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Healthcare and Safety Facilities Provided To the Workers in Small Scale Dyeing Units and the Working Conditions

Shweta Thomas, Dr. Chanchal (Associate Professor), Dr. Bhupinder Kaur (Assistant Professor)

Department of Fabric and Apparel Science, India
Institute of Home Economics, University of Delhi, New Delhi
Corresponding Author:Shweta Thomas

ABSTRACT: Colour is such a vital and vibrant ingredient of our existence that is difficult to imagine what life would be like without it. Dyeing is a process of colouring materials such as textile fibers, so that the colouring matter becomes an integral part of the fibre. Dyes or dyestuffs are soluble compounds that can be either absorbed and retained by the fibre or chemically combined with it. Dyes are generally fast that is, they retain their colour in the fibre throughout the textile-making process and under exposure to normal wear, including sunlight, water, and detergent washing. Pigments are insoluble colouring compounds.

Millions of workers are not aware of the proper working condition of the units, healthcare and safety practices. So, they work in an atmosphere where they have to work continuously with dyes and chemicals for long time and negligent towards wearing protective equipment. If any kind of problems occur to them while working, they don't even bother to take rest, rather continue working with the problem. They are not even aware of the fact that using protective wear and taking rest may minimize the problem. So it is necessary to have a look on the working conditions of the workers in dyeing units and suggest themremedial measures to improve their performancein safety ways.

Key words: Chemicals, dyes, dyeing units, Effluent Treatment Plant, gloves, healthcare and safety facilities, masks, occupational health hazards, textile industries, working conditions.

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I. INTRODUCTION:

The textile industry, as a part of manufacturing sector has been one of the important sectors to contribute towards country's economy. It contributes 14% to the industrial production, 3% to the gross domestic production, 8% to the total excise revenue collection, 17% to the country's export earnings and most importantly it provides direct employment to over 35 million people in India (The Manufacturing Plan, 2015; Textile and Jute Industry, 2015).

Textile industry is one of the oldest, largest and most global industries in the world. It is not only the oldest, but also highly complex and competitive industry (Purushothama, 2015). Textile is one of the leading industries in the world. India is the world's second largest producer of textile and garments after China.

Dyeing is used to add colour to textile materials. Textile may be dyed at various stages of production.Dyeing can be performed using continuous or batch processes. In batch dyeing, a certain amount of textile substrate, usually 100 to 1,000 kilograms, is loaded into a dyeing machine and brought to equilibrium, or near equilibrium, with a solution containing the dye. Because the dyes have an affinity for the fibers, the dye molecules leave the dye solution and enter the fibers over a period of minutes to hours, depending on the type of dye and fabric used.

Occupational Hazards are basically the risks, unpleasant experiences or accidents that take place in a workplace as a result of physical, biological, chemical, psychosocial conditions (Mishra, 2018). Each Occupational disease and injury has a major effect on economy due to loss of productive hour, man-power losses, compensation to the victim's. Due to this reason, for reduction of all occupational diseases, injuries/fatalities, corrective and preventive measures should be done (Kumar et al., 2015).

Safety is one of the biggest issue and it is the responsibility of the owners to make sure that the worker is working in a safe environment. In the dyeing units, workers' attitudinal approach towards the safe working condition is negative. They have no knowledge regarding the remedial action towards the problem. So, it is very necessary to observe the working conditions in order to spread awareness about the health problems and also to study their healthcare and safety facilities provided to them in the units.

II. METHODOLOGY:

The current study aims to identify the nature of work processes involved in small scale dyeing units. It involves investigation of the physical and ergonomic working conditions of the units faced by the workers and the provision of health care and safety facilities. It provides an outlook towards the health hazards prevalent in the small scale dyeing units in Delhi and NCR. It is expected that the research will help in promoting the healthy and safe working conditions in the units, thus will contribute significantly to the productivity.

- **Locale of the research**

The research aims to study occupational health hazards of the dyeing workers in dyeing units in Delhi and NCR. Under this study, a sample size of 50 workers was studied by visiting six small scale dyeing units.

Sampling procedure:

- **Selection of dyeing units**

For present research, purposive sampling technique was used to select the dyeing units. The principle of selection in purposive sampling is when the researcher deliberately or purposively selects certain units/communities for the most of the study from the population, it is known as purposive sampling (Bernard, 2000). Therefore, to study the working conditions and healthcare and safety facilities provided to the dyeing workers, various dyeing units of Delhi NCR were selected.

