

Original Research Article


Study on jute mill workers exposed to occupational hazards

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Abstract

Background: Occupational risks alone account for 1.7% of disability adjusted life years (DALY) lost worldwide. Occupational exposure to airborne particulates is estimated to cause 12% of deaths due to chronic obstructive pulmonary disease.

Aim: To study the socio demographic profile and morbidity status of jute mill workers exposed to occupational hazards.

Materials and methods: It was a cross sectional study carried out for a period of 9 months. Simple random sampling technique was applied to select the samples from jute processing departments like Selection, Batching, Carding, Preparing, Spinning, Winding, Beaming, Weaving and Finishing.

Results: There was a no statistical significant association ($P>0.05$) found between per duration and type of work. There was a statistical significant association ($P<0.05$) found between Section of work and Housing condition of workers. P value 0.000 statistical significance was found between the total number of workers and drinking habit. There was a statistical significant association ($P<0.05$) found between Section of work and Addictions of workers. Statistical significant association ($P<0.05$) was found between other Health problem and Sex.

Conclusion: The results highlight a lack of adequate work safety practices in the jute mill workers. Workers experience various work-related hazards and health problems.

Key words

Jute mill, Workers, Occupational hazards.

Introduction

Jute is a bio-degradable and soil-friendly, and used in packaging and in various ways as diversified product. People face numerous hazards at work. Occupational risks alone account for 1.7% of disability adjusted life years (DALY) lost worldwide. Occupational exposure to airborne particulates is estimated to cause 12% of deaths due to chronic obstructive pulmonary disease. The World Health Report 2002 places occupational risks as the tenth leading cause of morbidity and mortality. Almost 22.5 million disability adjusted life years (DALY) and 699 000 deaths are attributable to these risk factors. The dust-related deaths are placed at 243,000. Occupational health is of major concern in the South-East Asia Region [1, 2]. Current occupational safety, health and working conditions indicate that there are potential risks of health hazards and diseases at workplaces in the industrial establishments. Jute processing consists departments like selection, batching, carding, drawing, spinning, winding, beaming, weaving, and finishing to yield final products. The observation of the environmental conditions suggested that the selecting, carding and batching processes were dusty. The main subjective complaints prevalent among the workers were cough, expectoration, breathlessness, headache and nasal blockage. The relationship of PEFr with age, sex, section of work were studied among jute mill workers in Krishna jute mill Eluru. Hypertension, diabetes, osteoarthritis, vision problems, hearing problems are the main health problems among the different sections of the jute mill workers.

Among many authors studied about the jute mill workers every one concentrated only on the respiratory morbidity. In order to find out the other types of morbidity among the jute mill workers I have done this study.

Materials and methods

The present study was a cross sectional study carried out among Jute mill workers in Krishna jute mill, Eluru. The study was conducted for a period of 9 months from 1st June 2017 to 30th February 2018. Simple random sampling technique was applied to select the samples from jute processing departments like Selection, Batching, Carding, Preparing, Spinning, Winding, Beaming, Weaving and Finishing.

Inclusion criteria: Workers with more than 3 years of working experience who are willing to participate in the study.

Exclusion criteria: Workers who are working for less than 3 years of working duration, who were not interested to participate, Trainees.

540 workers who were working in the morning shift among different sections and who have given verbal consent were included in the study.

Sample size calculated as study done by Muralidhar Y, et al. [1] among the jute mill workers showed 38% of respiratory problems among the jute mill workers. This prevalence is considered to find out the sample size. The formula used for calculation the sample size: $N=4PQ/L^2$

Where, N is the required sample size P is the prevalence of respiratory problems=38% Using the above formula, the sample size estimate was 471.471 was the sample size estimated using above formula which is added with another 10% non-response rate to make the sample more representative. So the sample size required for the study was rounded to 540.

A proforma was designed and approval was taken from the faculty and head of the department of Community medicine, ASRAM Medical College, Eluru. The data was collected using a pretested semi structured questionnaire. Importance of the study was explained and an informed consent was taken from all the study participants before collecting the data and the study was approved by institutional ethical committee. The study was collected by interview method. The study was done among total of 540

workers in the morning shift of different sections like Selection, Batching, Carding, Preparing, Spinning, Winding, Beaming, Weaving, and Finishing.

