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Effects of tobacco dust on bidi rollers

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ABSTRACT

The aim of study effects of tobacco dust on bidi rollers. Environmental pollution may affect human beings directly or through its physical objects, possessions or opportunities for recreation and appreciation of nature. Atmospheric pollutants like dusts, fumes, and mists cause air pollution which adversely affects human health and creates annoyance to human eyes, irritation to nose and throat, and ill effects to human health through headache, allergies, nausea and similar effects. Tobacco particulate air pollution is one of the important problems in tobacco processing industries. Bidi rollers inhale tobacco dust and volatile components present in the work environment. Inhalation of tobacco dust health effects such as asthma, burning eyes conjunctivitis, chronic obstructive bronchitis and allergic respiratory or nasal diseases. Control Group - Healthy Controls - 100 subjects. Normal healthy age matched female subjects (not exposed to any occupational dust) were selected as controls. Female bidi rollers - 100 were considered as the subject of this study (exposed to occupational tobacco dust with work experience 10-40yrs). Information was collected by visiting the house of each bidi roller. The study subjects were interviewed and a questionnaire was filled for each subject, which included details about their age, educational qualification and health problems such as headache, nausea, irritation and dryness of throat, weakness, sneezing faced by them. The present study indicates that women bidi rollers face numerous health problems due to direct inhalation of tobacco dust such as asthma, burning eyes conjunctivitis, chronic obstructive bronchitis and allergic respiratory or nasal diseases.

Keywords— Tobacco, Health effects bidi rollers

1. INTRODUCTION

Environmental pollution may affect human beings directly or through its physical objects, possessions or opportunities for recreation and appreciation of nature. Atmospheric pollutants like dusts, fumes, and mists cause air pollution which adversely affects human health and creates annoyance to human eyes, irritation to nose and throat, and ill effects to human health through headache, allergies, nausea and similar effects.⁽¹⁾ The great majority of occupational poisonings result from breathing the air containing toxic substances in the form of gases, vapours, mists and dusts.⁽²⁾

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Tobacco particulate air pollution is one of the important problems in tobacco processing industries. Bidis is an indigenous cigarette filled with tobacco flake and wrapped in a tendu leaf, tied with a string at one end. Bidi rollers working 6 to 10hrs/day, handle 125-450 gm of tobacco per day and inhale tobacco dust and volatile components present in the work environment. The volatile components such as the alkaloids like nicotine are also inhaled. Due to the sweating in these workers, some amount of volatile components may be dissolved in the sweat and are absorbed through intact skin. The inhaled tobacco dust is deposited and nicotine is absorbed in the lung epithelium.^(3,4,5) Epidemiological studies showed that individual exposure to this type of air pollutant causes some adverse health effects especially respiratory outcomes such as asthma, burning eyes conjunctivitis, chronic obstructive bronchitis and allergic respiratory or nasal diseases in rollers exposed to tobacco dust.^(6,7)

2. MATERIALS AND METHODS

Control Group: Healthy Controls- 100 subjects normal healthy age matched female subjects (not exposed to any occupational dust) were selected as controls. Female bidi rollers - 100 were considered as the subject of this study (exposed to occupational tobacco dust with work experience 10-40yrs).

The present study was done in Dr. V. M. Govt. Medical college, Solapur district, Maharashtra, India & subject information was collected by visiting the house of each bidi rollers. The study subjects were interviewed and a questionnaire was filled for each subject, which included details about their age, educational qualification and health problems such as headache, nausea, irritation and dryness of throat, weakness, sneezing faced by them.

Table 1: Distribution of Study Subjects

Healthy Controls (Not exposed to any occupational dust)	100
Bidi Rollers (Exposed to tobacco dust)	100

Inclusive Criteria: The female bidi rollers within the age group of 15-60 years were selected.

Exclusive Criteria: The subject having history of smoking, passive smoking and diseases such as Diabetes Mellitus, Renal

Diseases, Cardiovascular Diseases etc. were excluded from study.

3. RESULTS AND DISCUSSION

The present study was indicate that prevalence of headache, nausea, irritation and dryness of throat, weakness, sneezing were higher in occupational exposure of tobacco dust bidi rollers.

