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Awareness and handling practices of asbestos in asbestos workers

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ABSTRACT

Objectives: This study is carried out to assess the knowledge and attitude of asbestos workers regarding health effects of asbestos, its preventive measures and safe disposal. **Materials and Methods:** This cross-sectional study included 117 asbestos workers of six small-scale asbestos products manufacturing units. Interview technique was used as a tool for data collection on predesigned questionnaire. **Results:** Only 50.4% of the subjects knew that their workplace asbestos as one of the raw material. Further 75 (64.1%) considered asbestos as harmful material for health. Only 10 (8.5%) workers received formal training to safe handle the asbestos while only 3 (2.6%) subjects knew that health hazards caused by asbestos are compensable. All the workers were using mask to protect themselves against the dust. 29% of the workers did not know about the safe disposal of asbestos waste. **Conclusions:** The present study reveals inadequate knowledge regarding asbestos and its safe disposal in the workers.

KEY WORDS: Asbestos, India, small-scale units

INTRODUCTION

Over all the world, pneumoconiosis are still an important occupational health problem [1]. It is characterized by pulmonary fibrosis caused by inhalation of silica, coal particles or asbestos. Inhalation of asbestos fibers is known to cause asbestosis, which is characterized by the fibrosis of both the pleura and the pulmonary parenchyma [2-4]. There is a long latent period when the disease becomes overt and by the time the worker presents with the symptom already much damage is already being done. Further, asbestos has been classified as a Group I carcinogen by International Agency for Research on Cancer and is acknowledged as a well-known carcinogen of lung cancer and malignant mesothelioma [5,6]. Some studies also suggested carcinoma of esophagus [7], stomach [8] and pharynx [9]. Not only this chronic nature and the disabling feature of the disease also results in mental agony to the victims [10].

The asbestos is defined on the basis of its industrial properties; its shape, chemical composition, and physical properties. The WHO defines asbestos as all fibers with the physical and chemical properties of commercial asbestos. Chemically it is a silicate mineral having a fibrous form, including serpentine, amphibole, zeolite, or palygorskite [11].

Asbestos is used in India in two types of units, i.e., large organized units and small scale unorganized units. Although the organized units are covered in the ambit of Indian Factories Act, the smaller unorganized sectors are mostly not covered by the law. Thus, more often than never these units flout the norms for the welfare of the workers. This makes the workers of unorganized sectors more susceptible for exposure to harmful substances by virtue of workplace pollution.

Though there is no treatment for the asbestos-related diseases, it can be prevented. However, it requires the workers to be aware of the material being used and the hazards it poses. The understanding of workers regarding mode of exposure, the bodily system it affects, legal issues associated with the disease and the preventive measures available are important for reducing the burden of the disease.

With this background, the present study is carried out to assess the knowledge, attitude and practices of asbestos workers of small scale units regarding health effects of asbestos, preventive measures to be taken and safe disposal of asbestos.

MATERIALS AND METHODS

The present cross-sectional study was carried out in asbestos workers of small-scale asbestos products manufacturing units. A total of 117 workers from six small units were included. Three units were in Thane, two in Noida and one in Panoli. Two units were manufacturing friction materials while other four units were engaged in asbestos textile production. All the subjects were male. Interview technique was used as a tool for data collection on predesigned questionnaire. The questionnaire included questions regarding knowledge about the harmful nature of asbestos and the type and severity of such hazards, possible protection against such hazards and the actual practice of the workers for protecting themselves and safe disposal of asbestos waste. The survey concluded with imparting knowledge regarding the appropriate way of asbestos handling and disposal. The statistical analysis was carried out using SPSS 15.0 (SPSS Inc., 233 South Wacker Drive, 11th Floor, Chicago, IL) and included calculation of percentages and proportions.

RESULTS

The present study is included 117 male asbestos workers working in smaller asbestos product manufacturing units.

Table 1 depicts the basic demographic and occupational characteristics of the study subjects. It can be observed that most of the subjects were young with 37.6% belonging to <25 years age group. About three-fourth of the workers are in the job for <5 years. 70% of the workers had up to secondary level of educational attainment. This is a positive factor while imparting knowledge about the asbestos hazards and safe handling.

Table 2 shows the knowledge regarding asbestos related health hazards in the study subjects. Only 50.4% of the subjects knew that the workplace in which they are working uses asbestos as one of the raw material. Further 75 (64.1%) considered asbestos as harmful material for health. However, only 26 (34.7%) considered the health hazards as serious. Though most of the workers said that the respiratory system is the one, which is most, affected, some also said digestive system or skin can also be affected. About 11.2% workers though considered asbestos, as harmful material did not knew about the hazard. The use of protective device such as mask was considered as the best method for preventing such hazards. Unfortunately, only 10 (8.5%) workers received formal training to safe handle the asbestos while only 3 (2.6%) subjects knew that health hazards caused by asbestos are compensable under the law of the country.

The attitude and practice toward handling of asbestos and its disposal are shown in Table 3. All the workers were using personal protective device such as a piece of cloth as mask to protect themselves against the dust. However, only 92.3% knew its utility while remaining were using it either observing others doing it or because they felt better. Only 71% knew about the safe disposal of asbestos with 65% said that the waste asbestos material is recycled while 6% said that the deep burial is done to dispose of waste. 29% of the workers did not know about the safe disposal of asbestos waste.