The name, age, and sex of each individual was recorded in the proforma, the details of religion, occupation, educational status, diet, smoking, drinking, family history were elicited and noted. Definition of awareness in my study is some idea about the disease, symptoms, complications and risk factors were considered as awareness present and no idea about above specified things were considered as lack of awareness.

Socioeconomic status: Socio economic status was elicited and noted and this was divided into 5 classes that is upper class, upper middle class, lower middle class, upper lower class, and lower

class as per the modified B. G. Prasad's classification.

Anthropometry

Anthropometric data was collected and in this height in centimeters was measured using a portable stadiometer.

The data collected was entered through Microsoft Office Excel 2007. Analysis was done using in Statistical package for social sciences (SPSS) V22.0 necessary statistical tests like proportions and chi -square test were applied.

Results

There was a no statistical significant association ($P>0.05$) found between per duration and type of work. There was a statistical significant association ($P<0.05$) found between Section of work and Housing condition of workers (**Table – 1**).

Table - 1: Distribution of housing conditions of workers.

Section	Type of house of a person							
	Pucca		Semipucca		Katcha		Total	
Selection	18	30.0%	38	63.3%	4	6.7%	60	100.0%
Batching	31	41.7%	26	43.3%	2	3.3%	60	100.0%
Carding	21	35.0%	35	58.3%	4	6.7%	60	100.0%
Preparing	26	32.2%	32	52.5%	2	3.4%	60	100.0%
Spinning	27	45.0%	31	51.7%	2	3.3%	60	100.0%
Winding	34	28.3%	32	53.3%	4	6.7%	60	100.0%
Beaming	29	45.0%	30	50.0%	1	1.7%	60	100.0%
Weaving	25	33.3%	31	51.7%	4	6.7%	60	100.0%
Finishing	32	53.3%	26	43.3%	2	3.3%	60	100.0%
Total	206	38.2%	280	51.9%	25	4.6%	540	100.0%

Chisquare-45.525,DF-24,Sig-0.005 highly significant

Socio economic Status of workers of workers was insignificant in comparison with sections of workers (**Table – 2**). P value 0.000 statistical significance was found between the total number of workers and drinking habit. There was a statistical significant association ($P<0.05$) found between Section of work and Addictions of workers (**Table – 3**). Age wise distribution of peak expiratory flow rate is insignificant in correlation (**Table – 4**).

Age wise correlation with health problems were insignificant (**Table – 4**). There was a statistical significant association ($P<0.05$) found between other Health problem and Sex (**Table – 5**). There was no significance between Section wise distributions of peak expiratory flow rate (**Table – 6**). There was a statistical significant association ($P<0.05$) found between Section of work and Ear problems of workers (**Table – 7**). No significance in G.I.T morbidity among workers of various sections (**Table – 8**).

Table - 2: Distribution of Socio economic Status of workers as per Section.

Section	Socio Economic Status											
	Upper Class		Upper Middle		Lower Middle		Upper Lower		Lower		Total	
Selection	1	1.7%	12	20.0%	16	26.7%	28	46.7%	3	5.0%	60	100.0%
Batching	1	1.7%	9	15.0%	19	31.7%	30	50.0%	1	1.7%	60	100.0%
Carding	1	1.7%	10	16.7%	17	28.3%	29	48.3%	3	5.0%	60	100.0%
Preparing	1	1.7%	12	20.0%	15	25.0%	30	50.0%	2	3.3%	60	100.0%
Spinning	-	-	11	18.3%	20	33.3%	26	43.3%	3	5.0%	60	100.0%
Winding	1	1.7%	11	18.3%	18	30.0%	27	45.0%	3	5.0%	60	100.0%
Beaming	1	1.7%	12	20.0%	16	26.7%	28	46.7%	3	5.0%	60	100.0%
Weaving	1	1.7%	9	15.0%	20	33.3%	29	48.3%	1	1.7%	60	100.0%
Finishing	1	1.7%	10	16.7%	17	28.3%	31	51.7%	1	1.7%	60	100.0%
Total	8	1.5%	96	17.8%	158	29.3%	258	47.8%	20	3.7%	540	100.0%
Chi square value-7.176,DF-32,P value-1.000												

Table - 3: Distribution of Addictions among workers.

