Knowledge, Attitude, and Practice of Dyeing and Printing Workers

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ABSTRACT

Background: Millions of workers are occupationally exposed to dyes in the world, but little is known about their knowledge and attitudes toward the effects of dye on their health. Objectives: The aim of this study was to assess the fabric dyers’ and fabric printers’ knowledge, attitude, and practice toward the health hazard of dyes. Materials and Methods: The present study was taken up in the Madurai district which is situated in the Southern Tamil Nadu, India. One hundred and forty-two workers employed in small-scale dyeing and printing units participated in a face-to-face confidential interview. Results: The mean age of fabric dyers and fabric printers was 42 years (±10.7). When enquired about whether dyes affect body organ(s), all the workers agreed that dye(s) will affect skin, but they were not aware that dyes could affect other parts of the body. All the workers believed that safe methods of handling of dyes and disposal of contaminated packaging used for dyes need to be considered. It was found that 34% of the workers were using personal protective equipment (PPE) such as rubber hand gloves during work. Conclusion: The workers had knowledge regarding the occupational hazards, and their attitudinal approach toward the betterment of the work environment is positive.

Keywords: Dye, dyeing, industrial workers, printing, rubber hand gloves

Introduction

The harmful effects of dyestuffs on human health have been reported worldwide for several decades. Poor health, safety, and waste management practices may pose several health hazards to textile workers as they are exposed to such conditions with no control over the length and frequency of exposure. Occupation health authorities around the world have established safety regulations and/or guidelines to limit workers’ exposures to solvents at the worksite, both by controlling the air concentrations of solvents in the work environment and by helping workers to avoid unnecessary exposures through safe practices and personal protective equipment (PPE). Theoretically, safe practices depend on having an appropriate attitude toward the health risks associated with exposure to dyes, which in turn depends on knowledge about the danger and harmful effects of dyes. Millions of workers are occupationally exposed to dyes in the world, but little is known about their knowledge of and attitudes toward the effects of dyes.

Fabric dyers’ and printers’ knowledge, attitude, and practice toward the health hazard of dyes have not been well assessed in India. There is a great concern that workers should be aware of the adverse effects of dyes if not handled properly as they are exposed to the same with no control over the length and frequency of exposure.

Materials and Methods

The present study was taken up in the Madurai district which is situated in the Southern Tamil Nadu, Madurai...
is famous for Sungudi sarees. It is an exclusive design made by textile workers in Madurai and is recognized as traditional art all over India. As per the records of the Dyeing and Printing Association, there are around 50 micro level units employing around 5–20 employees per unit. The investigators met the owners and workers and the purpose of the study was clearly explained to them and the willingness to participate in the study was confirmed orally. Thus 142 workers employed in 23 units participated in the study.

A combination of several methods was used to assess the KAP of the workers. Primary data collection was done by interviewing the workers followed by other methods such as observation, records, and reports maintained in the units. The interview schedule was prepared in English but was communicated to them in their local dialect (Tamil). Questions on socioeconomic background, awareness of occupational health, and details on the use of PPE were formulated and pretested among the workers who did not form a part of the study. The pretested schedule was suitably modified incorporating the suggestions by the experts in the relevant field, and workers in the units.

Data were gathered from the respondents by a face-to-face confidential interview with the workers at the worksite. This enabled the workers to provide information about the health problem, work organization, environment, use of protective devices, etc. The interview for each worker took about 20–25 min. The data thus collected were analyzed using SPSS 11.0 with respect to knowledge, awareness level, and attitude and practices in preventing hazards.

Results

The mean age of fabric dyers and printers was 42 (±10.7) years. Majority of the workers (93%) were men and the rest (10%) were women. Long working hours and inconvenient worksite may be the reasons for less number of women opting for this work and high percent of men. The dyeing and printing units were therefore predominately male dominated. Forty-six percent of the workers had high school education, followed by 34% with primary school-level education; 9% were illiterate, 8% had higher secondary level education, and only 2% had college-level education. Ninety percent of the workers reported working for 8–10 h a day during normal season. However, during peak periods, the work hours extended up to 14 h/day.

It is clear from Table 1 that nearly half of the workers (55%) were current smokers. Forty-seven percent of workers consumed alcohol and 32% were nondrinkers. One-fourth of the workers had developed the habit of using tobacco and use of snuff. Such habits in the workers were due to job stress or due to the influence of their peer groups. Most of these habits were more common among young workers.

From Table 2, it is clear that all the workers agreed that dyes will affect skin since most of the workers had contact dermatitis due to the constant use of dyes. Nearly half of the workers (51%) opined that dye(s) will also affect lungs. Majority of the workers (95%) had no idea regarding the effect of dyes on heart, liver, and kidneys.

All the workers strongly felt that safe methods of handling of dyes and disposal of contaminated packaging should be followed. They also said that marking and labeling of the dyes should be taken into account while working with dyes. With regard to practice, only 73% of the workers had been instructed on safe methods of handling dyes. The rest of the workers did not receive any instructions on handling of dyes, because in every unit only few people had been identified to prepare the dye solution. Hence only those workers were given proper instructions on handling of dyes.

