

ASSESSMENT OF HEALTH PROFILE OF ZARI WORKERS WITH SPECIAL REFERENCE TO MUSCULOSKELETAL DISORDERS IN AN URBAN SLUM OF MUMBAI, INDIA

BHUWAN SHARMA & HEMANT MAHAJAN

Assistant Professor, Department of Community Medicine, Grant Government Medical College, Mumbai, India

ABSTRACT

Zari making is a kind of occupation which comes under unorganized sector and most of these units are situated in slums. Workers employed in these industries have to bear the brunt of unhygienic working conditions coupled with no health or safety measures. Little has been published about the known or suspected health risk of workers employed in zari work, despite it forming the livelihood of so many people in underdeveloped area. The present study was carried out to assess the health profile of workers employed in zari industry and put forth recommendations in order to improve and maintain their health status. A cross sectional study was done on 800 subjects, using pre-formed, pre-tested, semi-structured questionnaire. Information was collected regarding various morbidities and their working environment. Most of the workers (68%) complained of pain related to musculoskeletal system. Backache, both upper and lower was the main complaint (73%) which was significantly associated with the duration of work. Thus present study demonstrated that zari workers were suffering from varied morbidities which were associated with their occupational environment. So regulation of their working environment and periodical medical examination of the workers should be done to improve their health status.

KEYWORDS: Health Profile, Musculoskeletal Disorders, Urban Slum, Zari Workers

INTRODUCTION

Occupation is one of the determinants of health and diseases arising out of or in the course of employment are called "Occupational diseases". The spectrum of industries in India extends from the organized large and medium industries to modern small scale industries and unorganized traditional industries. The last two industries are known as village and small industries (VSI). Both of them constitute a vital segment of our country's economy. Zari embroidery which involves glittering the apparels of various kinds, with metallic fibre or other ornamental material ¹ is a kind of occupation which comes under unorganized sector. The health hazards involved in it are totally different from the other industries where heavy machinery or dangerous chemicals are involved. Morbidities seen among the zari workers has been attributed to their low educational level, poor social status, meagre payment, long working hours, poor lighting and ventilation, continuous awkward postures and lack of system for periodic health check up. The most common of which are musculoskeletal disorders ² including upper backache, lower backache and neck pain. Little has been published about the known or suspected health risks of zari workers, despite the fact that it involves a large human resource and has a potential future in Indian economy. Present study is carried out to assess the health profile of workers involved in zari industry.

MATERIALS AND METHODOLOGY

Study Design: The present cross-sectional descriptive study was conducted at an urban slum in Mumbai, India. It was conducted during the period of October 2011 to December 2012 by selecting 800 zari workers by simple random

sampling.

The study was implemented in the following phases:

Preparatory Phase

- **Administrative Approval:** Appropriate approvals were taken from Dean of the T.N. Medical College, Mumbai, India, Head of Dept. of Community Medicine, T.N. Medical College, Mumbai, India, Head of Cheetah Camp Urban Health Camp, Mumbai, India and Institutional Ethical Committee (IEC).
- **Construction of Tools:** A checklist was prepared for interview schedule, observation and focal group discussion. Voluntary consent form was prepared in English, Hindi and Marathi.

Data Collection Phase

- **Study Area:** The study was conducted at Cheetah Camp urban slum which is a field practice area of Department of Preventive and Social Medicine, of T. N. Medical College. The population of Cheetah Camp consists of people who have migrated from different parts of India, mainly from Uttar Pradesh, Bihar, West Bengal, Madhya Pradesh, Andhra Pradesh and Tamil Nadu. They have migrated to Mumbai in search of job and are now engaged in small scale industries like Zari work, Bag making, Mat weaving, Carpentry, tailoring etc.
- **Survey of the Study Area:** The survey was carried out with the help of Medical Social Worker, volunteers of Youth clubs and members of Community Based Organisations to identify the number of units engaged in zari work, their distribution, and average number of workers in one unit etc. It was observed that there were approximately 1000 zari units, distributed all over the study area. About 8-10 workers were employed in each unit.
- **Sampling:** Since minimum 8000 workers were occupied in ≈ 1000 zari units, it was decided to enroll 10% of the total workforce. A list of all 1000 units was made with each given a unique serial number and 100 units were randomly selected using table of random numbers. A list of 800 workers from these units was made. Thus the final sample size enrolled was 800. It was decided to interview and examine all the 800 workers in the unit itself.