Addictions		Male	%	Female	%	Total	%
Smoking	Yes	155	87.6	22	12.4	177	100
	No	225	62	138	38	363	100
	Chi square value-37.361, DF-1, Pvalue-0.000 HS						
Drinking	Yes	126	98.4	2	1.6	128	100
	No	254	61.7	158	38.3	412	100
Chi square value-63.385, DF-1, P Value-0.000 highly significant							
Pan	13		76.5	4	23.5	17	100
Khaini	11		78.6	3	21.4	14	100
Gutka	8		100%	0	0.00%	8	100
Chi square value-4.322, DF-9, P value-0.229							

Table - 4: Age wise distribution of peak expiratory flow rate among the workers.

Age	PEFM of a person									
	0-100		100-200		200-300		300-400		Total	
19-30	12	24.0%	25	50.0%	8	16.0%	5	10.0%	50	100.0%
31-40	24	24.7%	55	56.7%	8	8.2%	10	10.3%	97	100.0%
41-50	28	14.4%	118	60.5%	32	16.4%	17	8.7%	195	100.0%
51-60	35	20.8%	87	51.8%	24	14.3%	22	13.1%	168	100.0%
61-70	6	20.0%	16	53.3%	6	20.0%	2	6.7%	30	100.0%
Total	105	19.4%	301	55.7%	78	14.4%	56	10.4%	540	100.0%
Chi square value-12.258,DF-12,P value-0.425										

There was a statistical significant association (P<0.05) found between Section of work and Skin problems (Table – 9).

Discussion

In the present study 70.4 % study population were males and 29.6% were females. Majority

that is 36.1 % of the study subjects were in 41 to 50 years age group. In the study done by Chattopadhyay BP, et al. [2]; 42.5% of workers were in age group of 40-49 years. In the present study all the workers were literates. In the study done by Vaidya S.N., et al. [3] among the jute mill workers 82.7% of the workers were literate. There are nearly nine sections seen in jute

manufacturing process among all the nine sections Selection, Batching, Carding, Preparing, Spinning were known as high dust exposure group and Winding, Beaming, Weaving Finishing were known as low dust exposure group. In the present study 96.8% (523) workers were Hindus among them 1.5% (8) belongs to Upper class, 18.2% (95) belongs to Upper middle class, 28.5% (149) belongs to Lower middle class, 48.2% (252) belongs to Upper lower class,

3.6% (19) belongs to Lower class. 2.6% (14) workers were Christians among them 57.1% (8) belongs to Lower middle class, 35.7% (5) belongs to Upper lower class, 7.1% (1) belongs to Lower class. 0.55% (3) workers were Muslims among them 33.3% (1) belongs to Upper middle class, 33.3% (1) belongs to Lower middle class, 33.3% (1) belongs to Upper lower class respectively as per modified B.G. Prasad classification.

Table – 5: Age wise distribution of Health problems among workers.

Ocular problems	Age of person in years										
	19-30		31-40		41-50		51-60		61-70		Total
Xerophthalmia	4	11.40%	10	28.60%	10	28.60%	11	31.40%	0	0.00%	
Squint	0	0.00%	0	0.00%	6	60.00%	4	40.00%	0	0.00%	10
Diminished vision	17	13.30%	21	16.40%	49	38.30%	36	28.10%	5	3.90%	128
Watering from eyes	0	0.00%	0	0.00%	3	50.00%	3	50.00%	0	0.00%	6
Blurring of vision	7	9.20%	16	21.10%	25	32.90%	25	32.90%	3	3.90%	76
Cataract	0	0.00%	6	40.00%	3	20.00%	4	26.70%	2	13.30%	15
Allergic conjunctivitis	1	4.00%	6	24.00%	9	36.00%	9	36.00%	0	0.00%	25
Redness of eyes	2	13.30%	3	20.00%	7	46.70%	2	13.30%	1	6.70%	15
Normal	19	8.30%	35	15.20%	83	36.10%	74	32.20%	19	8.30%	230
Total	50	9.30%	97	18.00%	195	36.10%	168	31.10%	30	5.60%	540
Chi square value-35.313, DF-32, P value-0.314											
Ear problems											
Right ear pain	16	13.20%	18	14.90%	35	28.90%	42	34.70%	10	8.30%	121
Left ear pain	11	12.50%	15	17.00%	32	36.40%	27	30.70%	3	3.40%	88
Hearing loss	4	7.30%	13	23.60%	20	36.40%	16	29.10%	2	3.60%	55
Normal	19	6.90%	51	18.50%	108	39.10%	83	30.10%	15	5.40%	276
Total	50	9.30%	97	18.00%	195	36.10%	168	31.10%	30	5.60%	540
Chi square value-12.483, DF-12, P value -0.408											
Other Health problems											
Hypertension	8	14.50%	8	14.50%	22	40.00%	17	30.90%	0	0.00%	55
Diabetes mellitus	4	5.30%	11	14.70%	32	42.70%	23	30.70%	5	6.70%	75
Osteoarthritis	1	3.60%	7	25.00%	9	32.10%	8	28.60%	3	10.70%	28
Asthma	10	17.20%	12	20.70%	21	36.20%	12	20.70%	3	5.20%	58
Epilepsy	2	28.60%	1	14.30%	1	14.30%	3	42.90%	0	0.00%	7

