"MORBIDITY PROFILE AND FACTORS ASSOCIATED AMONG POWER-LOOM WORKERS - A CROSS-SECTIONAL STUDY"

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ABSTRACT **Background:** With more than 25 lakh power-looms, the sector provides employment to about 65 lakh persons in India. Like many other occupations, the power-looms produce noise and vibrations affecting the health, with increase in morbidities.1The common health problems faced by power-loom workers were musculoskeletal problems, mental disorders, stress, respiratory problems, eye diseases, gastritis and injuries.2 This study was conducted to assess the morbidity profile among the power-loom workers and to assess the association of socio demographic factors with the morbidity profile among the power-loom workers in Bengaluru rural.
Methods: A Community based cross-sectional study was conducted during March-July 2019, among 134 Power-loom workers situated in the rural field practice area of a medical college in Bengaluru. Data was collected using semi-structured, interviewer-administered questionnaire and analysed using Epi Info Version 7.2.1. Chi-squared test was used to test association and p-value <0.05 considered statistically significant.
Results: Mean age of the Power-loom workers studied was 42.38 (± 9.66) years and 76.1% were males. majority 56% belong to class-II socioeconomic status. The most common morbidities were musculoskeletal problems (81.3%), vision problems (53.8%), gastrointestinal problems (53.8%) and hearing problems (24%). Multi-morbidity was seen in 75.4% of study participants and was significantly more among males. There was a significant association between morbidity pattern and age-group, duration of current job, lifting of heavy objects (P<0.05).
Conclusion: The prevalence of morbidity among power loom workers was high and there is need to develop appropriate strategy to tackle, including preventive strategy.

KEYWORDS : Morbidity pattern, Power-loom workers, Vision problems, Hearing problems.

INTRODUCTION

With more than 25 lakh power-looms, the sector provides employment to about 65 lakh persons in India. Like many other occupations, the power-looms produce noise and vibrations affecting the health, with increase in morbidities.[1] The common health problems faced by power-loom workers are musculoskeletal problems, mental disorders, stress, respiratory problems, eye diseases, gastritis and injuries.[2] This study was carried out to estimate the prevalence of Morbidity profile and the factors associated with it among the power-loom workers in Bengaluru rural district.

Objectives
- To assess the morbidity profile among the power-loom workers in Bengaluru Rural
- To assess the association of socio demographic factors with the morbidity profile among the power-loom workers.

METHODOLOGY

A Community based Cross-sectional study was conducted from March to July 2019 among Power-loom workers working in Seegehalli - Kannamangala Power-loom cluster situated in Rural Field practice area of Vydehi Institute of Medical Sciences and Research Centre, Bengaluru. A line list of all the people working in the power-looms in the weaver clusters situated in the study area was prepared. From the line list, sample was drawn through simple random sampling technique, till the required sample size was achieved, after considering the inclusion criteria.

After obtaining the approval from the ethical committee, the need for the study and that the individual data collected was kept confidential and was explained to the study participants. A written consent was obtained from those who agree to participate in the study. Data was collected using pre-tested semi-structured, interviewer administered data collection tool. The data collection tool had following variables such as Sociodemographic profile (age, sex, religion, education, type of family, occupation, income, marital status, financial dependency,

duration of current job) , details on Life-style factors such as sleeping pattern, Lifting of heavy objects and Morbidity profile such as history of Diabetes, Hypertension, Musculoskeletal disorders, Vision problems, Gastrointestinal problems, Hearing problems, Cardiovascular problems, Respiratory problems, Varicose veins and Others .

Inclusion Criteria
The weavers aged 18 years and above, both gender, who have been working for more than one year in the current profession.

Exclusion Criteria
Individuals who are not willing for the participation in the study, pregnant and lactating women and those with chronic debilitating diseases will not be included in the study.

Sample Size
The sample size was calculated for the study using the following formula:

$$n = \frac{\left[Z^2_{(1-\frac{\alpha}{2})} * P(1-P)\right]}{d^2}$$

Where, P_expected proportion;
d_absolute precision
$Z_{(1-\alpha/2)}$_Confidence interval

Based on the study by Neeraja T et al[4] among the weavers in Guntur District, Andhra Pradesh state, where the prevalence of musculoskeletal problems was reported as 86%, the required sample size was calculated based on the following assumptions:
Expected proportion = 0.86; Precision = 6%; Confidence interval = 95%

The minimum required sample size was 128. Sample size increased by 5%. Hence a total sample of 134 (128 + 5% of 128 = 128+6 = 134) for the study.

Statistical Analysis:
Data was entered and analysed using Epi Info Version 7.2.1. Data was summarized and was presented in percentages, tables and graphs. Chi-squared test was used to test association between various variables. P value <0.05 was considered as statistically significant.

RESULTS
Out of 134 power-loom workers, 102(76.1%) were males and 32(23.9%) were females. The Mean age of the participants was 42.38 years (± 9.66).