However, when enquired about the use of PPE by workers, one-half of the workers did not have a positive attitude for use of PPE during work. This may be due to lack of awareness on the health hazards of working with dyes. This might also be one of the reasons for the high level of knowledge that dyeing and printing workers will develop dermatological problems.

As regards the method of removal of stubborn stains due to dyes on the hands and legs, 35% workers used bleaching powder, 23% used dish washing powder, 28% used soap, and 14% used only water. Workers engaged in dyeing mostly used bleaching powder to remove

| Table 1: Personal habits of workers |
|-------------------------------------|
| **Personal habits** | **Number (n = 142)** | **Percentage** |
| Smoking               |                       |                |
| Current smoker        | 78                    | 54.9           |
| Nonsmoker             | 19                    | 13.4           |
| Ex-smoker             | 27                    | 19.0           |
| Passive smoker        | 18                    | 12.7           |
| Drinking              |                       |                |
| Current drinker       | 67                    | 47.2           |
| Nondrinker            | 45                    | 31.7           |
| Ex-drinker            | 30                    | 21.1           |
| Tobacco chewing       |                       |                |
| Current chewer        | 36                    | 25.4           |
| Nonsnuffer            | 77                    | 54.2           |
| Ex-chewer             | 29                    | 20.4           |
| Use of snuff          |                       |                |
| Current snuffer       | 36                    | 25.4           |
| Nonsnuffer            | 98                    | 69.0           |
| Ex-snuffer            | 8                     | 5.6            |
irritants while dish washing powder and soap were used by workers engaged in screen printing, and water was used by hand printers and batik printers.

Discussion

The making of sungudi sarees involves many stages and the whole process is labor oriented which can be broadly divided into printing and dyeing of fabrics. Printing may be either screen printing or batik printing. In the screen printing process, the fabric is stretched along a long table and the selected design is printed using a screen which has the selected motif engraved in it. Later a small quantity of the prepared dye is applied on the screen and is spread on the fabric using a spreader and later the screen is moved at regular intervals till the fabric design is completely done. In the case of batik printing, melted wax is applied on fabrics as per design requirements using either a block or a brush. In the dyeing process, the fabric is first tied using a thick rope at the borders and they are dyed first and then rinsed in water and later sundried.

Though a number of studies have been carried out on KAP of workers in various fields, this is the first attempt to study the KAP of small-scale dyeing and printing workers in South India. Earlier study\(^{(2)}\) on knowledge, attitude, and practice regarding organic solvents among 501 printing workers in 28 factories in Hong Kong revealed a low level of knowledge (20.4%), appropriate attitude (38.4%), and safe practice (22%) among the workers. Safe practice did not depend on knowledge and attitude but was positively associated with being informed of safety precautions and being supplied with chemical information by supervisors. Another study\(^{(3)}\) also reported a huge gap between the knowledge and practice of salt workers with protective devices. KAP related to occupational health problems among garment workers in Tamil Nadu, India, revealed that the workers employed in the three sections had high levels of knowledge of health problems, but the knowledge of PPE differed by section. There was a wide gap between their knowledge level and practice of using protective devices.\(^{(4)}\) The KAP study of pesticide sprayers\(^{(5)}\) in agricultural farms indicated that careful working was considered to be very important by 93% of the pesticide sprayers while 7% suggested the use of personal protective devices (PPD). The hygiene and sanitation practices of the sprayers require much improvement with attitudinal change along with the provision of better facilities and infrastructure.

The above studies clearly indicate that although all the workers had knowledge regarding the occupational hazards irrespective of the nature of the occupation they are engaged in, their attitudinal approach toward the betterment of the work environment is positive. But because of lack of provision in the worksite, they are unable to practice. Making workers aware of the occupational hazards and motivating them to use PPE while at work is the need of the hour.

References

1. Occupational Safety and Health Branch. Protection of workers’
health series: Solvents. Hongkong: Labour Department; 2000.

2. Yu IT, Lee NL, Wong TW. Knowledge, Attitude and Practice regarding Organic Solvents among Printing Workers in Hong Kong. J Occup Health. 2005;47:305-10.

3. Haldiya KR, Sachdev R, Mathur ML, Saiyed HN. Knowledge, Attitude and Practices related to Occupational Health Problems among Salt Workers working in the Desert of Rajasthan, India. J Occup Health 2005;47:85-8.

4. Parimalam P, Kamalamma N, Ganguli AK. Knowledge, Attitude and Practice related to Occupational Health Problems among Garment Workers in Tamil Nadu, India. J Occup Health 2007;49:528-34.

5. Mekonnen Y, Agonafir T. Pesticide Sprayers' Knowledge, Attitude and Practice of Pesticide Use on Agricultural Farms of Ethiopia. Occup Med 2002;52:311-5.

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