Tuberculosis	3	18.80%	4	25.00%	3	18.80%	6	37.50%	0	0.00%	16
COPD	4	10.80%	9	24.30%	5	13.50%	16	43.20%	3	8.10%	37
Any of Two	18	6.80%	44	16.70%	102	38.80%	83	31.60%	16	6.10%	263
No	0	0.00%	1	100.00%	0	0.00%	0	0.00%	0	0.00%	1
Total	50	9.30%	97	18.00%	195	36.10%	168	31.10%	30	5.60%	540
Chi square -42.002,DF-32,P-0.111											
Gastric Problems											
Jaundice	1	9.10%	2	18.20%	4	36.40%	4	36.40%	0	0.00%	11
Gastric problem	2	7.70%	3	11.50%	13	50.00%	7	26.90%	1	3.80%	26
Stomach burning	1	4.80%	4	19.00%	9	42.90%	5	23.80%	2	9.50%	21
No	46	9.50%	88	18.30%	169	35.10%	152	31.50%	27	5.60%	482
Total	50	9.30%	97	18.00%	195	36.10%	168	31.10%	30	5.60%	540
Chi Square-4.982, DF-12, P-0.959											

Table - 5: Sex wise distribution of peak Health problems among the workers.

Ocular	Sex of the person				
	Male		Female		Total
Xerophthalmia	26	74.30%	9	25.70%	35
Squint	7	70.00%	3	30.00%	10
Diminished vision	93	72.70%	35	27.30%	128
Watering from eyes	6	100.00%	0	0.00%	6
Blurring of vision	58	76.30%	18	23.70%	76
Cataract	13	86.70%	2	13.30%	15
Allergic conjunctivitis	18	72.00%	7	28.00%	25
Redness of eyes	12	80.00%	3	20.00%	15
Normal	147	63.90%	83	36.10%	230
Total	380	70.40%	160	29.60%	540
Chi square value-11.603, DF-8, P value- 0.170.					
Ear problem					
Right ear pain	94	77.70%	27	22.30%	121
Left ear pain	62	70.50%	26	29.50%	88
Hearing loss	41	74.50%	14	25.50%	55
Normal	183	66.30%	93	33.70%	276
Total	380	70.40%	160	29.60%	540
Chi square value- 5.754,DF-3,P value-0.124					
Other Health problem					
Hypertension	44	80.00%	11	20.00%	55
Diabetes mellitus	35	46.70%	40	53.30%	75
Osteoarthritis	20	71.40%	8	28.60%	28
Asthma	44	75.90%	14	24.10%	58
Epilepsy	6	85.70%	1	14.30%	7
Tuberculosis	13	81.30%	3	18.80%	16

COPD	31	83.80%	6	16.20%	37
Two Problems	186	70.70%	77	29.30%	263
No	1	100.00%	0	0.00%	1
Total	380	70.40%	160	29.60%	540
Chi square value- 28.839,DF-8,P -0.0001, Highly significant					
G.I problems					
Jaundice	9	81.80%	2	18.20%	11
Gastric problem	17	65.40%	9	34.60%	26
Stomach burning	15	71.40%	6	28.60%	21
No	339	70.30%	143	29.70%	482
Total	380	70.40%	160	29.60%	540
Chi square-1.013,DF-3,P-0.978					

Table - 6: Section wise distribution of peak expiratory flow rate among the workers.

