



OCCUPATIONAL HEALTH HAZARDS OF BEEDI INDUSTRY WORKERS - A REVIEW

Physiology/ Public Health

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ABSTRACT

Beedi is very popular smoked tobacco product to the socio-economically backward class population due to its very low price in comparison with cigarette. The beedi industry is the 2nd largest agro-forestry based industry in India in which millions of socio-economically poor women and children are engaged. In India, about 4.4 millions workers are engaged in this industry but the actual number might be 10 million. These workers are exposing various types of toxic substances (tobacco and tendu leaf dust) during beedi rolling process daily which have some serious genotoxic, carcinogenic, cardio-respiratory, gynecological and neurological health effects. These workers are also suffering from the work related musculo-skeletal disorders (WRMSDs) due to maintaining awkward sitting postures for long time. Proper education and awareness programme by government bodies and NGOs in addition with using of personal protective equipments (PPEs), maintaining proper work-rest cycle may be helpful for the workers to overcome the occupational health hazards present in this beedi making process. In this present study an attempt is made to highlight various occupational health issues present in the beedi manufacturing industry.

KEYWORDS

Beedi workers, Beedi industry, Occupational health hazards

INTRODUCTION

In India, Beedi is a smoking product made by 0.15 to 0.25 grams of dried tobacco in a rectangular dried tendu leaf piece (beedi wrapper) tightens with a thread. It is a very common and popular tobacco smoking product in our country. Beedi is also very popular smoked tobacco product to the socio-economically backward class population due to its very low price. Beedi has 85% market share of total smoking products [1] and near about 7.7% adults consume beedi in India [2]. These beedi industries were grown as organized sector but due to various strict government rules, regulations, policies, taxation on organized sector, it shifted to unorganized sector [3].

This beedi industry is the 2nd largest agro-forestry based industry in India which provides employment to millions of socio-economically poor women and children in the village areas. In beedi industry, 90% of the workers are women and children because of their beedi rolling proficiency whereas men are engaged mostly in the factories [4]. Most of this beedi making is done by contact, piece and daily base system in which a large number of women and children workers are engaged quite easily from their homes. In India, near about 4.4 millions workers are engaged in this industry [5] but the actual number might be 10 million [6].

Beedi industries are located in Andhra Pradesh, Bihar, Madhya Pradesh, Karnataka, Odisha, Uttar Pradesh and West Bengal of India [7]. Beedi making is a cottage based job and due to easy availability of cheap labour, this industry flourished in some parts of West Bengal [8] and nearly 2 million workers are engaged in this occupation [9]. Women are more familiar to this job due to their thin/deft fingers which is required for beedi rolling [10]. They don't have proper skill and adequate education for alternative job and they also preferred this occupation as it can be done along with their household duties from home. Children are also engaged in this occupation due to poor socio-economic family status as well as ignorance of the parents [11]. In India, more than 3,00,000 child beedi workers engaged in this hazardous job [12].

Mohandas had reported that these beedi workers suffered from various occupational diseases due to tobacco exposure and also postural disorders due to monotonous/repeating working positions [13]. These beedi workers expose in different types of occupational hazardous along with tobacco dust daily. They also maintain awkward working posture for prolonged period. So, in this review study an attempt is made to highlight different occupational health hazards present in the beedi manufacturing industry.

METHODOLOGY

Initially fifty two papers have been viewed for this present study. After review, 46 papers have been shortlisted for final consideration for this review work in which 13 papers are showing general information about the beedi making industries whereas 33 papers are highlighting different occupational health hazards among the beedi making workers.

Timeline Of Research

Year	Authors	Observations
1991	Bagwe, A. N., and Bhisey, R. A. [14]	The study found that beedi industry workers exposed to various mutagenic and genotoxic chemicals during their occupational life span.
1991	Bhisey, R. A., and Govekar, R. B. [15]	The study showed that beedi making workers exposed to genotoxic hazards which increased the mutagenic burden among them.
1995	Bagwe, A. N., and Bhisey, R. A. [16]	The research found that the beedi/tobacco processors exposed to various spectrums of mutagens which might cause frame-shift and base pair change as well as oxidative damage.
1995	Mahimkar, M. B., and Bhisey, R. A. [17]	Occupational genotoxicity was found among the beedi manufacturing workers due to exposed tobacco flakes and dust.
1999	Bhisey, R. A., et al., [18]	It was found that beedi industry workers suffered from chronic bronchitis as inspirable dust concentration containing tobacco particle which was 150 times higher in the working environment of the beedi industry.
2002	Kuruwila, M., et al., [19]	It was observed that beedi rolling workers were suffering from various dermatological disorders such as callosities, pigmentation, paronychia, dystrophy on their fingers, feet and nails.
2003	Umadevi, B., et al., [20]	A correlation between an increased frequency in chromosomal aberrations with years of service was found among the tobacco dust exposed workers in South India.
2006	Chattopadhyay, B. P., et al., [21]	High respiratory complications such as cough, shortness of breath, morning cough and chest tightness with pulmonary function abnormalities were found among the exposed beedi workers.
2007	Pande, R. [22]	The study highlighted that due to lack of other source of income, women and children were engaged in this extremely strenuous occupation and they also suffered from various health hazards.
2008	Mittal, S., et al., [23]	Various ocular complications such as defective vision, papillary conjunctival hyperplasia, cataract, segmental optic atrophy, eye irritation etc due to occupational exposure to tobacco dust among south Indian beedi industry workers were reported.