Table 1: Demographic and occupational characteristics of study subjects

Characteristics	Number (%) (*N*=117)
Age (in years)	
<25	44 (37.6)
25-34	37 (31.6)
35-44	23 (19.7)
≥45	13 (11.1)
Duration of job (in years)	
<5	88 (75.2)
5-9	13 (11.1)
≥10	16 (13.7)
Educational status	
Illiterate	13 (11.1)
Primary	19 (16.2)
Secondary	52 (44.4)
Higher secondary	30 (25.6)
Graduate	3 (2.6)

Table 2: Knowledge regarding asbestos hazards in study subjects

Characteristics	Number (%) (*N*=117)
Know that asbestos is used at work process	59 (50.4)
Asbestos is harmful for health	75 (64.1)
How severe is the harm	
Low	24 (32)
Moderate	18 (24)
High	26 (34.7)
Do not know	7 (9.3)
Type of health hazards caused by asbestos	
Respiratory	60 (50.3)
Digestive	2 (1.7)
Others	13 (11.2)
What is the protective measure	
Use of PPE	104 (88.9)
Local exhaust ventilation	1 (0.9)
Do not know	12 (10.3)
Received training for safe handling of asbestos	10 (8.5)
Asbestos hazards are compensable	3 (2.6)

PPE: Personal protective equipment

Table 3: Attitude of study subjects towards asbestos hazards

Characteristics	Number (%) (*N*=117)
Use PPE while working	117 (100)
Use PPE because	
Feel better	2 (1.7)
Know its utility	108 (92.3)
Others do it	4 (3.4)
Do not know	3 (2.6)
Frequency of usage of PPE	
Always	112 (95.7)
Sometimes	5 (4.3)
Disposal of asbestos waste	
Recycle	76 (65)
With municipal waste	19 (16.2)
Leave unattended	14 (12)
Deep burial	7 (6)
Do not know	1 (0.8)
Undergone periodic medical examination	28 (23.9)
Chest X-ray done any time since joining job	16 (13.7)

PPE: Personal protective equipment

DISCUSSION

The present study is carried out to assess the knowledge, attitude and practices of asbestos workers of small-scale units regarding health effects of asbestos, preventive measures to be taken and safe disposal of asbestos. Most of the workers were young, i.e., 69.2% were below 35 years of age. This is important because if at this age they get exposed to harmful fibers of asbestos, and the process of interstitial lung fibrosis is initiated they have to spend their rest of life very miserably. As most of the workers were working for <5 years and thus not much time is lost when they can be told about the importance of safe handling of the asbestos containing materials [12]. Also about three-fourth of the study subjects had at least primary level of schooling that facilitates the compliance of health education program.

The study revealed that about half of the workers did not know that they are handling harmful substance such as asbestos at their workplace. However, those who knew came to know about this through their employers. This highlights the issue that most of the time the employers don't inform the workers about asbestos so as to not lose their labor. Under the Section 41B of Indian Factories Act, 1948 [13] regarding compulsory disclosure of information by the occupier, the occupier of every factory involving a hazardous process shall disclose in the manner prescribed, all information regarding dangers including health hazards and the measures to overcome such hazards arising from the exposure to or handling of the materials or substances in the manufacture, transportation, storage and other processes, to the workers employed in the factory, the Chief Inspector, the local authority, within whose jurisdiction the factory is situated, and the general public in the vicinity. Further about one-third of the workers were ignorant about the harmful nature of the asbestos. Only 8.5% workers had undergone training for safe handling of the asbestos. This makes the workers adopt bad manufacturing practices, which further increase the chance of exposure to dust and neglect the advice to use personal protective measures. Only three workers knew that the disease caused by asbestos exposure particularly asbestosis is compensable under the law. Other investigators have also reported that although the hazards of asbestos are well known in developed countries, awareness of its adverse health effects is less in other parts of the world, particularly when exposure occurs in non-occupational settings [14]. Further, the risk perceived by the workers is very less, and attitude toward the illness is benign as there is no clear understanding about the causation [15].

The attitude and practice suggested that all the workers were using a piece of cloth as mask to prevent inhalation of dust and fibers at the workplace. This may be the impact of health survey being taken and thereby workers being told by the employer to respond affirmatively to the use of personal protective devices. This is the reason of most of the workers stating that the use of personal protective devices particularly masks as the only way to prevent dust exposure and its related hazards. Whereas the principles of workplace hygiene suggest that the use of personal protective measures should be a last resort. Against the provisions in the Indian Factories Act for pre-placement and periodical medical examination including chest radiography of the workers exposed to dust in workplace environment, none was subjected to pre-placement examination, about one-fourth underwent periodic medical examination and only 13.7% were ever radiographed after joining the job.

When asked about the disposal of asbestos-containing waste two-third mentioned that they are recycling the waste while another 6% percent informed correctly that they deep bury the waste. However about one-third of the workers did not know safe disposal of such waste. Thus disposing of such waste with municipal waste or leaving it unattended may result in ambient air pollution thereby posing a bigger threat of environmental health hazard due to permanence of asbestos containing material [16] and thus recycling is one of the best method [17].

Thus, the implementation of effective strategies to eliminate asbestos related diseases is an important challenge in Asia including India, where asbestos is still consumed [18]. There is a need to impart knowledge regarding asbestos and its safe disposal to the workers [19,20]. This will not only increase their safety awareness but also safe disposal of such substances will prevent the environmental threats. In fact, there is a need for the "worker counseling program" for the asbestos workers. The content should include elements that allow an understanding of the diseased concerned, the risk (depending on the type of exposure), the benefits and limits of screening, and an awareness of the possible consequences of follow up. The program should allow enough time for one to one discussion with a professional to consider all aspects [21]. It may be necessary to meet for a second time. This counseling may be given, to subjects over 50 years old, in the framework of either the occupational health or social security. The present study concluded with imparting education regarding asbestos, its health effects and the appropriate method for its safe disposal.

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