

A cross sectional study to assess health status of Zari workers in an urban slum of Mumbai, India

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Abstract

Background: Zari making is a kind of occupation which comes under unorganized sector and most of these units are situated in slums. Zari workers suffer from a range of health problems. The workers have to work in a continuously sitting position which can account to various health related problems. Zari workers, less often approaches to health services for various reasons therefore despite a wide network of primary healthcare system, remain out of the coverage. Little has been published about the known or suspected health risk of worker employed in Zari work, despite the fact that this occupation is a way of livelihood for many people in underdeveloped areas. **Objectives:** To assess the health status and personal habits among the Zari workers. Association between the morbidity and working conditions, **Method:** The study was a cross-sectional epidemiological study. As there are approximately 300 Zari workers registered in United Zari Worker Union and we decide to take all the Zari workers registered in the union will be enrolled for the study The comparison of qualitative data was done using chi-square test. **Results:** Out of 300 workers 285(95%)of the Zari workers were males and Most of the Zari workers (71%) were from age group 20 – 40 years(71%). workers were addicted to nicotine product i.e. smoking (51%), tobacco (37%) and Gutkha (16.66%) while (31.33%) Zari workers were addicted to alcohol,56.67 percent Zari workers had needle prick injury. 74 percent workers had callosities on feet. 83.33 percent worked for 10 hrs or more whereas only 16.66 percent worked for less than 10 hours daily. **Conclusion:** 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: Zari Workers, Health Status, Urban Slum and morbidity.

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INTRODUCTION

Occupation is one of the determinants of the health, and diseases arising out of or in the course of employment are called “occupational Disease”. The working environment has got direct effect on the health status of the person¹. 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 (i.e. modern small scale industries and unorganized traditional 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 is a kind of occupation which comes under unorganized sector². The term Zari and embroidery though used synonymously are technically different. The word Zari has its root in Persian, which means decorative material. Zari means actual manufacturer of decorative material whereas Zari embroidery as handicraft means use of these Zari materials on piece of cloth or other material to increase its decorative value and to give it an ornamental look. The health hazards seen among the Zari workers has been attributed to their low educational level, poor health

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 disorders³ and occupational stress. 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 status of workers involved in Zari industry.

MATERIALS AND METHODOLOGY

Study Design: The present cross-sectional epidemiological study was conducted at an urban slum in Mumbai, India. It was conducted during the period of January 2012 to December 2012 by selecting 300 Zari workers.

The study was implemented in the following phases:

Preparatory phase

The preparatory phase navigates through following activities:

- a. **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)
- b. **Mapping of the study area:** Mapping of the study area was done with the help of Community Development Officer and secretary of United Zari Worker Union of that area a detailed mapping of Zari working units was done in all the sectors of the area.
- c. **Construction of tools:** A checklist was prepared for interview schedule, observation. Voluntary consent form was prepared in English, Hindi, and Marathi.
- d. **Schedule of activities:** Selection of the markets Karkhana, in the study area, planning of interview schedules and final data collection was done.

Data collection phase

Study Area

The study was conducted at Cheetah Camp urban slum which is a field practice area of Department of Community Medicine of T. N. Medical College. The population of Cheetah Camp consists of people who have migrated from different parts of India, Majority of the population are migrated from Tamil Nadu. The sanitation in this area is poor, with most families belonging to low socio-economic status, residing in kuccha houses with no

basic amenities. Men in this community are engaged mostly in the small scale unorganized sectors which they inherit from their ancestors. Women are basically engaged in household work and few in other works contributing economically towards their families. The market place is situated in the catch area and in other areas as well, like nearby railway station area. The individuals in this area are engaged in various activities and business trades, important among which are Zari work and bag making.

Study Population

Workers engaged in Zari working Process, scattered all over the slum, in the study area were considered for the study. Zari workers are scattered all over the slums in units, each having 8 to 10 workers. Being an unorganized small scale industry,

Methodology

The methodology undertaken for this study was as follows:

- a. **Survey of the study area:** The survey was carried out with the help of Community development officer, Medical Social Worker, volunteers of Youth clubs and members of CBOs and members of CBOs like United Zari Worker Union to identify the number of units engaged in Zari making process. It was observed that there were approximately 1000 Zari working units, distributed all over the study area. About 8-10 workers were employed in each unit.
- b. **Study Design and Study Period:** The study was a cross-sectional epidemiological study conducted during the period of January 2012 to December 2012.
- c. **Sampling Methodology:** As there are approximately 300 Zari workers registered in United Zari Worker Union and we decide to take all the Zari workers registered in the union will be enrolled for the study.

