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RESEARCH ARTICLE

An epidemiological study of occupational health hazards among bidi workers of Amarchinta, Andhra Pradesh

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Abstract

Bidi rolling is a popular small-scale industry in Andhra Pradesh which provides employment for over 10 lakh women bidi workers, particularly in the Telangana region. Amarchinta is a Mandal of Mahabubnagar district which is part of Telangana region where major population are low socio-economic status especially in rural area where most of this group is dependent of bidi rolling for their survival. A descriptive cross-sectional study was used to assess the magnitude of common occupational health problems among bidi workers. A total of 470 bidi workers were selected by random sampling method. For collection of data, a predesigned, pretested questionnaire were used and the results were analyzed by descriptive statistical method. Out of total 470 participants (bidi rollers) from 140 families, majority (55%) were in the age group of 15-35 years. Around 79% bidi workers were living in poor environmental and housing conditions. It was observed that almost 90% of the workers developed pain in various body parts and occupational health problems as reported by the male and female bidi workers. The most frequent pain is shoulder pain in both the males and females (75% and 80.85%) followed by back pain and neck pain (76.60%). Apart from the musculo-skeletal problems, there are also cough (27%), breathlessness (20%), acidity (40%), generalized weakness (34%) and skin diseases (dermatitis) (21.27%) and tuberculosis (6.8%).

Keywords: Bidi rolling, bidi workers, Amarchinta, occupational health problems, musculo-skeletal problems.

Introduction

Bidi manufacturing is about a century old business in India. Tobacco cultivation began in the late 17th century and bidis were first created when tobacco workers took left-over tobacco and rolled it in leaves (Pranay, 2009). Bidi sector is an agro-forestry based 2nd largest industry in India and provides employment to millions of women and children who are mostly from the poor socio-economic status. Most of the bidi making is carried out by the contractual, home-based, piece rate, daily base system where women and children are involved in this work quite easily. Bidi is made by two main raw materials, tendu (bidi wrapper) leaves and tobacco flakes. Bidi is also known as poor man's cigarette. There are about 300 manufacturers of bidi brands and thousands of small scale contractors and manufacturers involved in bidi production in India. A large part of the bidi industry is largely unregulated and home-based, making it difficult to regulate the working conditions and implement welfare laws. There are approximately 4.4 million full time bidi workers in India (VHAI, 2009). Bidi rolling is a popular small-scale industry in Andhra Pradesh which provides employment to over 10 lakh women bidi workers, particularly in the Telangana region. There are around 40 bidi manufacturers in Andhra Pradesh and the annual industry turnover is about 1,500 crore. Till today, the range of bidi manufacturing varies from individual, self-employed bidi workers to the large branded bidi companies.

Srinivasulu (1997) reported that 90% of bidi workers are women. Bidis outsell cigarettes by a ratio of eight to one (8:1) in India. Bidis are usually smoked by men, but produced mainly by women and young children who roll them in their home (Srivastava, 2000). Children help their mothers, fathers and siblings with bidi rolling and they work all day with no breaks or holidays. On school days they roll bidis before reaching school and again continue after returning back, without any wages (Kaur and Ratna, 1999).

Bidi rolling causes serious occupational hazards to the workers and their families. Bidi rollers are constantly exposed to tobacco dust and hazardous chemicals and they experience exacerbation of tuberculosis, asthma, anaemia, giddiness, postural and eye problems (Kumar, 2003). When bidis are stored in the house, food spoils quicker and family members experience nausea and headaches (Panchamukhi *et al*., 2000). Against these backdrops, this study was aimed with the following objectives:

1. To examine the socio-economic conditions of female bidi workers in the bidi industry.
2. To study the problems related to women workers in bidi Industry.
3. To assess the magnitude of common occupational health hazards among bidi workers.

Materials and methods

Study area: The study was carried out in the Department of community medicine, SVSMC, Mahabubnagar, AP during 1st week of Sep 2011. Permission from ethical committee of the SVS medical college was obtained before conducting the study. In this study, intervention or any drug/vaccine trail was not done. Written consent was taken from village sarpanch (head of the village) and informed consent was taken by all the participants.