Section	PEFM of a person								
	0-100		100-200		200-300		300-400		Total
Selection	8	13.3%	30	50.0%	12	20.0%	10	16.7%	60
Batching	8	13.3%	35	58.3%	9	15.0%	8	13.3%	60
Carding	11	18.3%	31	51.7%	12	20.0%	6	10.0%	60
Preparing	17	28.3%	30	50.0%	4	6.7%	9	15.0%	60
Spinning	16	26.7%	33	55.0%	7	11.7%	4	6.7%	60
Winding	18	30.0%	31	51.7%	4	6.7%	7	11.7%	60
Beaming	8	13.3%	41	68.3%	6	10.0%	5	8.3%	60
Weaving	9	15.0%	37	61.7%	11	18.3%	3	5.0%	60
Finishing	10	16.7%	33	55.0%	13	21.7%	4	6.7%	60
Total	105	19.4%	301	55.7%	78	14.4%	56	10.4%	540
Chi square value-34.286,DF-24,P value-0.80									

Table - 7: Distribution of ear problems among the workers of different sections.

Section	Ear Problems among workers								
	Rt ear		Lt ear		H.L		Normal		Total
	No.	%	No.	%	No.	%	No.	%	
Selection	3	5.0	13	21.7	12	20.0	32	53.3	60
Batching	18	30.0	12	20.0	7	11.7	23	38.3	60
Carding	17	28.3	7	11.7	11	18.3	25	41.7	60
Preparing	20	33.3	10	16.7	4	6.7	26	43.3	60
Spinning	18	30.0	8	13.3	5	8.3	29	48.3	60
Winding	10	16.7	14	23.3	3	5.0	33	55.0	60
Beaming	12	20.0	2	3.3	6	10.0	40	66.7	60
Weaving	7	11.7	10	16.7	4	6.7	39	65.0	60
Finishing	16	26.7	12	20.0	3	5.0	29	48.3	60
Total	121	22.4	88	16.3	55	10.2	276	51.1	540
Chi square value 54.896,DF-24,P value-0.000 Highly significant									

Table - 8: GIT morbidity among workers of various sections.

Section	Gastrointestinal tract of a person								
	Jaundice		Gastric problem		Stomach burning		No		Total
Selection	2	3.3%	2	3.3%	1	1.7%	55	91.7%	60
Batching	2	3.3%	3	5.0%	3	5.0%	52	86.7%	60
Carding	1	1.7%	2	3.3%	3	5.0%	54	90.0%	60
Preparing	1	1.7%	3	5.0%	3	5.0%	53	88.3%	60
Spinning	1	1.7%	3	5.0%	2	3.3%	54	90.0%	60
Winding	1	1.7%	3	5.0%	2	3.3%	54	90.0%	60
Beaming	1	1.7%	3	5.0%	2	3.3%	54	90.0%	60
Weaving	1	1.7%	3	5.0%	3	5.0%	53	88.3%	60
Finishing	1	1.7%	4	6.7%	2	3.3%	53	88.3%	60
Total	11	2.0%	26	4.8%	21	3.9%	482	89.3%	540

Chi square-4.103,DF-24,P-1.000

Table - 9: Skin problems among workers of various sections.

Section	Skin problems of person								
	Itching		Skin rashes		Skin allergy		Normal		Total
Selection	8	13.3%	4	6.7%	7	11.7%	41	68.3%	60
Batching	3	5.0%	3	5.0%	2	3.3%	52	86.7%	60
Carding	3	5.0%	8	13.3%	1	1.7%	48	80.0%	60
Preparing	4	6.7%	3	5.0%	1	1.7%	52	86.7%	60
Spinning	6	10.0%	6	10.0%	3	5.0%	45	75.0%	60
Winding	5	8.3%	0	0.0%	3	5.0%	52	86.7%	60
Beaming	3	5.0%	11	18.3%	2	3.3%	44	73.3%	60
Weaving	11	18.3%	3	5.0%	4	6.7%	42	70.0%	60
Finishing	4	6.7%	4	6.7%	3	5.0%	49	81.7%	60
Total	47	8.7%	42	7.8%	26	4.8%	425	78.7%	540

Chi square-41.964,DF24-,P-0.013

Ighoroje ADA, Marchie C, Nwobodo ED, et al. [4] in a study among industrial workers revealed the prevalence of hearing difficulties and tinnitus as the result of excessive exposure to loud noise were strongly related to age, severe difficulties in hearing being unusual under the age of 35 years. In this study 22.4% (121) workers were suffering from Right ear pain among them highest number of workers 34.7% (42) were seen in 51-60 years. 16.2% (88) workers were suffering from Left ear pain among them highest number of workers 36.4% (32) were seen in 41-50 years. 10.1% (55) workers were suffering from Hearing loss among them highest number of workers 36.4% (20) were seen in 41-50 years. This shows that as the age increases the frequency of hearing problems may increase.

