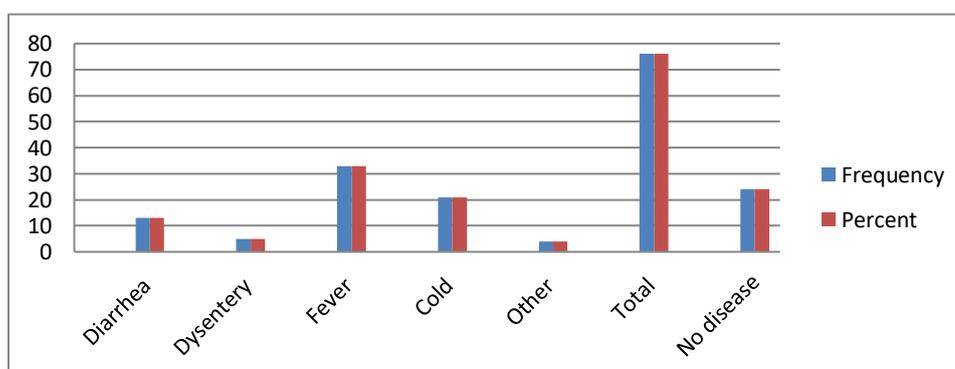
Salary Structure (Taka)	Total	Nutritional status			
		Underweight		Healthy weight	
		No. of workers	(%)	No. of workers	(%)
3000-3500	49	25	51.02	24	48.98
3600-4000	24	16	66.67	8	33.33
4100-4500	27	19	70.37	8	29.63
Total	100	60	60	40	40

Table-6 showed the relationship of the worker's nutritional status with their salary structure. According to these study analysis 49 workers monthly salary was 3000-3500Tk among which 51.02% of the workers were underweight, 48.98% of the workers were healthy weight. Monthly income of 3600-4000Tk was among 24 worker, of which 66.67% of the workers were underweight, 33.33% of the workers were healthy weight. 27 worker's monthly income was 4100-4500 Takas; among which 70.37% of the workers were underweight, 29.63% workers were healthy weight. Although the underweight rate was increasing with the higher income, we had observed the number of family member was more among the higher income groups.

Table 7. Dietary intake pattern of the workers

Food item	Daily (%)	3-4 days per week	4-6 days per week	Once per month
Rice	100	-	-	-
Fish	-	20	60	20
Meat	-	-	20	80
Potato , pulses	20	-	80	-
Vegetables	20	-	80	-
Milk and milk products	-	-	-	100

Table-7 showed the dietary intake pattern of the workers were assessed by food frequency questionnaire. 100% of the workers were taken rice along with their daily meal. 60% of the workers were taken fish in 4-6 days in a week, 80% of the workers were taken potato, pulses in 4-6 days per week along with their meal. 100% workers taken meat, milk or milk based food item once per month or less along with their meal. 20% workers were taken vegetables daily, while 80% of them taken 4-6 days along with their per week meal.

**Fig. 1.** Types of diseases occurred among the Respondents

The Figure above showed the type of disease occurred of the workers within 15 days. We found that 13% of the workers suffered from diarrhea, 5% were suffered from dysentery, 33% suffered from fever, 21% suffered from cold, and 4% from others diseases.

Conclusion

A cross sectional study was carries out to assess the nutritional status and dietary intake pattern of adolescent female workers in selected area. The CDC BMI-for-age growth chart was applied to know the nutritional status of the workers. According to this study 60% of the workers were underweight and 40% of the workers were healthy weight. Anemia was very prevalent among them. 92% of the workers were anemic condition. Nutritional knowledge of the workers was very poor.

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