Research design: Research design adopted for this study was descriptive cross-sectional study. The total population of the study area was around 19,000 and out of it, About 11,400 people (60%) were involved in bidi rolling work. On the basis of pilot study conducted in the study area, 470 participants from 140 families were selected by random sampling method. Questionnaire was prepared with the aid of literature and consultation with safety experts and doctors for interview purpose. Finally 30 questions are formed under six dimensions:

1. Environment and sanitation condition of bidi workers.
2. Socio-economic status of the bidi workers.
3. Physical health and occupational health profile of bidi workers.
4. Emotional fittings.
5. Personal safety.
6. General awareness.

Door to door survey was conducted for data collection by pre-designed, pre-tested questionnaire and analyzed by descriptive statistical methods.

Results

Out of total 470 participants from 140 families, majority (55%) were in the age group of 15-35 years. Around 21% children were between the age group of 10-15 years. The mean age of the participants was 28.68 years. Bidi work was found as a female dominated work specially rolling of bidi and blending of tobacco. Around 87.23% of bidi workers were females and only 12.76% were male (Fig. 1). It was the same in case of children where 85% were female child involved in bidi rolling (Table 1). The dimension of environment and sanitation condition revealed that the housing standard was satisfactory only among 21% of the families and remaining 79% living in poor environmental and housing conditions dwelling with poor ventilation, overcrowding and drainage etc. (Table 2). General hygienic condition of bidi workers was poor in majority (83%) of the participants. Socio-economic status of the majority bidi workers were lower class (61%), lower middle class (39%) according to the modified kuppuswamy's classification (Kumar *et al.,* 2007) (Table 3). Around 48% of bidi workers are illiterate. Poor socio-economic status, poor education, awareness and lack of hygienic consideration lead to various health problems to the bidi workers. During rolling of bidi, nicotine of tobacco powder comes into direct contact with the skin and becomes absorbed through the skin into the blood.

Fig. 1. Sex wise distribution of bidi workers.

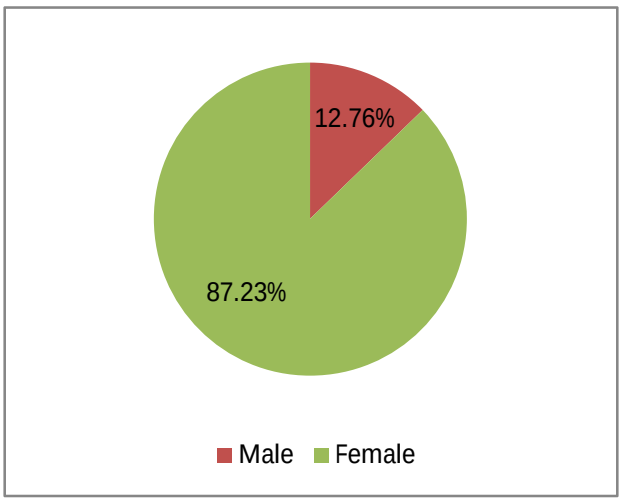

Table 1. Sex wise distribution of bidi workers (children, *n=98*).

Sex	No.	%
Male	83	84.7%
Female	15	15.3%
Total	98	100%

Table 2. Environment and housing condition of bidi workers (families, *n=140*).

Level	No.	%
satisfactory	30	21.43
poor	110	78.57
Total	140	100%

Table 3. Socio-economic status of bidi workers (*n=140*).

Class	No.	%
Upper class	Nil	-
Upper middle	Nil	-
Lower middle	55	39.28
Upper lower	85	60.72
Lower	Nil	-
Total	140	100%

Table 4. Common occupational health problems among bidi workers *(*n=470*).

Health problems	No.	%
Cough (bronchitis)	128	27.24
Breathlessness	95	20.22
TB	32	06.8
Abdomen pain	88	18.72
Acidity	188	40
Head ache	190	40.42
Nausea/vomiting	90	19.14
Backache	**360**	**76.60**
Pain in shoulder/knee	**380**	**80.85**
Generalized weakness	160	34.04
Skin diseases	100	21.27

*Multiple answers.

