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REVIEW ARTICLE

A COMPARATIVE STUDY ON ANTHROPOMETRIC MEASUREMENT AND CLINICAL STATUS OF TEXTILE WOMEN WORKERS

[1,*]Dr. Sridevi, D. and [2]Dr. Radhai Sri, S.

[1]Department of Nutrition and Dietetics, Dr. NGP Arts and Science College, Coimbatore, India
[2]Department of Nutrition and Dietetics, PSG Arts and Science College, Coimbatore, India

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ABSTRACT

A study on the health and nutritional status of 300 women aged between 20-60year were selected by random sampling method from cotton textile industries. Of the total, 150 women working in different sections of ginning factory and 150 women employed in different sections of spinning factory were covered for the study Nutritional status was assessed by calculating BMI (Body Mass Index) about 19 and 15 per cent of the respective groups were under low weight category (18.5 to 20).Fifteen per cent of ginners had BMI between 17 to 18.5 with mild degree of malnutrition when compared to spinning (4 per cent). In case of clinical status the iron deficiency is most likely to be a contributing factor and moderate to severe degree of anaemia was noticed among 47 to 59 per cent of women.

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INTRODUCTION

Cotton textile industry is one of the second largest traditional industries in the world. Textile mills are the most important source of employment for industrial workers in India and it has been estimated that nearly one half of the million workers are employed in these mills. Textile industry has a large population in India for many years which causes health hazard for the women working in the textile industries which has been overlooked. Moreover all the studies conducted so far, were confined to selected area and there is no recent study which portrays clearly the nutritional status of ginning and spinning workers.

Working women have dual roles to play at home as a wife, a mother and at work place as employee in the society so they are prone to more occupation related diseases stress and strain Kailer (1995) leading to under nourishment. Considering these data, an attempt has been made to assess the health status of women working in textile industries. Hence, in the present study women working in textile industries were included to conduct research on anthropometric and clinical status of textile women workers.

Corresponding author: Dr. Sridevi, D.,
Department of Nutrition and Dietetics, Dr. NGP Arts and Science College, Coimbatore, India.

MATERIALS AND METHODS

The survey was conducted in the textile industries located at urban areas of Tirupur (250 units) and Erode (175 units) districts of Tamil Nadu. 20 per cent of women in Tirupur and 10 per cent of women in Erode were working in cotton textile industries. Basic reasons for selecting these districts are because, majority of women in these districts have been employed in textile based occupations to support the economic level of their family. Totally 300 women aged between 20-60year were selected by random sampling method from cotton textile industries. Of the total, 150 women working in different sections of ginning factory namely, gin house, gutter and sorting and 150 women employed in different sections of spinning factory namely carding, blowing and spindle were covered for the study. The data was collected among them using interview schedule technique including socio economic status, anthropometric measurements like height, weight and BMI were assessed by standard methods and they were examined by a physician to identify the presence of clinical symptoms of nutritional deficiency using modified ICMR Proforma.

RESULTS AND DISCUSSION

Anthropometric Measurements

Nutritional status of the selected women was assessed by using anthropometric measurements.

Height and body weight of all the 300 textile workers were recorded using standard procedures and using these two measurements Body Mass Index was computed.

Height

The mean height of the selected women working in ginning (gin house, gutter and sorting) and spinning (blowing, carding and spindle) is presented in Table – 1. From the Table 1, it is clear that the height of women workers belonging to the age group of 20 to 60 years ranged between 150.3 and 159.7cm. The heights of all the age groups of women was lower when compared to NCHS standard (1974) and closer to average Indian heights. The mean height of the women working in spindle ranged between 150.3 to 155.5 cm. The height of all the age groups of the spinning workers was low compared to NCHS standard. The mean height (155.5 cm) was higher in the age of 30 to 40years when compared to other age group.

Weight

Mean weight per age of the selected women working in ginning and spinning mills is presented in Table 2. The mean weight of women working in gin house, gutter and sorting sections ranged between 49.9± 2.25 to51.0 ± 2.0.