Ramazzini B [5] in his study among the diseases of workers revealed that between 7.4 and 10.2 million people work at sites where the level of noise presents an increased risk of hearing loss. In his study he revealed that 17% workers were suffering from hearing loss among them 10% were males and 7% were females, 21% of workers were suffering from ear pain among them 16% were males and 5% were females. Males are more affected as compared to the females. Workers exposed to high pitch sound were found with increased risk of hearing loss. In the present study 10.1% (55) workers are suffering from hearing loss among them 74.5% (41) workers were males and 25.5% (26) workers were females. These workers were continuously exposed to high pitch sounds. 22.4% (121)

workers were suffering from Right ear pain, among them 77.7% (94) were males and 22.3% (27) were females. Continuous exposure to high pitch sounds may results in headache, ear pain, which finally leads to hearing loss. 16.2% (88) workers were suffering from Left ear pain among them 70.5% (62) workers were males and 29.5% (26) workers were females. In this study male workers are more as compared to the females. Hence males are more subjected to hearing problems as compared to the females. This shows that as the working years increases jute mill workers are continuously exposed to high pitch sound. Continuous exposure to high pitch sound for longer period of years may results in occurrence of various ear problems.

Gierke HE, et al. [6] in his study among the industrial workers showed that there is positive significant relationship between working experience of the respondents and right hearing loss and left hearing loss. The more years of working experience results into more hearing loss. This is because workers are continously exposed to high pitch sounds. This study is among different sections of workers involved in jute manufacturing process, according to this study 10.2% (55) workers were suffering from hearing loss among them highest number of workers were seen among the workers in Selection section 20% (12) followed by workers in the Carding section 18.3% (11). Right ear pain was seen among 22.4% (121) workers among them highest number 33.3% (20) of workers were seen in preparing section followed by batching section it includes about 30% (18) of workers. Left ear pain was seen among 16.3% (88) workers among them highest number 23.3% (14) workers were seen among winding section followed by 21.7% (12) of workers were seen among selection section. As the experience of work in years increases duration of exposure to high pitch sound may increases which leads to Right side hearing loss and left side hearing loss. Workers in jute mill were shifted from one section to another section depending upon the duration of work.

In this study, 6.4% (35) workers were suffering from Xerophthalmia among them 31.4% (11) of workers were in 51-60 years of age, 1.8% (10) of workers were suffering from Squint among them 60% (6) workers were in 41-50 years of age, 23.7% (128) of workers were suffering from Diminished vision among them 38.3% (49) of workers were in 41-50 years of age, 1.1% (6) workers were suffering from Watering from eyes among them 50% (3) of workers were in 51-60 years of age, 14% (76) workers were suffering from Blurring vision among them 32.9% (25) of workers were in 51-60 years of age, 2.77% (15) workers were suffering from Cataract among them 40% (6) of workers were in 31-40 years of age, 4.62% (25) workers were suffering from Allergic conjunctivitis among them 36% (9) of workers were in 51-60 years of age, 2.7% (15) workers were suffering from Redness of eyes among them 46.7% (7) of workers were in 51-60 years of age. Schlote T, Kadner G, et al. [7] in his study among the industrial workers revealed that continuous exposure to high dust in the working places may results in various eye problems. Asthenopia or eye strain is a condition results in uncomfortable, painful, and irritable vision. His study results shows that 29.6% (130) workers were suffering from Diminished vision among them 52% of workers were belong to 41-50 years of age, 24.6% (110) workers were suffering from Blurring vision among them 45% of workers were belong to 51-60 years of age, 3.9% (24) workers were suffering from Allergic conjunctivitis among them 32% of workers were belong to 41-50 years of age, 2.9% (21) workers were suffering from Watering from eyes among them 46% of workers were belong to 51-60 years of age. This study reveals that workers exposed to high dust at their working places were more prone to ocular diseases. American Optometry Association (2011) [8] in their study revealed that most of the ocular accidents and ocular problems may occurs as a result of not using proper protective measures at their working places. Personnel protective measures are very essential at the working places to avoid various occupational hazards. By using proper protectonal measures at the working places we

can prevent the occurrence of various eye problems.