Personal hygiene was poor (83%) among the majority of bidi workers. Around 90% of women followed poor hygiene (without washing hands before breast feeding in between the work). Survey of occupational health profile revealed various occupational hazards among the bidi workers. The hazards may be attributed to improper working posture and unhygienic conditions at work place. It has been observed that almost 90% of the workers have developed pain in various body parts. Occupational health problems are reported by the male and female bidi workers. It is found that most frequent pain is shoulder pain in both males and females (80.85%) followed by back pain and neck pain (76.60%). Apart from that, knee, chest, elbow and wrist pain have also been reported to a significant degree. It is found that that the frequency and intensity of pain is more in all the cases in females than the males. The reason is less tolerance to fatigue and less physiological working capacity in females. Another cause may be improper diet and malnutrition.

Apart from the musculo-skeletal problems, there are also other problems reported by the bidi workers like cough (27%), breathlessness (20%), acidity (40%), generalized weakness (34%) and skin diseases (dermatitis) (21.27%) and tuberculosis (6.8%) (Table 4). The dimension of emotional fittings revealed that 88%of the workers are attending job when they are not physically fit or sick. Around 53% of the workers don't enjoy the taste of food stuff when they consume it because of bad tobacco smell in the house. About 95% of the bidi workers are forced towards this work because of poverty and 91% of the workers are not consulting doctors when they are not physically fit. Regarding general awareness aspects of tobacco related hazards, 97% of the bidi workers are not aware of nicotine component of tobacco and only 19% of them are aware that this occupation may also cause cancer and tuberculosis. Around 73% of them agree that occupying children in this job might compromise their education, physical health and general welfare. Around 82% workers got registered with ESI dispensary of Amachinta area for local treatments. It was found that knowledge and practice regarding personal protective measures was quite poor as 87% of workers were not using any protective measures during bidi rolling (Table 5).

Table 5. Use of protective measures during bidi rolling.

Protective measures	No.	%
Not using	410	87.23
Full shirts/pants/Lungi/sheet	60	12.76
Gloves/mask	-	-
Socks	-	-
Total	470	100%

Discussion

The bidi industry in the name of home-based, door-step employment exploits women and children by not paying minimum wages as recommended by government. Women constitute 76-95% of total employment in bidi manufacturing (Sudarshan and Kaur, 1999). Bidi rolling is considered as serious occupation which leads to health hazards as these workers constantly expose themselves to tobacco dust and other dangerous chemicals. Bidi rolling has grown from household occupation to the level of cooperative societies, especially in the state like Andhra Pradesh wherein bidi workers work in groups in its manufacturing process.

Due to poor socio-economic status and poor environmental conditions, the bidi workers are forced to work continuously for hours in improper working postures and beyond their normal working capacities which causes serious physiological manifestations. According to Bagwe and Bhisey (1991) and Swami *et al.* (1995) bidi rollers are exposed to un burnt tobacco, mainly through the cutaneous and nasopharyngeal routes. Ranjit Singh and Padmalatha (1995) reported that bidi rollers were affected by respiratory disorders namely skin diseases, gastrointestinal illness, gynecological problems, lumbosacral pain and are susceptible to fungal diseases, peptic ulcer, hemorrhoids and diarrhea. Bhisey *et al*. (2006) recorded that inspirable dust of tobacco in the tobacco factory was associated with chronic bronchitis in workers which falls in line with our study findings where 27% bidi workers reported similar symptoms. Female bidi rollers report verbal and physical abuse based on gender and caste differences (Aghi, 2001) and this study also recorded females reporting similar complaints.

Conclusion

Out of total 470 participants (bidi rollers) from 140 families, majority (55%) were in the age group of 15-35 years. Around 79% bidi workers were living in poor environmental and housing conditions. It was observed that almost 90% of the workers developed pain in various body parts and occupational health problems as reported by the male and female bidi workers. The most frequent pain is shoulder pain in both the males and females (75% and 80.85%) followed by back pain and neck pain (76.60%). Apart from the musculo-skeletal problems, there are also cough (27%), breathlessness (20%), acidity (40%), generalized weakness (34%) and skin diseases (dermatitis) (21.27%) and tuberculosis (6.8%).

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