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 was done.

Inclusion Criteria

- a. Zari workers who are present on the duty in any shift during study period.
- b. Those who are involved in Zari making work for at least 6 months.
- c. Those who give consent to participate in the study.

Exclusion Criteria

- a. Zari workers who are not available during the study period.
- b. Worker those who are not registered with union.

c. Children less than 14 years of age.

The data was collected from January 2012 to December 2012.

Data entry and Analysis

Data was entered in MS-Excel, corrected for typographic errors and analyzed using SPSS software 16.0 version. The results were rearranged in MS-Word. Graphical presentation of the result was done using MS-Excel. The comparison of qualitative data was done using Pearson Chi-Square test. The confidence limit for significance was fixed at 95% level with p-value < 0.05.

RESULTS

Total 300 Zari workers were interviewed. Most of the Zari workers (71 %) were from the age group 20 – 40 years. Of them, 12.67% were less than 20 years of age, 20.67% in 21 to 25 years of age, 21.33% of Zari workers were in the age group of 26 to 30 years, 13.3% belong to 31 to 34 years age group, 15.67% were from 36 to 40 years, 4% from 41 to 45 years, 8% from 46 to 50 age group and mere 4.3% were more than 50 years. Majority of the Zari workers were males (95%) and only 5% of study sample consist of females. Though 33.67 % of Zari workers were illiterate and never undergone any kind of

education, 19.33 % of workers had education minimum H.S.C. and above. Most of the subjects 263 (87.67%) were Muslims followed by Hindus 27 (9%) where as others are 10(3.33). According to Modified Prasad classification, 79 (26.33%) subjects belongs to Class II, while 112 (37.33%) and 109 (36.33%) belongs to Class III and IV respectively, and Class I and V includes no workers, 77.34 percent of the Zari workers started the Zari work below their 15 years of age and mere only 10(3.3 %) were started the job when their age was 25 years. 77.67 percent of Zari workers were staying in Mumbai for more than 20 years. 22.33 percent were staying in Mumbai less than 20 years.45.33 percent were residing in nuclear families while 49.67 stayed in joint family, and 5 percent stays alone. It is observed that 51.33 percent of Zari workers have 3-5 members in their house, where as 29.33 percent have a family size of less than 3 members. 3.33 percent of Zari workers have family size having 10-12 members. 0.67 percent has more than 12 members in their family.77.34 percent of the Zari workers started the Zari work below their 15 years of age and mere only 10(3.3 %) were started the job when their age was 25 years.

Table 1: Age, Sex, education. Religion, socio economic class, and Age at Start of Work wise Distribution of Zari Workers

| | Variables | Frequency | Percentage |
|-------------------------------|--------------------|-----------|------------|
| Age (years) | <20 | 38 | 12.67% |
| | 21 to 25 | 62 | 20.67% |
| | 26 to 30 | 64 | 21.33% |
| | 31 to35 | 40 | 13.33% |
| | 36 to 40 | 47 | 15.67% |
| | 41 to 45 | 12 | 4% |
| | 46 to 50 | 24 | 8% |
| | >50 | 13 | 4.33% |
| Sex | Female | 15 | 5% |
| | Male | 285 | 95% |
| Educational status | Illiterate | 101 | 33.67% |
| | Primary | 33 | 11% |
| | secondary | 108 | 36% |
| Religion | H.S.C. | 46 | 15.30% |
| | Graduate and above | 12 | 4% |
| | Hindu | 27 | 9.00% |
| | Muslim | 263 | 87.67% |
| Socioeconomic Class | Other | 10 | 3.33% |
| | Class I | 0 | 0.00% |
| | Class II | 79 | 26.33% |
| | Class III | 112 | 37.33% |
| | Class IV | 109 | 36.33% |
| Age at the start of Zari work | Class V | 0 | 0.00% |
| | <10 | 98 | 32.67% |
| | 11 to 15 | 134 | 44.67% |
| | 16 to 20 | 52 | 17.33% |
| | 21 to 25 | 6 | 2% |
| | >25 | 10 | 3.33% |