Fig.1: Distribution of study subjects based on morbidity pattern among Power loom workers [N= 134]

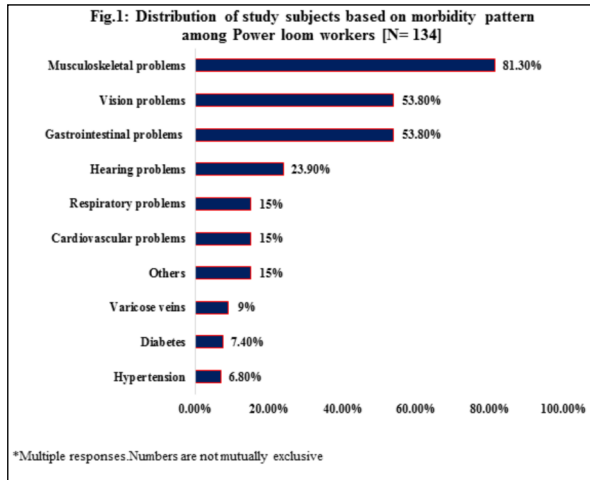*Multiple responses.Numbers are not mutually exclusive

Figure 1 shows distribution of study subjects based on morbidity pattern among Power loom workers. Out of 134 study participants, commonest morbidity was 109(81.3%) musculoskeletal disorders, followed by 72(53.8%) vision problems, 72(53.8%) gastrointestinal problems, 32(23.9%) hearing problems, 20(15%) cardiovascular problems, 20(15%) respiratory problems, 12(9%) varicose veins, 10(7.4%) diabetes, 9(6.8%) hypertension and 20(15%) other morbidities (renal failure, renal calculi, hypothyroidism, osteoarthritis, gynaecological problems, headache, skin diseases).

Table 1: Factors Associated With The Major Morbidities Among The Power-loom Workers (N=134)

Variable	Musculoskeletal problems (n=109) No. (%)	Visual problems (n=72) No. (%)	Gastrointestinal problems (n=72) No. (%)	Hearing problems (n=32) No. (%)
Age- group				
≤40	51(46.8)*	28(38.9)*	33(45.9)*	14(43.8)*
>40	58(53.2)	44(61.1)	39(54.1)	18(56.2)
Gender				
Male	82(75.2)#	58(80.6)#	57(79.1)#	22(68.8)#
Female	27(24.8)	14(19.4)	15(20.9)	10(31.2)
Socio-economic status				
Class I	14(12.8)#	11(15.2)#	09(12.6)#	6(18.8)#
Class II	49(44.9)	27(37.5)	38(52.8)	15(46.9)
Class III	30(27.6)	25(34.8)	18(25.0)	07(21.9)
Class IV	13(11.9)	09(12.5)	06(08.3)	03(09.3)
Class V	03(02.8)	00(00.0)	01(01.3)	10(03.1)
Duration of current Job				
≤10 years	21(19.2)#	09(12.5)*	09(12.5)#	05(15.7)#
>10-20years	32(29.4)	17(23.6)	27(37.5)	10(31.2)
>20 years	56(51.4)	46(63.9)	36(50.0)	17(53.1)
Lifting of heavy objects				
Yes	63(57.9)#	48(66.7)*	44(61.1)#	23(71.9)*
No	46(42.2)	24(33.3)	28(38.9)	09(28.1)
*P <0.05, #P>0.05				

Table 1 shows factors associated with the major morbidities among the power-loom workers (N=134). Out of 109 power-loom workers who had Musculoskeletal problems, 58(53.2%) were more than 40 years of age and 51(46.8%) were less than or equal to 40 years. Among 72 power-loom workers who had vision problems, majority 44(61.1%) were more than 40 years and 28(38.9%) were less than or equal to 40 years. In 72 power-loom workers who had Gastrointestinal problems, 39(54.1%) were more than 40 years and 33(45.9%) were less than or

equal to 40 years and among 32 power-loom workers who had hearing problems, 14(43.8%) were less than or equal to 40 years and 18(56.2%) were more than 40 years. There is a significant association between age group and Morbidity profile (P<0.05).

Out of 109 power-loom workers who had Musculoskeletal problems, majority 82(75.2%) were males and 27(24.8%) were females. Among 72 power-loom workers who had vision problems, majority 58(80.6%) were males and 14(19.4%) were females. In 72 power-loom workers who had Gastrointestinal problems, majority 57(79.1%) were males and 15(20.9%) were females and among 32 power-loom workers who had hearing problems, majority 22(68.8%) were males and 10(31.2%) were females. There is a no significant association between gender and Morbidity profile (P>0.05).

Out of 109 power-loom workers who had Musculoskeletal problems, majority 49(44.9%) were belongs to Class II Socio-economic class, followed by 30(27.6%) were in class III,14(12.8) were in class I, 13(11.9%) were in class IV and 3(2.8%) were in class V. Among 72 power-loom workers who had vision problems, 27(37.5%) were belongs to Class II Socio-economic class, followed by 25(34.8%) were in class III, 11(15.2) were in class I, 9(12.5%) were in class IV. In 72 power-loom workers who had Gastrointestinal problems, majority 38(52.8%) were belongs to Class II Socio-economic class, followed by 18(25%) were in class III, 9(12.6%) were in class I, 6(8.3%) were in class IV and 1(1.3%) were in class V and among 32 power-loom workers who had hearing problems, majority 15(46.9%) were belongs to Class II Socio-economic class, followed by 10(03.1%) were in class V, 7(21.9%) were in class III, 6(18.8) were in class I and 3(9.3%) were in class IV. There is a no significant association between Socio-economic status and Morbidity profile (P>0.05).