Mocci F, Serra A, et al. [9] in his study confirmed that Visual headaches most often occur toward the front of the head occur most often toward the middle or end of the day, as a result of continuous strain to the eye due to continuous exposure to high dust at the working place. Continuous exposure to high dust at the working place may results in various ocular problems. His study shows the occurrence of 21.9% (90) workers were suffering from Diminished vision among them 62% of workers were males and 38% of workers were females, 17.6% (68) workers were suffering from Blurring vision among them 55% of workers were males and 44% workers were females, 1.9% (20) workers were suffering from Allergic conjunctivitis among them 76% were males and 24% were females, 20.3% (21) workers were suffering from Watering from eyes among 71% were males and 29% were females. This study shows 6.4% (35) workers were suffering from Xerophthalmia among them 74.3% (26) were males and 25.7% (9) were females, 1.8% (10) of workers were suffering from Squint among them 70% (7) workers were males and 30% (3) were females, 23.7% (128) of workers were suffering from Diminished vision among them 72.7% (93) of workers were males and 27.5% (35) workers were females, 1.1% (6) workers were suffering from Watering from eyes among them all the workers were males, 14% (76) workers were suffering from Blurring vision among them 76.3% (58) were males and 23.7% (18) were females, 2.77% (15) workers were suffering from Cataract among them 86.7% (13) were males and 13.3% (2) were females, 4.62% (25) workers were suffering from Allergic conjunctivitis among them 72% (18) of workers were males and 28% (7) were females, 2.7% (15) workers were suffering from Redness of eyes among them 80% (12) were males and 20% (3) were females. Due to high number of male workers the occurrence of eye problems were more among males as compared to females. Wood V [10] in his study showed that headache is discomfort which occurs

mainly as a result of working under poor illumination under high dust. Working under poor illumination and at high dust at the work place leads to occurrence of eye strain and various ocular problems. Hence proper illumination should be present at the working place to avoid the occurrence of headache and various ocular problems. Workers in the industries may suffer from various ocular problems that were mainly because of not following proper precautionary measures at the working places. Workers should use proper protective measures to avoid ocular accidents. Lack of proper awareness is the main reason for most of the ocular problems at the working places. Awareness regarding the usage of proper protective measures should be taught to every worker in the industry.

In the present study 10.1% (55) of workers were suffering from Hypertension among them 40% (22) workers were in 41-50 years of age. 13.8% (75) of workers were suffering from Diabetes among them 42.7% (32) of workers were in 41-50 years of age. 5.18% (28) of workers were suffering from Osteoarthritis among them 32.1% (9) workers were in 41-50 years of age. 1.2% (7) of workers were suffering from Epilepsy among them 42.9% (3) workers were in 51-60 years of age. Agnihotram R.V. [11] conducted a study among the industrial workers in his study 18.5% (76) workers were suffering from Hypertension among them 49% of workers were in 41-50 years of age. Most of workers with hypertension were found to be in the middle age group. So many factors were responsible for the occurrence of hypertension among the workers. Most of the workers suffering with hypertension were obese and some workers were having family history of hypertension. Some workers were suffering from long standing hypertension. Some workers was not knowing that they were having the hypertension. Complications regarding the long standing hypertension was clearly explained to all the workers. Among the 55 workers suffering from hypertension 80% (44) were males and 20% (11) were females. Hypertension was more among males as compared to females. Chobanian

AV, et al. [12] in his study among the industrial workers showed that 82% of workers suffering from hypertension were males and 18% of workers suffering hypertension were females. Hypertension was mostly observed in males as compared to the females.

Seshaiah V [13] in his study revealed the probable causes regarding the occurrence of diabetes among the industrial workers. Diabetes is a non-communicable disease which occur in both males as well as females. In this study among all the 75 workers suffering from diabetes 46.7% (35) workers were males and 53.3% (40) workers were females. In this study Diabetes is more among the female workers as compared to the male workers. Among most of the women lack of physical activity is the main reason for the occurrence of the diabetes, women who are mostly engaged in the sedentary work were more prone to the diabetes. Ramachandran A, et al. [14] has conducted a study based on diabetes prevention program has clearly documented the importance of physical activity in the prevention of diabetes. He carried out a population based study among the industrial workers and showed that a positive family history of diabetes was present in 24.7% of subjects. Mean body mass index and percentage of obesity were significantly higher in families with a positive family history. They concluded that in his study population, general and central obesity are associated with a family history of diabetes. A family history of diabetes may increase the risk of hypertension and hyperlipidemia indirectly through its connection with body mass index.