- **Selection of Dyeing Workers**

In the dyeing units, different processes include desizing, scouring, mercerising, bleaching, dyeing and finishing. During these processes, certain pollutants like vapours, dusts, gases, odours, etc are formed which may affect the health of the workers.To study the existing facilities provided to the workers who were involved in pre-treatments, dyeing and finishing, they were randomly selected. Considering that they should have been working in the units for at least past 2 years. Thus, a total of 50 workers were selected for the investigation.

DEVELOPMENT OF TOOLS

In order to gather information, two types of schedules were prepared.

- Interview schedule
- Observation schedule

Interview schedule In order to obtain the required information from the respondents, an interview schedule was prepared to study the provision of various facilities to the workers (as shown in Fig.1). This includes:

- **Generalinformation**The general information aimed at collecting data on the personal profile of the respondents.
- **Specificinformation**The specific information on the other hand, aimed at collecting information regarding provision of health care and safety facilities in the small scale dyeing units.
- Pre-testing of the tools was done to check the clarity of language and its practicability/applicability in field situation. The observation and interview schedules for all the sample categories were duly pre-tested and were finalised after making modifications.

Observation schedule An observation set was prepared to collect information regarding the physical working conditions of the small scale dyeing units (Fig. 2). The physical working conditions covered aspects like infrastructure, ventilation, storage, lighting and ETPs.

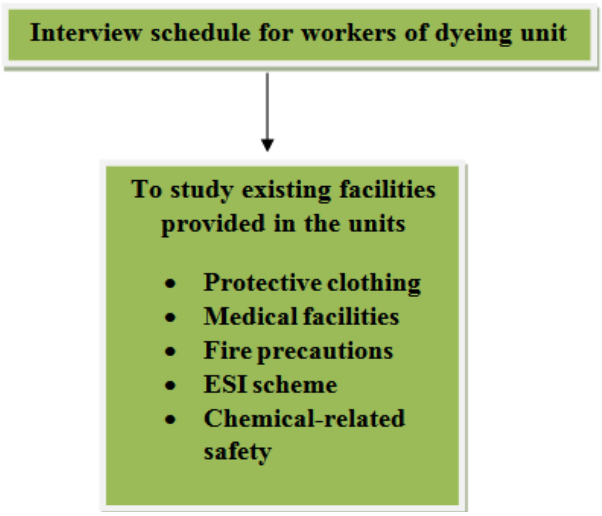


Fig. 1 Collection of primary data through interview schedule

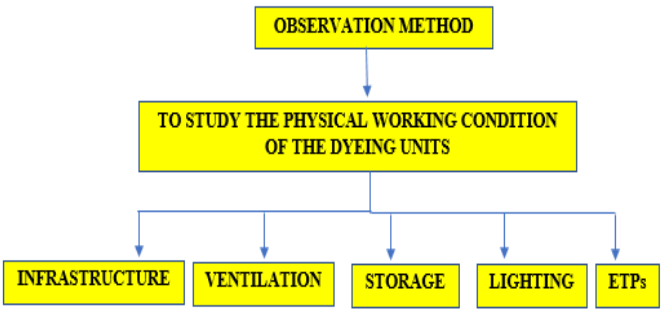


Fig. 2 Collection of primary data through observation schedule

COLLECTION OF DATA

Initially, the secondary data through the means of books, journals, etc. was gathered. Primary data was collected through personal visits to six small scale dyeing units, in and around Delhi NCR. The interview was conducted among 50 workers.

III. RESULTS AND DISCUSSION:

(I) Provision Of Health Care And Safety Facilities To The Workers Of Small Scale Dyeing Units

- **Provision of protective wear**

In the dyeing units, there are several factors like improper lighting at some units, unawareness of protective wear, unhygienic conditions that contribute to the ill health of the workers. Table 1 shows the responses of the workers regarding the health care facilities provided to them for protection against health hazards.

Table 1. Provisionof protective wear

S.no	Protective work wear	Yes	No	Total units
1.	Masks	2	4	6
2.	Gloves	6	0	6
3.	Lab coats	0	6	6
4.	Aprons	0	6	6
5.	Boots	0	6	6
6.	Safety glasses	2	4	6

Results have shown that workers of all the units were provided gloves, while only two units were providing them masks, but only a few of them were using it (**Fig 3**). Only two units were providing them safety glasses. Lab coats and aprons were not used by any of the units. There were no provision of boots (**Fig 4**) to the workers, they had to wear their own shoes/boots. Only one of them was using boots (**Fig 5**). All the workers were least bothered about their health (**Fig 6**).