The workers were approached at their respective units during working hours. Each worker was subjected to the preformed interview schedule and a detail medical evaluation. The individuals were also tested for vision by using Snellen's Chart and anthropometric measurements were undertaken using a measuring tape and weighing scale. Body mass index (BMI) of all the bag makers was calculated using Quetlet's index [$BMI = Wt \text{ in kg} / ht^2 \text{ in m}$]. Blood pressure was measured after advising the workers to take rest for 10 minutes using sphygmomanometer. A laboratory investigation of each individual was done at the Urban Health Centre. Subjects were investigated for their blood sugar level and their complete blood picture including hemoglobin (Hb) estimation and ESR values. Hb was estimated using Sahli's method, ESR was evaluated using Wintrobe's method while CBC was done using Wright's stain method. Blood sugar level was observed using GOD-POD method.

In addition to these a workshop was conducted with the help of an occupational therapist for the benefits of bag makers to make them self capable for getting rid from musculoskeletal pains with ergonomic posturing and other tips.

Inclusion Criteria

- Zari workers who were present on the duty in any shift during study period.
- Those who have been employed for at least 2 years.

- Those who gave consent to participate in the study.

Exclusion Criteria

- Bag makers who are chronically absent during the study period.
- Bag makers who were hospitalised.

The data was collected from March 2011 to August 2012.

Data Entry & Analysis

Collected data was entered in MS-Excel 2007 and corrected for typographic errors & analyzed using SPSS 16.0 version. The comparison of qualitative data was done using chi-square test. The confidence limit for significance was fixed at 95% level with p-value < 0.05.

RESULTS

Total 800 zari workers were interviewed. Table 1 reveals that majority of the zari workers were males (95.9%). Out of 800 workers, 82% were between age group of 15 to 44 years with mean age of 38.7 years. The bulk of workforce belonged to lower socio-economic class i.e. Class III (34.8%) and class IV (24.3%). Literacy wise the figures were concerning, with most workers having only primary education (41.3%). Illiteracy was also prevalent in the bag maker community (7.0%). Most of the workers complained of pain related to musculoskeletal system (table 2). Major complaints were lower backache (76.3%), upper backache (50.3%), pain in legs (41.1%) and pain in arms (29.3%). Around 69.3% of the workers had some or other kind of addiction (table 3). On being more specific, 49% were addicted to smoking, either in a cigarette or bidi form. 32.0% and 15% were tobacco and gutkha chewers. 11.1% ate mawa and 48.3% of them consumed alcohol. On looking at the examination and laboratory findings (table 4) 25% of workers had needle prick injuries, 63% were anemic, 7.5% were hypertensive, 67.1% had high fasting blood sugar level, 51% had BMI above than 25Kg/m² and 49.0% had high post meal blood sugar level. Table 4 describes the significant association between various symptoms and duration in present job. It can be clearly seen from the table that all subjects with more than 30 years of job had low backache problems while 53.8% of those with less than 10 years of job had such problem.

DISCUSSIONS

On evaluating the results, we found that most of the zari workers were suffering from musculoskeletal disorders with lower and upper backache being most common followed by pain in legs. The reason for this was prolonged awkward bending posture, which increases the risk of back and knee problems.³ In a study conducted by Bhatia M.⁴ among zari workers, backache (87.7%) was the chief complaints followed by lacrimation (34.7%) and headache (31.9%). Similar findings were also seen by Punalekar¹ in a study on 500 female zari workers in gujrat where pain in back was complained by 70% and diminished vision by 74% subjects.

Addiction among the zari workers was rampant. Almost 70% of the workers were having some or the other addiction, most common of which was smoking (49%) followed by alcohol (48.3%) and tobacco (32%). On asking further about the reason behind their indulgence in addictions, 53.4 % replied that feeling of pleasure is the main driving force , while 33.4 % of them blamed stress in their life to be the reason and 13.2% held stress at their workplace, is responsible for such addictions (non tabulated). In a study done on workers involved in diamond cutting industry (unorganized sector) by Mehta H. et al,⁵ 48.85% workers had a habit of chewing tobacco. Similar findings were reported by Tiwari et al.⁶ and Ladd et al.⁷ in studies done on the workers engaged in other unorganized sectors.

