

# Health and Nutritional Status of Female Spinning Residential Workers and Imparting Nutrition Education

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**Abstract:** *The eminence of women work force has a great impact on the economy of a country. Many studies have quoted that the workers in textile industry face many physical health problems including 'occupational fatigue syndrome'. In the light of this, an attempt was made to assess the health and nutritional status of female spinning residential workers. The study was carried out at a private mill in Tiruppur district. A total of 130 female spinning workers from various working units residing in hostel within the premises aged between 18 and 35 were selected randomly. About 40 per cent of the workers showed the symptoms of musculoskeletal disorder including lower back pain, pain in arms and legs, upper back pain and joint pain. Similarly, 42 per cent of the respondents had GI disturbances like constipation, loss of appetite, flatulence, indigestion and peptic ulcer. 33 per cent of the workers suffered from the symptoms of respiratory diseases like cough, breathlessness, wheezing, asthma, phlegm, sinusitis and chest tightness. RDA was also not met by the workers with respect to all essential nutrients. Nutrition education was given using different aids to impart knowledge on need and importance of nutrition.*

**Keywords:** Back pain, respiratory problems, morbidity, nutrition education

## 1. Introduction

The textile sector in India is one of the largest in the world and has a significant presence in the economy as well as in the international textile economy<sup>[1]</sup>. The cotton and the textile industry has an overwhelming presence in the Indian economy<sup>[2]</sup>. Among the South Indian states, Tamil Nadu has a significant presence of textile industry and employs over 2 lakh women in low-skilled manufacturing jobs<sup>[3]</sup>. Occupational hazards became more prominent in textile industries in which respiratory tract disease represents the most important group of occupational disease in textile industry as a result of inhalation of cotton fibres and dust in the work place<sup>[4,5]</sup>. Women working in sections like carding, blowing, ring frame, spinning etc., were found to be associated with higher prevalence of cough, wheezing and chronic bronchitis<sup>[6]</sup>. In textile industry, the factors which are most often associated with the occurrence of serious musculoskeletal disorders include performing repetitive tasks in a sitting/standing position, static and awkward postures, prolonged duration of work and inadequate rest pause<sup>[7]</sup>. Longer duration of involvement in shift work also influenced the occurrence of gastric and cardiac problems like disturbed appetite, stomach upsets, stomach ache, constipation, dizziness, breathless and swollen feet<sup>[8]</sup>. In addition to these, anaemia, protein energy malnutrition, vitamin A, B complex and C deficiencies were also higher among textile workers<sup>[9]</sup>. With reference to the above findings a study was conducted with the following objectives:

- 1) To assess the health and nutritional status of the cotton spinning female residential workers.
- 2) To find the correlation between
  - a) Duration of work and occurrence of respiratory symptom.
  - b) Work experience and occurrence of respiratory symptom.
- 3) To provide nutritional education to the cotton spinning female residential workers.



## 2. Literature Survey

Cotton is a natural fibre used in production of cloth. When cotton is being processed it emits fine dust particles into the air. These particles are breathed into the lungs by the person working with the fibre and develop a permanent decrease in their breathing ability. The cotton dust related disease is known as brown lung or byssinosis and affects thousands of people in the textile industry who are exposed to large quantity of dust<sup>[10,11]</sup>

## 3. Materials and Methods

Women are pillar of the Indian society and infrastructure, in which they venture into various new aspects and succeed globally in recent years. To evoke the information, a total of 130 female cotton spinning workers residing in hostel within the premises of a private mill in Tiruppur district were selected randomly for the study. An interview schedule was framed in which a list of structured questions containing general information, information about their work pattern, anthropometric measurements, medical information regarding their health status (presence of any Gastro-Intestinal symptoms, respiratory symptoms, musculoskeletal symptoms, family history, non-communicable diseases, and medication/ supplements taken), clinical examination and dietary assessment like food frequency record and 24- hours dietary recall were included. The respondents were investigated once in a week for four consecutive times to elicit required data. In order to sensitize the respondents regarding nutrition, some nutrition-based education

materials were developed including audio-visual aid (Computer aided power point Presentation), visual aid - Pamphlet and a hand washing poster. The poster explaining the hand washing steps was stuck in dining, kitchen and hand washing areas to improve the workers hygiene.

#### 4. Results and Discussion

Health and safety issues associated with textile industry are numerous and workers are often exposed to various hazards like physical, chemical, biological, mechanical, ergonomic and psycho-social hazards which cause tightening of the chest, coughing, wheezing, hearing loss, dermatitis, nausea, vomiting, musculoskeletal disorders and other disorders. Considering this various above symptoms encountered by the respondents are discussed below.

##### Respiratory symptoms among Cotton Spinning Female Residential Workers

Table 1 shows the respiratory symptoms persisting among the workers. It was found that 12 per cent of the cotton spinning female residential workers were suffering from cough. 10 per cent of them reported to have breathlessness and 4 per cent were found with phlegm.