Out of 109 power-loom workers who had Musculoskeletal problems, majority 56(51.4%) were doing current job since more than 20 years followed by 32(29.4%) for >10-20years and 21(19.2%) were working for ≤10 years. Among 72 power-loom workers who had vision problems, majority 46(63.9%) were doing current job since more than 20 years followed by 17(23.6%) for >10-20years and 9(12.5%) were working for ≤10 years. In 72 power-loom workers who had Gastrointestinal problems, 36(50%) were doing current job since more than 20 years followed by 27(37.5%) for >10-20years and 9(12.5%) were working for ≤10 years and among 32 power-loom workers who had hearing problems 17(53.1%) were doing current job since more than 20 years followed by 10(31.2%) for >10-20years and 5(15.7%) were working for ≤10 years. There is a no significant association between duration of current job and Morbidity profile (P>0.05) except Visual problems which is statistically significant (P<0.05).

Out of 109 power-loom workers who had Musculoskeletal problems, 63(57.9%) used to lift heavy objects and among 72 power-loom workers who had vision problems, 48(66.7%) used to lift heavy objects. In 72 power-loom workers who had Gastrointestinal problems, 44(61.1%) used to lift heavy objects and among 32 power-loom workers who had hearing problems, majority 23(71.9%) used to lift heavy objects. There is a no significant association between Lifting of heavy objects and Morbidity profile (P>0.05) except Visual problems and Hearing problems which is statistically significant (P<0.05).

DISCUSSION
This study was carried out to assess the morbidity profile and the factors associated with it among Power-loom workers. In the current study most common form of morbidity was Musculoskeletal disorders (81.3%) followed by Vision problems & Gastro-intestinal problems (53.8%). In community based, cross sectional study conducted by Ahmad S A et al in 2012, among 206 small-scale textile industry workers in the Meerut district of Uttar Pradesh, to assess the musculoskeletal disorders and respiratory illness of workers. The commonest health problems were Musculoskeletal disorders (68.4%) followed by respiratory illness (15.5%) & 16% of other common general diseases.[2]

A cross-sectional study was conducted by Thomas S in 2012, to assess the health problems of women working in a textile unit in Coimbatore, Tamil Nadu. About 70% of the respondents had back pain problem and pains in joints of arms/legs. 45% had eye problems, 31.65% had headache, 9.49% had fever once a month, 26.58% had backache, 12.03% had cough, 12.66% had knee pain, 5.90% had stomach pain and 1.9% had hypertension.[4]

A Community based cross-sectional study was conducted by Kapil G et al in 2011 among randomly selected power-loom workers in Meerut, Western Uttar Pradesh, to find out the health status and the treatment-seeking behaviour of power-loom workers. Majority of power-loom workers suffered from respiratory diseases (52%), followed by musculoskeletal problems (22%), generalised weakness (18%), injuries of legs and hands (14%), mental diseases (12%), gastrointestinal diseases (12%), skin diseases (10%) and noise-induced hearing loss (8%).[5]

Goel A and Tyagi I carried out a cross-sectional study in 2012, among 70 weavers who belonging to the traditional community of weavers (Julahas) from Mahua Dabra village, Udham Singh Nagar district, Uttarakhand, to find out the occupational health hazards related to weaving. About 50 % weavers were suffering from backache, 45.8% from pain in palm and stiffness of hand joints, 42.9% from shoulder pain, Knee pain and pain in calf muscles, 35.8% had breathing problem and chest pain, 31.4% from spondylitis, 24.2% from headache, 14.2% from hearing problems and 7.1% obesity. The study concluded that morbidity among weavers is very high and need to give due importance to tackle the problems.[6]

CONCLUSION
The study showed that majority 76.1% were males and 23.9% were females. The Mean age of the participants was 42.38 years (± 9.66). The prevalence of morbidities like Musculoskeletal problems, vision problems, gastrointestinal problems, hearing problems and cardiovascular problems among power loom workers was high. There is a significant association between age group and Morbidity profile (P<0.05). There is a no significant association between gender, Socio-economic status, duration of current job, lifting of heavy objects and Morbidity profile (P>0.05)

Limitations
As the study was conducted among the power-loom workers residing in the field practice area of Rural Health Training Centre, Kannamangala, Bangalore Rural District, attached to Vydehi Institute of Medical Sciences and Research Centre, Bengaluru, the results may not generalize to the entire power-loom worker's community. The study design had no comparison group with the community dwelling, the influence of extraneous factors could not be studied.

Recommendations
Pre-placement and periodic health checks should be organized for both power-loom workers and the power-looms owners, to ensure good health of the workers

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