The examination findings revealed that needle prick injuries was found in 25% of workers, 7.5% were

hypertensive while 63% were anemic. Study done by Bhatia et al.⁴ found needle prick injuries in 24.4 % of the workers. Mehta et al⁵ found 6.58% prevalence of hypertension in diamond cutters. Medhi et al.⁸ studied the nutritional status of 1,863 male and 2,153 females working in tea garden of Assam and found that prevalence of anemia was 69.9% among the workers.

The musculoskeletal problems increases as the years in current job increases, with more people falling prey to low backache, upper backache, pain in legs and pain in arms. Tingling and numbness was also found in all individuals who had 30 years of job experience in their present job. It is because of the fact that zari workers were occupied for about 12 hours continuously in the same awkward sitting posture. Their occupation is burdened with strenuous work and over exertion and it could be the cause of musculoskeletal morbidity. Nordin et al.⁹ have also found that over exertion accounts for more than two thirds of the disorders of musculoskeletal system among industrial workers. This finding has also been found to be a cause of musculoskeletal disorders in studies done by Houtman IL et al.¹⁰ and Skov T et al.¹¹

RECOMMENDATIONS

Unlike the organized sector, zari workers are the victims of government invisibilities. So, first of all they should be recognized as a significant economic industry and should be registered under ward officer. This will ensure the regulation of working environment and entitle them to various benefit schemes. Regular health check up clinics should be organized for early diagnosis and treatment of various morbidities. Occupational therapy and physiotherapy services should be made available with the help of various NGOs. More ergonomic research should be encouraged to develop new techniques in zari work.

REFERENCES

1. Punalekar, S.P., 'Informalisation and Dependency'. A Study of Zari Embroidery Workers in Gujrat' Centre for social studies, South Gujrat University, Surat, 1988.
2. Nag A. (1986) Occupational stresses on women engaged in making beedies. *Journal of occupational Medicine*; 130:36
3. PC Ghosh ., et al., Occupational Health Profile of the Beedi Workersand Ergonomics Intervention, HNEWS APRIL-JUNE2005, PG.3.
4. Bhatia M., 'Occupational Hazards of Zari Workers in Cheetah Camp, Bombay'. University of Bombay, Bombay, 1987.
5. Harshvardhan Mehta H, Ribadiya G. Morbidity profile and treatment pattern among the workers of diamond cutting and polishing industry at Ahmedabad City. *Indian J of Practising Doctors*. Vol. 5, No. 5 (2008-11 - 2008-12)
6. Tiwary G, Gangopadhyay P K, Biswas S, Nayak K, Chatterjee M K, Chakraborty D, Mukherjee S. Socio-economic status of workers of building construction industry. *Indian Journal of Occup Environ Med*; 16:66-71. Available from: <http://www.ijoem.com/text.asap?2012/16/2/66/107072>
7. Balkrishna B. Adsul, Payal S. Laad, Prashant V. Howal, Ramesh M. Chaturvedi. Health problems among migrant construction workers: A unique public-private partnership project. *Indian J Occup Environ Med*. 2011 Jan-Apr; 15(1): 29-32.doi: 10.4103/0019-5278.83001

8. Medhi, G.K., Hazarika, N.C., Shah, B. and Mahanta, J., 2006, Health problems and nutritional status of tea garden population of Assam. J. Med. Sci., 60(12): 496-505.
9. Margareta Nordin & Carl Zetterberg. Work related Musculoskeletal Disorders excluding Back Pain. 65: 937-939.
10. Houtman IL, Bongers PM, Smulders PG. Psychological stressors at work and musculoskeletal problems, Scand J. Work Environ. Health, 1994; 20: 139-145.
11. Skov T, Borg V, Orhede E. Psychosocial and Physical risk factors for musculoskeletal disorders of the neck, shoulder & lower back in sales people. Occup. Environ Medicine, 1996; 53: 352-356.

APPENDICES

Table 1: Socio-Demographic Profile of Workers

Variables		No.	Percentage
Sex	Female	33	4.1%
	Male	767	95.9%
Age (years)	15 to 24	264	33.0%
	25 to 34	191	23.9%
	35 to 44	201	25.1%
	45 to 54	104	13.0%
	55 to 64	40	5.0%
Religion	Hindu	154	19.3%
	Muslim	646	80.8%
Socioeconomic Class (according to Kuppuswamy Classification)	Class I	84	10.5%
	Class II	244	30.5%
	Class III	278	34.8%
	Class IV	194	24.3%
Married	Yes	552	69.0%
	No	248	31.0%
Education	Illiterate	56	7.0%
	Primary	330	41.3%
	Secondary	215	26.9%
	Higher Secondary	191	23.9%
	Graduate	8	1.0%