Fig 3 Working with gloves

Fig 4 No provision of boo

Fig 5 Working with boots Fig 6 No use of gloves and boots

- **Provision of medical facilities**

First aid is the provision of immediate care to a victim with an injury or illness, usually affected by a lay person, and performed within a limited skill range. First aid is normally performed until the injury or illness is satisfactorily dealt with (such as in the case of small cuts, minor bruises, and blisters) or until the next level of care, such as an ambulance or doctor, arrives.

An attempt was also made to know whether workers of the dyeing units were using Personal Protective Equipment (PPE) or not. PPE was designed to protect employees from serious workplace injuries or illness resulting from contact with chemical, radiological, physical, electrical, mechanical, or other workplace hazards. Besides face shields, safety glasses, hard hats, and safety shoes, PPE includes a variety of devices and garments such as goggles, coveralls, gloves, vests, earplugs, and respirators (OSHA). It was observed that most of the workers of dyeing units were provided with protective wears.

As mentioned, there are various types of protective clothing like gloves, gumboots, earplugs, goggles, respirator, etc. But it was noticed by the investigator that workers were using only the hand gloves. Further, it was found that some of the workers were not using any kind of protection using chemicals and dyes, which may lead to cracks and ultimately a route for entry of chemicals in the body.

Table 2 Provision of medical facilities

S.no	Medical facilities	Yes	No	Total units
1.	First aid kits	6	0	6
2.	Regular checkups	0	6	6
3.	Medical allowance	3	3	6
4.	Sick leave	6	0	6

Table 2 indicates that all the units were providing first aid kits and sick leaves to the workers. Three of the units also provide proper medical allowances to the workers. Provision of regular checkups were not a part of these small scale units.

- **Provision of fire precautions**

The risk of fire in the units is high due to several reasons like too much power generations and chemicals. The provision of fire safety (**Fig 7**) is a must for any workplace and the workers must be trained to use the equipment properly.

Table 3. Provision of fire precautions

S.no	Fire precautions	Yes	No	Total units
1.	**Proper precautions used**	5	1	6
2.	**Enough firefighting equipment**	6	0	6
3.	**Proper exit plans**	2	4	6
4.	**Proper clearance near stairs & exits**	2	4	6

Fig 7Provision of Fire extinguishers

The precautions regarding fire safety was present in all the units visited in one way or the other (Table 3). Fire extinguishers were present in every unit which is a basic requirement for the safety purpose. It was found that only two units had proper clearance near stairs and exits.

- **Provision of chemical-related precautions**

As shown in Table 4, all the units had proper storage of chemicals (**Fig 8**), but only a few workers were using personal protective equipment while working near chemicals (**Fig 9**). There were proper storage of chemicals in all the six units. Four of the units had inappropriate drainage system. Provision of Effluent Treatment Plants (ETPs) was lacking in four units and was proper in two units (**Fig 10**).

The promulgation of Employees' State Insurance Act (ESI), 1948 envisaged an integrated need-based social insurance scheme that would protect the interest of workers in contingencies such as sickness, maternity, temporary or permanent physical disablement, and death due to employment injury resulting in loss of wages or earning capacity. The Act also guarantees reasonably good medical care to the workers and their immediate dependents (ESI Act, 1948). Analysis of the results had indicated that 40% of the workers were getting ESI facility.

Table 4. Provision of chemical-related precautions

S.no	Chemical related precautions	Yes	No	Total units
1.	**Proper storage of chemicals**	6	0	6
2.	**Use of protective wear near chemicals**	1	5	6
3.	**Proper drainage system**	2	4	6
4.	**Provision of ETPs**	2	4	6

Fig 8 Proper storage of chemicals

Fig 9 Not using protective wear near chemicals
Fig 10 Provision of ETPs

(II) Working Conditions Of Small Scale Dyeing Units

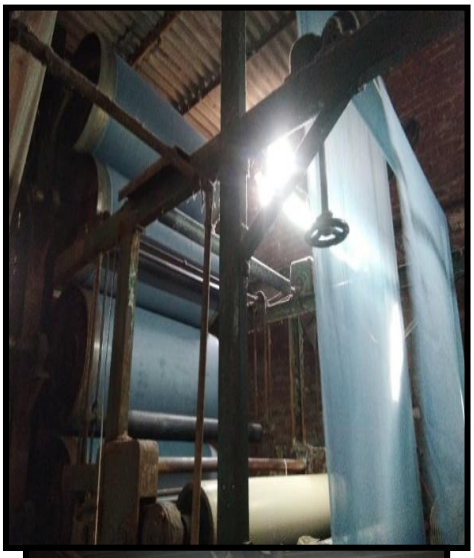
In the present research, an attempt was made to study the working conditions of the workers of the small scale dyeing units and results for same are tabulated in Table 5.