A weight deficit was noticed among women in the age group of 30-40 and50-60 years working in all three units. As the age increases, reduction in body weight was noticed and this may be due to conditions like negative energy balance and drudgery of the respondents during their work.

It is clear that the mean weight of the spinning workers of different categories of women ranged between 49.7 ± 2.1 to 51.96 ± 2.1kg. The mean weight of all spinning workers had met the NCHS standard value and they had the normal weight.

Table 1. Mean Height (cm) per Age of Selected Textile Women Workers

N=300

Age (year)	NCHS std height (cm)	Ginning workers Height cm				Spinning workers Height cm			
		Gin house	Gutter	Sorting	Total mean	Blowing	Carding	Spindle	Total mean
20-30	162.8	152.4 ±3.2	152.6 ±3.5	-	152.5 ±3.65	-	150.4 ±1.95	152.7 ±2.0	151.5 ±2.24
30-40	162.8	159.25 ±1.12	151.3 ±1.13	152.8 ±2.15	159.7 ±3.56	153.6 ±3.5	157.6 ±3.5	155.25 ±3.26	155.5 ± 3.54
40-50	161.5	151.9 ±1.25	153.8 ±4.78	151.5 ±4.59	154.4 ±2.50	154.9 ±5.3	151.5 ±1.86	156.25 ±4.2	154.2 ± 3.29
50-60	161.5	-	149.7 ±0.95	151.6 ±1.15	150.3 ±1.01	150.3 ±0.96	-	-	150.3 ± 1.54

*NCHS weight and Height of adults 18-74 years of age (US department of Health Education and welfare US 1971-74).

Table 2. Mean Weight (kg) per Age of Selected Textile Women Workers

N=300

Age (year)	NCHS *std weight (kg)	Ginning workers weight kg				Spinning workers weight kg			
		Gin house	Gutter	Sorting	Total Mean	Blowing	Car ding	Spindle	Total mean
20-30	62	51.2 ±3.4	48.6 ±1.7	-	49.9 ±2.25	-	52.4 ±3.5	49.5 ±1.9	50.95 ± 1.94
30-40		45.8 ± 1.24	47.3 ±1.56	46.1 ±3.5	46.4 ±0.92	52.0 ±3.5	53.6 ±4.2	50.3 ±2.1	51.96 ±2.1
40-50		46.2 ± 0.95	51.2 ± 2.2	55.6 ±4.5	51.0 ±2.1	49.2 ±1.9	51.6 ±2.2	53.5 ±4.4	51.43 ±2.0
50-60		-	48.3 ±1.5	42.3 ±0.35	45.3 ±1.04	49.7 ±2.1	-	-	49.7 ±2.1

*NCHS weight and Height of adults 18-74 years of age (US department of Health Education and welfare US 1971-74).

Table 3. Mean BMI for Selected Ginning and Spinning Workers

N=300

Groups	BMI = 17-18.5		BMI = 18.5-20		BMI = 20-25	
	mean	n(%)	Mean	n(%)	Mean	n(%)
Ginning	18.4	18	19.1	11	23.1	51
Gin house	±1.9	(22)	±2.5	(14)	±4.9	(64)
Gutter	17.4	2	19.5	13	23.3	30
	±1.6	(4)	±2.8	(29)	±3.0	(67)
Sorting	17.9	3	19.5	4	23.3	18
	±1.7	(12)	±2.8	(16)	±5.0	(72)
Total	17.9	23	19.03	28	23.2	99
	±1.7	(15)	±2.4	(19)	±3.1	(66)
Spinning	17.6	2	19.7	6	23.6	19
Blowing	±1.9	(7)	±2.4	(23)	±5.5	(17)
Carding	17.9	1	18.5	5	22.8	27
	±1.7	(3)	±2.0	(15)	±3.1	(82)
Spindle	17.7	3	18.4	12	22.7	75
	±1.5	(3.3)	±1.9	(13.4)	±2.9	(83.3)
Total	17.7	6	18.8	23	23.0	121
	±1.5	(4)	±1.9	(15)	±5.0	(81)