Table 2: Distribution of Workers Based on Present Complaints

Symptom	No.	Percentage
Musculoskeletal Symptoms		
Low Backache	610	76.3%
Upper Backache	402	50.3%
Pain in legs	329	41.1%
Pain in arms	234	29.3%
Knee pain	34	4.3%
Knee pain, Neck pain	88	11.0%
Neck pain	121	15.1%
Headache	153	19.1%
CVS, CNS, RS, GUS and GIT Symptoms		
Chest Pain	67	8.4%
Breathlessness	35	4.4%
Cough, Cold	137	17.1%
Burning Epigastric pain	394	49.3%
Pain In abdomen	27	3.4%
Constipation	242	30.3%

Table 2 – Contd.,		
Loose motion	25	3.1%
Bleeding Per Rectum	58	7.3%
Burning Micturation (UTI)	24	3.0%
Tingling Numbness	289	36.1%
Giddiness	65	8.1%
Ophthalmic Symptoms		
Diminution Of Vision	266	33.3%
Redness in eye	25	3.1%
Immature senile cataract	106	13.3%
Mature senile cataract	32	4.0%
Squint	5	0.6%
ENT Symptoms		
Decrease hearing	70	8.8%
Discharge from ear	9	1.1%
Pain in the ear	23	2.9%
Dermal Symptoms		
Itching In hands feet	60	7.5%
Corn, callous	327	40.9%
Fungal Infection	223	27.9%
Pyoderma	16	2.0%
Scabies	17	2.1%
Other Skin Problem	159	19.9%

Table 3: Distribution of Addiction among Workers

Variables	No.	Percentage
Any addiction	554	69.3%
Smoke Cigarette/Beedi	392	49.0%
Chewing Tobacco	256	32.0%
Chewing Gutkha	120	15.0%
Eating Mawa	89	11.1%
Brushing With Mishri	33	4.1%
Alcohol	386	48.3%

Table 4: Distribution of Workers Based on Examination and Laboratory Findings

Investigation	Result	No.	Percentage
Hemoglobin (gm %)	Anaemia	504	63.0%
	Normal	296	37.0%
Blood pressure	High	60	7.5%
	Normal	740	92.5%
Needle prick injury	Yes	200	25%
Fasting sugar	High	537	67.1%
	Normal	263	32.9%
Post Meal sugar	High	392	49.0%
	Normal	408	51.0%
BMI (kg/m ²)	< 18.5	88	11.0%
	18.5- 24.99	304	38.0%
	25 and above	408	51.0%

Table 5: Association of Symptoms among the Subjects with Years of Service in Present Occupation

Symptom		<10 yrs (n=359)	10-19 (n=313)	20-29 (n=96)	30-39 (n=24)	40-49 (n=8)	Chi-Square Value	P-Value
Low Backache	No.	193	305	80	24	8	190.530	< 0.001
	%	53.8%	97.4%	83.3%	100.0%	100.0%	Significant	
Upper Backache	No.	81	209	80	24	8	217.979	< 0.001
	%	22.6%	66.8%	83.3%	100.0%	100.0%	Significant	
Pain in legs	No.	56	161	80	24	8	226.808	< 0.001
	%	15.6%	51.4%	83.3%	100.0%	100.0%	Significant	
Pain in arms	No.	57	73	72	24	8	210.834	< 0.001
	%	15.9%	23.3%	75.0%	100.0%	100.0%	Significant	
Other Musculo-skeletal problem	No.	40	107	72	16	8	344.246	< 0.001
	%	2.2%	5.8%	8.3%	0.0%	0.0%	Significant	
Tingling Numbness	No.	47	122	88	24	8	268.567	< 0.001
	%	13.1%	39.0%	91.7%	100.0%	100.0%	Significant	
Burning epigastric pain	No.	120	154	88	24	8	138.043	< 0.001
	%	33.4%	49.2%	91.7%	100.0%	100.0%	Significant	
Constipatin	No.	24	98	88	24	8	340.057	< 0.001
	%	6.7%	31.3%	91.7%	100.0%	100.0%	Significant	
Bleeding Per Rectum	No.	0	33	16	9	0	79.054	< 0.001
	%	0.0%	10.5%	16.7%	37.5%	0.0%	Significant	