Table 2: Addiction among Zari workers

| Variables | | Frequency | Percentage |
|---------------------|-----|------------|-------------|
| Any addiction | Yes | 84 | 28% |
| | No | 216 | 72% |
| Smoking | Yes | 153 | 51.0% |
| | No | 143 | 49% |
| Tobacco | Yes | 111 | 37% |
| | No | 189 | 63% |
| Alcohol | Yes | 94 | 31.33% |
| | No | 206 | 68.67% |
| Gutkha | Yes | 50 | 16% |
| | No | 250 | 83.34% |
| Narcotic inhalation | Yes | 21 | 7% |
| | No | 279 | 93% |
| IV Drug abusers | Yes | 4 | 1.33% |
| | No | 296 | 98.67% |
| Total | | 300 | 100% |

Table 3 and 4: Different working postures of Zari workers

| Working posture | Frequency | Percentage |
|--|------------|------------|
| Straight with sitting position | 12 | 4% |
| Straight with bending legs behind | 91 | 30.33% |
| Lateral | 18 | 6% |
| bending forward with bending legs behind | 147 | 49% |
| Bending forward with sitting in squatting position | 32 | 10.67% |
| Total | 300 | 100 |

| | | Frequency | Percent |
|--------------------------|-----|------------|------------|
| Chin resting on Karchop | Yes | 84 | 28% |
| | No | 216 | 72% |
| Chest rubbing on Karchop | Yes | 181 | 60.33% |
| | No | 119 | 39.67% |
| Total | | 300 | 100 |

Table 5: Various physical complaints by Zari workers

| Sr. No. | Sign/Symptoms | Frequency | Percent |
|---------------------------------------|----------------------------|-----------|---------|
| General | | | |
| 1 | 1.Fatigue/weakness | 127 | 42.33% |
| | 2.Headache | 114 | 38% |
| | 3.Fever | 52 | 17.33% |
| 2 | Respiratory Cough and Cold | 115 | 38.33% |
| Musculoskeletal and Joint pain | | | |
| 3 | 1.Backache | 170 | 56.67% |
| | 2.Bodyache | 56 | 18.67% |
| | 3.Arm Pain | 26 | 8.67% |
| | 4.Knee Joint Pain | 103 | 34.33% |
| | 5.Shoulder Pain | 41 | 13.67% |
| | 6.Neck Pain | 89 | 29.67% |
| Ophthalmic | | | |
| 4 | 1.Eye Pain and irritation | 123 | 41% |
| | 2.Watering from eyes | 133 | 44.33% |
| Skin | | | |
| 5 | 1.Itching | 37 | 12.33% |
| | 2.Boils | 10 | 3.33% |
| | 3.Scabies | 2 | 0.67% |
| Abdominal | | | |
| 6 | 1.Worms | 4 | 1.33% |

| | | | |
|---------------|-----------------------|-----|--------|
| | 2. Abdominal Pain | 53 | 17.67% |
| | 3. Loose Motions | 14 | 4.67% |
| Others | | | |
| 7 | 1. Toothache | 26 | 8.67% |
| | 2. T and N to Fingers | 75 | 25% |
| | 3. Giddiness | 6 | 2% |
| 8 | Pallor | 88 | 29.33% |
| 9 | Icterus | 9 | 3% |
| 10 | Clubbing | 19 | 6.33% |
| 11 | Lymph node | 14 | 4.67% |
| 12 | Edema feet | 12 | 4% |
| 13 | Needle prick injury | 170 | 56.67% |
| 14 | Callosity on feet | 222 | 74% |

Table 6: Association between long working hours and different physical problems

| Symptoms | | Working hours | | X value | p-value | Significance |
|----------------------|-----|---------------|-------------|---------|---------|--------------|
| | | <10 hrs | >10 hrs | | | |
| Headache | Yes | 17(5.66%) | 97(32.34%) | 37.135 | 0.002 | Significant |
| | No | 33(11%) | 153(51%) | | | |
| Musculoskeletal pain | Yes | 48(16%) | 242(80.67%) | 36.081 | 0.003 | Significant |
| | No | 2(0.66%) | 8(2.67%) | | | |
| Callosity of test | Yes | 31(10.34%) | 191(63.66%) | 54.791 | <0.001 | Significant |
| | No | 19(6.34%) | 59(19.66%) | | | |
| Watering from eyes | Yes | 18(6%) | 115(38.34%) | 28.196 | 0.03 | Significant |
| | No | 32(10.67%) | 135(45%) | | | |