Table 4. Clinical Assessment among Ginning and Spinning Women Workers

N=300

Clinical Assesment	Ginning				Spinning			
	Gin houses	Gutter	Sorting	Total	Blowing	Carding	Spindle	Total
	%	%	%	%	%	%	%	%
Protein calorie malnutrition								
Dispigmentation of hair	25	-	-	25	7	12	13	12
Dryness of hair	9	20	16	30	4	6	10	8
Sparseness of hair	8	18	-	9	4	6	8	7
Iron and folic acid deficiency weakness and fatigue	40	13	16	28	-	-	-	-
Poor concentration	31	-	12	19	-	-	-	-
Irritability	43	18	8	29	22	21	23	23
Head ache	49	51	12	44	26	39	63	51
Spoon shaped nails	19	36	-	21	15	9	12	12
Brittle nails	31	20	4	18	4	18	21	17
Crack in mouth corner	30	16	8	22	7	3	26	17
Pale skin	46	49	20	43	11	12	21	17
Others								
Bleeding gums	25	31	12	25	22	27	10	16
Swollen gums	24	18	4	19	15	18	8	11
Mottled enamel	29	20	24	25	-	-	7	4
Numbness and tingling of the extremities	14	20	20	17	7	12	4	7
Thyroid	9	7	4	7	7		-	2

Body Mass Index

Body Mass Index of the selected women working in ginning and spinning mills is presented in Table 3. It is evident that about 66 and 81 per cent of women working in ginning and spinning mills respectively had normal range of BMI (20 to 25). About 19 and 15 per cent of the respective groups were under low weight category (18.5 to 20). Higher per cent (15 per cent) of ginners had BMI between 17 to 18.5 with mild degree of malnutrition when compared to spinning (4 per cent). It is observed that none of them fall either in overweight or obese category.

Prevalence clinical symptoms among textile workers

Table 4 gives the prevalence of clinical deficiency symptoms among all the selected 300 textile women workers. Clinical examination of the selected textile women workers revealed that 41,38 and 16 per cent of women working in gin house, gutter and sorting section of ginning units respectively showed symptoms for protein calorie malnutrition with dispigmentation and dryness and sparseness of hair. Similarly 15, 24 and 31 per cent of women working in blowing carding and spindle sections respectively depicted symptoms for protein calorie malnutrition.

Majority of the women i.e. 80 to 86 per cent working in ginning unit and 64 to 74 per cent working in spinning units showed symptoms of anemia. Dental carries and bleeding gums were the other two nutritional problems observed among the selected women irrespective of the units. Symptoms such as headache, pale skin, irritability, were observed among 44, 43 and 29 per cent of ginners and 51, 17 and 23 per cent of spinners respectively. Only 11 and 2 per cent of women working in ginning and spinning industries respectively had thyroid problem.

A total of 17 and 7 per cent of ginners and spinners respectively had numbness and tingling of the extremities due to B complex deficiencies. Observed that 25, 17 and 20 per cent of women working in spinning industries had bleeding gums, spoon shaped nails and swollen gums respectively Rana (2003). While reporting the clinical signs, the present investigation agreed with other scientists that clinical measures are general and not necessarily specific to deficiencies of individual nutrient Jelliffee (1966). It was however, agreed upon generally that in field studies it may not be feasible to confirm the clinical signs with laboratory experiments Gibion (1984). Thus nutritionists continue to hold the view that clinical signs may be used as indicator of nutritional deficiencies when studied along with anthropometry and dietary data. In the present study, iron deficiency is most likely to be a contributing factor and moderate to severe degree of anaemia was noticed among 47 to 59 per cent of women.

Conclusion

The selected textile women workers were assessed for their anthropometric indices and clinical nutritional deficiency was recorded. The finding of the study revealed that they have more nutritional deficiency especially the iron deficiency anaemia, protein energy malnutrition and vitamin C deficiency due, to poor socio economic status, long working hours, improper food habits and increase exposure to cotton dust. To improve the health status of women workers additionally, nutrition education programme brought in retention of nutritional knowledge among textile workers.

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