In the present study 3.7% (20) of workers were suffering from both the hypertension and diabetes. Among them 50% (10) workers were in the age group of 51-60 years. Hypertension and diabetes was found mostly among the elderly age group in workers who are above 50 years of age. In this study majority of the workers suffering from diabetes and hypertension were obese. Obesity is the main cause of hypertension and diabetes among all the workers.

In the present study 4.81% (26) workers were suffering from gastric problem among them 50% (13) workers were in 41-50 years of age. 3.8% (21) workers were suffering from stomach burning among them 42.9% (9) workers were in 41-50 years of age. 2.03% (11) workers were suffering from jaundice among them 36.4% (4) workers were in 41-50 years of age. In the present study among the 26 workers suffering from gastric problems 65.4% (17) were males and 34.6% (9) workers were females. Among 21 workers suffering from stomach burning 71.4% (15) were males and 28.6% (6) workers were females. Among 11 workers suffering from jaundice 81.8% (9) workers were males and 18.2% (2) workers were females.

In the present study 8.7% (47) workers were suffering from itching among them 40.4% (19) workers were in the age group of 41-50 years. 7.8% (42) workers were suffering from skin rashes among them 40.7% (17) workers were in the age group of 51-60 years. 4.8% (26) workers were suffering from skin allergy among them 38.4% (10) workers were in the age group of 41-50 years. Oleru UG, et al. [15] in his study about the jute mill workers described about the occurrence of dermatoses among the workers. The results of his survey show that jute workers are especially prone to degenerative changes of the skin on exposed areas. Such degenerative changes on the hands, arms, or face seldom cause danger to life. In his study 19.4% (73) workers in the age group of 45-59 years were affected by oil acne. 4.5% (17) workers in the age group of 45-59 years were affected by pre malignant changes. In the present study among 47 workers suffering from itching 66% (31) workers were males and 34% (16) workers were females. Among the 42 workers suffering from skin rashes 69% (29) workers were males and 31% (13) and workers were females. Among the 26 workers suffering from skin allergy 73.1% (19) workers were males and 29.6% (7) workers were females. Curjel D.F., et al. [16] in his study among the jute mill workers told that among 40 workers suffering for oil acne 45% (18) workers were males and 55% (22) workers were females.

Agnihotram R.V. [11] in this study among the industrial workers explained about the skin allergy and other types of skin problems affected by the workers. White, et al. [17] in his study on the industrial workers proved that working conditions caused occupational skin diseases in workers in different occupations on a considerable scale. Dryness, redness, scaling, itching, skin rashes, skin allergy were the main occupational skin diseases. He told that success in preventing occupational skin diseases is possible with intervention measures, which include training in skin protection.

In the present study among the 170 workers addicted to smoking 87.6% (155) were male and 12.4% (22) were female. Workers use to smoke cigars, chutta, and beedi. In this study the p value is 0.0001 there is a statistically significant association found between the smoking habit and the sex of the worker. Among the 128 workers addicted to drinking 98.4% (126) were male and 1.6% (2) were female. In this study the p value is 0.0001 there is a statistically significant association found between the drinking habit and the sex of the worker. Bhaskar V.V. [18] in his study among the industrial workers told that more than half 51.5% (154) of the participants gave history of addiction. This might be due to the workers are residing away from their family or due to stress at the work place.

Conclusion

In conclusion, the results highlight a lack of adequate work safety practices in the jute mill workers. Workers experience various work-related hazards and health problems. This study revealed the need for an increased knowledge on occupational hazards and its prevention among jute mill workers. Jute mill workers with health problems etiological factor is respiratory and systemic system injury so regular health check up and health awareness and education of workers. Use of safety equipments. Rotation from high dust to low dust departments.

Given that adherence to safety practice guidelines is the key to reducing the risk of injury and illness among workers, there is the need to develop a framework that will initiate the integration and implementation of safety regulations and guidelines in the paint factories so as to reduce associated occupational hazards

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