Table 7: Relationship between symptoms of eyes and distance between eyes and Karchop

| Dist. Bet. Eye and Karchop | Eyes with no symptoms | Eyes with Symptoms |
|----------------------------|-----------------------|--------------------|
| ≤0.5ft. | 10 | 106 |
| 0.5 - 1ft. | 65 | 46 |
| 1 - 2 ft. | 34 | 27 |
| >2 ft. | 10 | 2 |
| Total | 119 | 181 |

| Chi-Square value | Df | p value | Significance |
|------------------|----|---------|--------------|
| 79.416 | 3 | <0.01 | Significant |

DISCUSSION

Table 1 The above table depicts the socio demographic profile of Zari workers. Most of the Zari workers (71 percent) were from the age group 20 – 40 years. Of them, 12.67% were less than 20 years of age, 20.67% in 21 to 25 years of age, 21.33% of Zari workers were in the age group of 26 to 30 years, 13.33% belong to 31 to 35 years age group, 15.67% were from 36 to 40 years, 4% from 41 to 45 years, 8% from 46 to 50 age group and mere 4.33% were more than 50 years. The age group ranged between 15 to 70 years with mean age of the Zari workers was 31.48 years. Bhatia⁴, (1987) in a study on the occupational hazards in Zari embroidery work at cheetah camp, Bombay on 102 Zari workers found the mean age of workers to be 23.36 years while Punalekar², (1988) in a study on 500 female workers in Zari and embroidery sector in South Gujrat found it to be 26.42 years. It is clearly seen that the mean age group in the present study is higher as compared to other studies. Therefore middle

age people more involved in Zari worker industry. Majority of the Zari workers were males (95%) and only 5% of study sample consist of females. In community under study most of the women from Muslim community were either house wife or engaged in home based Zari work, therefore they were few registered with Union. Though 33.67 % of Zari workers were illiterate and never undergone any kind of education, 19.33 % of workers had education minimum H.S.C. and above. Most of the subjects 263 (87.7%) were Muslims followed by Hindus 27 (9%) where as others are 10(3.33%). community under study mainly comprises of Muslim population. According to Modified BG Prasad classification, 79 (26.33%) subjects belongs to Class II, while 112 (37.33%) and 109 (36.33%) belongs to Class III and IV respectively, and Class I and V includes no workers, indicating that most of the Zari workers were from lower socioeconomic status according to Modified BG Prasad classification. 77.34 percent of the Zari workers started the Zari work below their 15 years of age and mere only 10(3.3 %) were

started the job when their age was 25 years. Bhatia⁴, (1987) in a study on the occupational hazards in Zari embroidery work at cheetah camp, Bombay on 102 Zari workers found 22.5% of workers were below 15 years of age. Dr. Lubhana A. Baig *et al*⁵ 2002-2003 in study conducted in 280 workers, all below 18 years of age in 95 cottage(Zari) industries from 10 different locations of five districts of Karachi found that 9.3 percent of children were 9-12 yrs, 29.3 percent between 13-15 yrs. and 61.4 percent between 16-18 yrs. of age. Punalekar², (1988) in a study on 500 female workers in Zari and embroidery sector in South Gujrath had 4 percent of the work force is below 15 yrs. of age and 58 percent of the workers started to work between 11-15 yrs. of age. However the age distribution of the present study conducted in urban slum does not show workers below 14 years of age. This can be attributed to the strict implementation of the CHILD LABOUR (PROHIBITION AND REGULATION) ACT.

Table 2 It was distressing to see that workers were addicted to nicotine product i.e. smoking (51%), tobacco (37%) and Gutkha (16.67%) while 31.33% Zari workers were addicted to alcohol, this may be because of peer pressure, long working hours, late night work, low income, dull work, poor working condition like inadequate ventilation, uncomfortable temperature, poor light and last but not the list, mental stress (60.34% of the Zari workers had moderate or severe stress). Nicotine products as easily available and cheap lead to their more usage. Along with tobacco smoking, 21 Zari workers (7%) used it as means for narcotic inhalation. 84(28.6%) of Zari workers not addicted to any substance.