- **Physical working conditions**

According to Table 5, the physical working conditions of six of the dyeing units were found presence of exhaust fan, air supply, natural light, artificial light (**Fig 11**) and windows/ventilators (**Fig 12**). Further, the storage of chemicals and tools were also maintained in all the units. Major requirement of cleaning was needed in two of the units (**Fig 13**). Regular cleaning were done in four units only and were unhygienic in two units. It was found good with respect to sufficient garbage bins (**Fig 14**) except one unit which had no garbage bin (**Fig 15**). Washrooms were adequate in number. Four units were lacking proper drainage (**Fig 16**) and obstacle-free pathways (**Fig 17**). Eating areas were clean in all the units (**Fig 18**).

Table 5. Physical working conditions of the small scale dyeing units

S.no	Physical working conditions	Yes	No	Total units
1.	**Exhausts fan**	6	0	6
2.	**Air supply**	6	0	6
3.	**Windows/ventilators for light**	6	0	6
4.	**Artificial light sources**	3	3	6
5.	**Regular cleaning**	4	2	6
6.	**Sufficient garbage bins**	5	1	6
7.	**Obstacle free pathways**	2	4	6
8.	**Clean eating area**	6	0	6
9.	**Adequate washrooms**	5	1	6
10.	**Storage of tools/chemicals**	6	0	6
11.	**Adequate drainage**	2	4	6



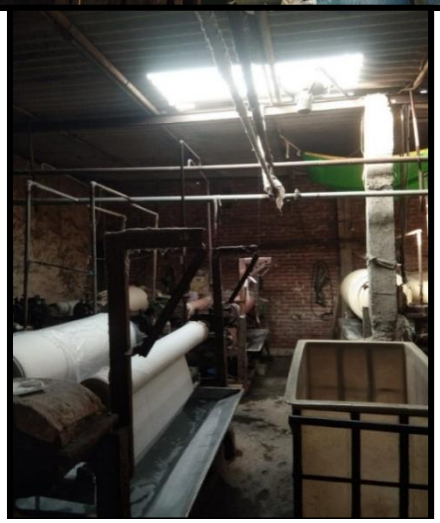


Fig 11 Artificial Light sources
Fig 12 Proper natural light and ventilation

Fig 13Unhygienic condition
Fig 14Unhealthy working conditions

Fig 15 Insufficient garbage bins
Fig 16Improper drainage system

Fig 17Lacking obstacle free pathways
Fig 18Clean eating area

IV. CONCLUSION:

In the present research, an attempt was made to study the healthcare facilities provided to the workers. There was sufficient provision of protective wear like gloves, masks in all the departments, but only a few workers were using it. First aid kits and sick leaves were provided in all the units while there was no provision of regular checkups. Fire safety measures like fire extinguishers were provided in all units but proper exit plans was not there in all units. Storage of chemicals were proper and labelled.It was observed that the physical working conditions of the small scale dyeing units were satisfactory. The only problem was lacking obstacle free pathways and drainage. ETPs was present only in some units.

Apart from that, it is important that the worker should keep updating the owner about the

unsafe conditions in the unit. It is also the responsibility of the owner to keep the workers safe and provide the unit with proper ventilation and lighting, and proper storage of chemicals so that workers can work safely. Regular cleaning should be done and sufficient provision of garbage bin should be provided in order to maintain hygiene. It is also advised to keep quick access to the exits.

REFERENCES:

[1]. Kumar, P. et al. (2014). Occupational health and safety in textile industry. International Journal of Research in Engineering and Technology. Vol-3, issue 11, eISSN: 2319-1163 | pISSN: 2321-7308.

[2]. Mishra, A. (2018). Occupational Health Hazards and Safety Measures: Garment Manufacturing, (Unpublished Master's dissertation). Institute of Home Economics, University of Delhi.

[3]. Purushothama, B. (2015). Solutions to Problems in Textile and Garment Industry. Woodhead Publishing India Pvt. Ltd. (2015). Pg.1-2, ISBN: 978-9-38030-849-4.

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