Table 2: Working Conditions of bidi rollers

Healthy Controls (Not exposed to any occupational dust)	100
Bidi Rollers (Exposed to tobacco dust)	100
Working Years (Experienced)	10-40yrs
Working Hours	6-10hrs
Bidi Rolled per day	400-1200

Table 3: Health Status of occupational exposure of bidi rollers

Symptoms due to (exposed to tobacco dust)	Healthy Controls (Not exposed to any occupational dust) (100)	Bidi Rollers (Exposed to tobacco dust) (100)
Headache	02	3
Backache	01	4
Nausea	00	4
Loss Appetite	00	8
Difficulty in breathing	00	10
Skin Irritation	00	9
Eye Irritation	00	19
Dryness of throat	00	15
Weakness	03	6
Sneezing	00	4

The respiratory impairments among the exposed rollers were reported to be caused by the varieties of dusts in small and largescale industries generated during their production processes. The nature of respiratory diseases caused by occupational dust is influenced by the type of dust and duration of exposure. Occupational diseases are caused by a pathologic response of the patients to their working environment. In bidi rollers, the occupational stress associated with long hours of work, exposure to tobacco dusts and poor working conditions are superimposed on the handicaps of poor socioeconomic and nutritional status. The salient features were that the subjects experienced symptoms like nausea, giddiness, vomiting, headache, tiredness, loss of appetite, weakness, cough and breathlessness. In response to the problems reported by bidi rollers were:

- Body pain due to continuous work in a static posture;
- Cough, which may be related to their exposure to tobacco dust;
- Stomach-related pains such as cramps, gas and spasmodic pains leading to Diarrhea;
- Morning cough;
- Cough throughout the day;
- Chest tightness, etc. (8)

Aparna N. Bagwe et. al. (9) demonstrated that the tobacco respirable dust and expose the rollers to tobacco by cutaneous and nasopharyngeal routes. They reported earlier that extracts of processed, unburnt bidi tobacco contain nitrosatable precursors to potent mutagens and the aqueous bidi tobacco extract was found to exhibit moderate skin tumor promoting activity. Dr. Sardesai Suman P et. al. (10) observed that

Nicotine is readily absorbed from the respiratory tract, buccal mucous membrane and skin. While preparing bidis ingredients tobacco is likely to be absorbed through intact skin of the hands and inhaled as fine dust. A. N. Bagwe et. al. (3,9,11) demonstrated that excretion of high amounts of cotinine (a metabolite of the tobacco alkaloid nicotine) by tobacco processors confirmed that tobacco dust exposure resulted in considerable absorption and systemic metabolism of tobacco constituents.

Some of the health effects experienced by bidi rollers include pain and cramps in the shoulders, neck, back and lower abdomen. The incidence of tuberculosis and bronchial asthma is higher than that among the general population (according to research by the Factory Advisory Services and Labor Institute in Bombay, a unit of the Labor Ministry of India). The International Labor Organization cites ailments such as exacerbation of tuberculosis, asthma, anemia, giddiness, postural and eye problems, and gynaecological difficulties among bidi rollers.(12)

The major health problems associated with bidi making are respiratory ailments such as bronchitis and asthma from tobacco dusts and nicotine, burning eyes conjunctivitis, occupational dermatitis and “green tobacco sickness”, which is caused by the absorption of nicotine via the skin. In addition, irregular, menstruation, miscarriages and significant neonatal deaths are common complaints among these rollers, they may be related to tobacco exposure.(13,14) Mahimkar et. al. (15) investigated tobacco processors exposed occupationally to bidi-tobacco showed that rollers exhibit a higher frequency of cancer in their peripheral blood lymphocytes as compared to the control group. The majority of cells exhibited chromatid type aberrations, comprising deletion fragments, breaks and gaps.

4. CONCLUSION

The present study indicates that women bidi rollers face numerous health problems due to direct inhalation of tobacco dust such as asthma, burning eyes conjunctivitis, chronic obstructive bronchitis and allergic respiratory or nasal diseases. There is a need to impart education to the women bidi rollers regarding the health hazards caused by tobacco & its effects and the need to use protective clothing such as gloves, masks.

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