Table 3 and 4 Table no. 3 shows that 49 percent Zari workers sit bending anteriorly and bending legs behind, during working. While 6 percent and 10.67 percent bend laterally and anteriorly in sitting in squatting position respectively during work. Table no.4 shows that 28 percent of the Zari workers sit with chin resting on Karchop and 60.33 percent Zari workers sit with chest rubbing on Karchop respectively. Both of these things lead to bending forward postures. Repeated bending postures in awkward position develops low back pain⁶ 44(14.67 %) Zari workers worked in squatting postures. Prolonged work in squatting postures is not recommended since it is prone to develop and increase back and knee problems⁶. According WHO (1987)⁷, postures and work design if not based on scientific approach of ergonomics, may lead to overt or cumulative trauma. Mendelievech⁸ (1979) observed that long hours of work and abnormal postures in Zari embroidery industry lead to damage in eye sight. As previously mentioned average work hours of Zari workers was 12 hrs per day which is half of the day and also because of inadequate ventilation and abnormal posture during work, it is disturbing trend to

note 124(41.33 %) Zari workers had decreased visual acuity.

Table 5 It can be seen that 38.33 percent suffered from upper respiratory tract infection. Headache, bachache and bodyache accounted for 38 percent, 56.67 percent and 18.67 percent respectively while 42.33 percent from fatigue and weakness.34.33 percent, 29.67 percent and 8.67 percent complained of knee joint pain , neck pain and arm pain respectively. Eye pain and irritation accounted for 41 percent whereas 16(5.33) Zari workers were free from any morbidity. The prevalence of upper respiratory tract infection was high in these workers because of working small rooms and close distance between them facilitating easy transmitting of infection to each other. In a study among Zari workers, Bhatia⁴ found the following facts: Watering from eyes (34.7 %), Redness (13.86%) and pain (9.9%) were major ocular complaints. 11 percent of Zari workers had myopia, who had less than 10 years of experience whereas 74.3 percent suffered from it, who had 20 years of experience. Common complaints were headache (31.9 %), backache (87.7 %) and pain in arms (14.5 %).Health problem faced by Zari workers in a study by Dr. Lubhana A. Baig *et al*⁵ include joint pains (22.85 %), backache (30.35 %) and vertigo (17.14 %).Punalekar², (1988) in a study on 500 female workers in Zari and embroidery sector in South Gujrat reports that 36 percent workers complained of pain either on finger, hand or shoulder. Pain in the back and waist was complained by 70 percent; diminished vision in 74 percent; decreased stamina and energy in 8 percent; while chest and respiratory complaints were given by 8 percent. From the above complaints, it can be inferred that, many complaints are related to the nature of work and working conditions. Fatigue and weakness in 42.33 percent is not surprising considering that there worker work for 12-14 hours daily with only a little rest. Severe malnutrition, anemia hard labour, fatigue and inadequate sleep make them susceptible to infection. 38.33 percent suffered upper respiratory tract infection, 17.33 percent suffered from fever, bad hygiene, environmental sanitation and overcrowding leads to dermatological conditions. Itching (12.33 %) and boils (3.33 %) was found in present study. Due to over stretching and continuous strain on musculoskeletal system as required in the work, musculoskeletal and joint pains were present in considerable number of patients. Ophthalmic complaints like eye pain and irritation (41 %) and watering from eyes (44.33 %) was also present due to close nature of work. Absence of clean water and storage facility has probably lead to lose motions (4.67 %) 56.67 percent Zari workers had needle prick injury. 74 percent workers had callosities on feet, 29.33 percent and 3 percent workers had pallor and icterus respectively. In a study in Zari

workers, Bhatia⁴ found needle injury in 24.4 percent and callosity in 36.6 percent of the Zari workers. Thus prevalence of callosity on feet in the Zari workers in the present study was found to be very high (74 percent). This may be because of abnormal postures during work specially squatting (14.67%) and bending legs behind (79.33%) and because of long working hours.

Table 6 32.34 % of Zari workers, suffering from headache were working for more than 10 hours daily. Similarly 80.67 %, 63.67% and 38.34 % of Zari workers, suffering from musculoskeletal problem, callosity of feet and eye problem respectively, were working for more than 10 hours. From the table it is clear that there is significant association between long working hours and physical problems among Zari workers.

Table 7 Above table shows 106 Zari workers experience eye symptoms if distance between eye and Karchop ≤ 0.5 ft, whereas 10 Zari workers who were worked distance ≤ 0.5 ft, not experience any eye symptoms. Similarly with distance of 0.5-1ft, 1-2ft, >2 ft, eye symptoms experience by Zari workers are 46, 27, 2 respectively. There is significant association between symptoms of eyes such as redness, conjunctivitis red and muddy conjunctiva, yellow sclera etc. and distance

between the eye and Karchop. As the distance between eyes and Karchop decreased the eye problem increased.

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