**Table 1:** Respiratory symptom among the cotton spinning female residential workers, (n = 130)

Symptom	No.	%
Cough	15	12
Breathlessness	13	10
Wheezing	3	2
Asthma	3	2
Phlegm	5	4
Sinusitis	1	1
Chest tightness	3	2
No Symptom	87	67

2 per cent of the cotton spinning female residential workers were presented with wheezing, asthma and chest tightness. Only 1 per cent reported to have sinusitis. Respondents reported that when cotton is being processed it emits fine dust particles into the air causing breathing difficulties when inhaled.

##### Correlation between Duration of Work and Respiratory Symptoms

**Table 2:** Correlation between Duration of Work and Respiratory Symptoms

		Duration	Respiratory symptoms
Duration	Pearson Correlation	1	.997*
	Sig. (2-tailed)		.048
	N	3	3
Respiratory symptoms	Pearson Correlation	.997*	1
	Sig. (2-tailed)	.048	
	N	3	3

\*. Correlation is significant at the 0.05 level (2-tailed).

The study also found that duration of work and occurrence of respiratory symptoms was significant at 0.05 level which states a positive correlation between duration of work and the occurrence of respiratory symptoms. So, it has been shown that long-term exposure to cotton dust is associated

with obstructive pulmonary disease that progresses with duration of exposure.

##### Correlation between Work Experience and Respiratory Symptoms

In addition, the study has also proved that work experience and occurrence of respiratory symptoms was significant at 0.01 level which states a positive correlation between work experience and occurrence of respiratory symptoms. Thus, it proves as experience increases, the occurrence of respiratory symptoms on the other hand also increases.

##### Musculo- skeletal symptoms among Cotton Spinning Female Residential Worker

The prevalence of lower back pain was found to be 18 per cent among cotton spinning female residential workers. 10 per cent reported to have pain in arms and legs. Upper back pain was found to be at seven per cent and five per cent were found to have joint pain. So, it was clear that working in static position for long hours may cause musculoskeletal diseases.

##### Gastro Intestinal Symptoms among the Cotton Spinning Female Residential Workers

The occurrence of constipation was reported to be at 15 per cent among the workers followed by loss of appetite (11 per cent), peptic ulcer (8 per cent) and indigestion (5 per cent). Only 3 per cent reported to have flatulence. Varying working hours and changes in shift time was found to be the major cause of developing GI symptoms.

##### Presence of other morbidity among workers

The prevalence of head ache (79.2 per cent) was prominent among the workers due to the noisy environment followed by hair fall (62.3 per cent) which was due to the sticky nature of cotton.

##### Body Mass Index (BMI) of Cotton Spinning Female Residential Workers

Majority of the respondents (44 per cent) had normal BMI. 33 per cent of the respondents were below normal, 12 per cent were noted to be pre-obese and 11 per cent of the respondents were obese.

##### Prevalence of Clinical Signs among Cotton Spinning Female Residential Workers

Among all clinical signs presence of dental carries (51 per cent) and mottling of teeth (46 per cent) was found to be high which was reported due to poor personal hygiene. 11 per cent of the respondents were found to have brittle and fragile nails which may be due to inadequate intake of protein and iron which was evident from the mean nutrient intake.

##### Food Frequency of Cotton Spinning Female Residential Workers

The consumption of fruits (7 per cent) and green leafy vegetables among the workers was very less on daily basis. Consumption of vegetables (40 per cent) on daily basis was appreciable. Consumption milk and milk products (60 per cent) was fairly good.

## Mean Nutrient Intake of the Cotton Spinning Female Residential Workers

**Table 3:** Mean nutrient intake of the cotton spinning female residential workers

Criteria	Energy k.cal/d	Protein (g)	Fat (g)	Calcium (mg)	Iron (mg)
<b>RDA</b>	2230	55	25	600	21
<b>Mean</b>	1540	39	20	360	12
<b>SD</b>	± 427	± 5	± 1.4	± 95	± 3
<b>% RDA</b>	69	71	80	60	57

The mean caloric intake of the cotton spinning female residential workers (1540 ± 427 kcal) was found to be lower than the ICMR recommendations (2230). Protein intake was 20 ± 1.4 g/day which accounts for only 71 per cent of RDA. Intake of fat was fairly good (80 per cent of RDA). Calcium essential for bone density and strength met 60 per cent of RDA. The consumption of iron was 12 ± 3 mg/day which is only 57 per cent of the RDA. It shows that the respondents were deprived of essential nutrients like iron and calcium which were found to be very important for women at reproductive age.

## 5. Conclusion

The occurrence of work related morbidities like respiratory, musculo skeletal and gastro intestinal become increasing among workers in textile industries. Hence, the present study concludes that textile industry workers' health and nutritional status can be still improved by different health and nutrition intervention. Imparting nutrition education was found to have an effective role to prevent such conditions.

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