



ANALYSIS OF HEMATOLOGICAL PARAMETERS IN A POPULATION WORKING IN SMALL TEXTILE INDUSTRY IN SOUTH INDIA.

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ABSTRACT

BACKGROUND: In India, With rapid industrialization of the developing world, textile dust induced lung diseases are poised to become a global health problem. The number of industries is on the increase, in India, and several industries like agriculture, textile industries, contribute mainly mankind for comfortable living. Workers are involved in different tasks such as dyeing, spinning, weaving and packing. Weaving in textile units involves working with weaving machines. The workers are exposed to vibration, cotton dust etc. Very less studies are available. **MATERIALS AND METHODS:** A total of 60 males individuals, 30 people involved in weaving sector in textile industry, and 30 peoples not involved, age and sex matched, age group 30-40 years, were included in this study. Institutional Ethical approval was obtained. Informed consent obtained. Various parameters including general examination, BMI, total WBC count, Differential count, Absolute eosinophil count, ESR, were obtained. The obtained data was analyzed using standard statistical methods. **RESULTS:** The eosinophil counts of weavers (14.96 ± 5.56) were found to be higher than non weavers (5.53 ± 2.37) and it was found to be statistically significant ($p < 0.05$). The AEC (1241.36 ± 498.36) were found to be higher in weavers than non weavers (540.83 ± 316.62) and was found to be highly significant ($p < 0.05$). The changes in TC (8513.33 ± 2415.4), DC-N (58 ± 12.00), L (26.66 ± 9.08), ESR (26.96 ± 12.69) were found to be insignificant ($p > 0.05$). **CONCLUSION:** Among the hematological parameters, eosinophilia is significant finding in weavers. This significant finding will contribute to allergic diseases. The weaving sector textile workers should be emphasized about the use of protective equipments while working.

KEYWORDS : Hematology, Textile Industry, weavers, Eosinophils.

INTRODUCTION :

In India, With rapid industrialization of the developing world, weaving dust induced lung diseases are poised to become a global health problem. The number of industries is on the increase, in India, and several industries like textile industry, agriculture industry contribute mainly mankind for comfortable living. Workers were involved in different tasks such as dyeing, spinning, weaving and packing. Weaving in textile units involves working with warping and weaving machines. The workers are exposed to vibration, cotton dust and noise. India's major industrial output by textile industry, provides employment to many million people. Comprises of two sectors, highly mechanized mills on one hand and hand weaving & spinning on other hand. Between the two falls the small-scale power loom sector^[1].

Aim and Objectives:

1. To measure the hematological parameters like total White Blood Cell count, Differential count, Absolute eosinophil count, Erythrocyte sedimentation rate in a weaving population of textile sector.
2. To measure the changes in hematological parameters.
3. To compare the changes in hematological parameters among weavers with people not exposed to weaving.

BACKGROUND:

Weaving, sector of textile industry, an occupation followed commonly in Southern part of India. Common occupational health hazards in textile industry are respiratory, musculoskeletal, refractory problems^[2]. There are numerous reported studies of weavers in developed countries but very few in developing countries^[3]. But studies on the hematological parameters are very few hence this study was undertaken.

MATERIALS AND METHODS:

This is a cross-sectional study involving 60 males individuals, 30 individuals exposed to weaving and 30 people not exposed to weaving, controls of the same environment, in

the age group 30-40 years, age and sex matched, were included. Institutional Ethical Committee approval was obtained. Informed consent was obtained from the individuals participating in the study. People having any H/O any respiratory problems, Diabetes, Hypertensives, IHD were excluded from the study. Various parameters including general examination, respiratory system examination, Height, Weight, BMI, total WBC count, differential count, AEC, ESR, were obtained. Blood samples were collected during day time around 8 AM, under aseptic precautions. The obtained data was analyzed using standard statistical methods.

RESULTS:

Baseline characteristics are shown in table 1. The eosinophils and AEC are shown in figure 1.

The eosinophil counts of weavers (14.96 ± 5.56) were found to be higher than nonweavers (5.53 ± 2.37), and the difference was found to be statistically significant ($p < 0.05$). The AEC of weavers was found to be higher (1241.36 ± 498.36) than non weavers (540.83 ± 316.62) and the result was found to be highly significant ($p < 0.05$), but changes in TC (8513.33 ± 2415.4), DC-N (58 ± 12.00), L (26.66 ± 9.08), ESR (26.96 ± 12.69) were found to be statistically insignificant ($p > 0.05$).

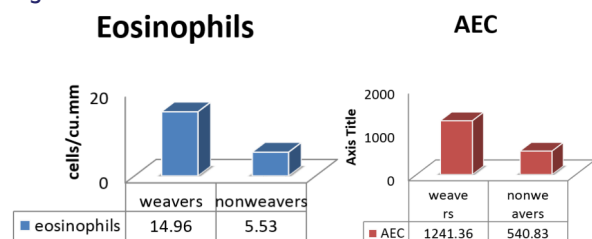
Table 1 :

	Weavers (n=30)	Nonweavers (n=30)	P value
Age (yrs)	43.26 ± 5.46	45.13 ± 4.36	-
BMI (kg/sq.m)	23.93 ± 3.89	24.74 ± 3.22	-
Total Count (Cells/Cu.M m)	8513.33 ± 2415.42	9480 ± 2620.13	0.8
Neutrophils (%)	58 ± 12	71.83 ± 10.73	0.1

LYMPHOCYTES	26.66±9.08	22.7±10.61	0.90
Eosinophils(%)	14.96±5.56	5.53±2.37	0.0000002**
Absolute Eosinophil Count(Cells/Cu.Mm)	1241.36±498.3	540.83±316.6	0.04**
ESR(Mm/Hr)	26.96±12.69	24.8±11.11	0.63

** p value highly significant . p value <0.05 significant. All are expressed as mean ± S.D

Figure 1:



DISCUSSION:

In a study by IramLiaqat et al, they found among exposure of 62 workers to textile chemicals involved in dyeing processes were compared with 95 control subjects, revealed an increase in eosinophil count of 3.78 ± 1.41 (controls), 7.27 ± 0.29 (exposed)* from 10-15 years of exposure leading to allergic manifestations⁴. A significant relationship was recorded between duration of exposure and elevated eosinophils (4.82-24.33) levels in blood, highest results were observed in workers exposed to textile dust for over 10 years, in a study by Kamalesh et al^[5]. Rajanarayan et al found, among morbidity conditions studied from 754 subjects exposed to textile workers from Nagpur showed 19.8% increase in eosinophil count in 102 subjects^[6]. Lung migration of eosinophils was significantly higher than the migration of neutrophils, with eosinophils showing a significantly faster efflux and shorter half time ($t_{1/2}$) than neutrophils, as per studies stated, from an annual meeting by the British society for allergy & clinical immunology^[7]. From the above studies it is clearly indicating that exposure to textile dust is a major health hazard to workers involved in weaving occupation. Our study also shows similar results. *Pvalue < 0.05.

CONCLUSION:

The eosinophil count of weavers are found to be highly significant (p < 0.05) than people not exposed to weaving dust. The absolute eosinophil count of weavers are found to be highly significant (p < 0.05). From the study it is concluded that occupational health problems are strongly associated with increased risk of allergic respiratory diseases. The weavers should be emphasized about the use of protective equipments (like masks) while working.

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