2010	Hemanalini, R., et al., [24]	It was reported that women beedi workers spend 14 to 16 hours/day in their job and they were facing various occupational hazards in this field.	2018	Singh, M., et al., [39]	It was reported that 87% child beedi rolling workers were suffering from headache and body pain due to monotonous and repetitive nature of the job at Solapur city of Maharashtra, India.
2010	Kumar, N. S., and Bharathi, P. S. [25]	The study found that > 75%, 70% and 50% beedi rolling workers suffered from osteological problems, GI problems and breathing problems respectively in Tamilnadu, India.	2018	Latha, R. [40]	It was observed that women beedi rolling workers suffered from breathing problems (37%) and back pain (35%).
2010	Yasmin, S., et al., [26]	The study showed that more than 75%, 70% and 50% female beedi rollers from Patna (Bihar), India, were suffering from osteological, gastrointestinal and respiratory problems.	2020	Ashish, S. S., et al., [41]	At Solapur, Maharashtra, India, 90% of the beedi rolling workers were interested to shift to a different/alternative job due to abuse, financial domination and various occupational health problems.
2012	Mandelia, C., et al., [27]	Some occupational exposure of tobacco on fetal growth (length of crown heel and birth weight) was found among the beedi rollers in coastal part of Karnataka.	2020	Arora, M., et al., [42]	Earning of Beedi workers in India were much less than other industries with poor job quality, social security and lack of employment benefits.
2012	Devi, K. R., and Naik, J. K. [28]	In Hyderabad, India, it was reported that the frequency of abortions, still births, neonatal deaths were high with decreased number of fertile female among the tobacco dust exposed beedi workers.	2020	Rao, R. L. L., et al., [43]	In Telangana, India, 50%, 31%, 27%, 25% and 20% women beedi workers suffered from musculoskeletal, gynecological, respiratory morbidity, hypertension and malnutritional problems associated with their occupation.
2012	Rupali, V., et al., [29]	Fatigue in unfavorable working conditions was found as the common problem among beedi rollers in urban slums areas of Mumbai, India.	2020	Kim, J., et al., [44]	More working days and working hours were associated with respiratory symptoms and unusual absent as reported by the child beedi workers (aged ≤ 14 years) at Rangpur, Bangladesh.
2013	Das, C. K. [30]	At Murshidabad district of West Bengal, India, female beedi workers suffered from musculoskeletal, respiratory, stomach, eye and gynecological problems due to their occupation.	2021	Islam, M. N. [45]	More than 78% female beedi making workers suffered from back, neck and leg pain whereas more than 28% of them suffered from asthmatic problems at Murshidabad district of West Bengal, India.
2013	Tom, J. and Francis, S. S. [31]	It was reported that longer working hours had directly associated with occupational health problems among the beedi rolling workers in Kerala, India.	2021	Pandian, S. H., and Duraisingh, V. [46]	In Tamilnadu, India, it was shown that by the age of 45 years, beedi workers' unable to roll the beedi as their fingertips begins to thin.
2013	Joshi, K. P., et al., [32]	Shoulder pain followed by back and neck pain were found as the major MSDs among the beedi workers in Andhra Pradesh, India.	CONCLUSIONS		
2013	Prakash, B., and Vyas, U. [33]	Eye irritation, difficulty in breathing, nail discoloration, irritation and dryness of throat etc. were reported by the beedi industry workers at Ajmer, India.	At present beedi industry is very popular in tobacco sector as it is the very cheap substitute of cigarette. Socio-economically poor village people mainly women and children are engaged in this occupation. They are exposing various types of toxic substances during beedi rolling process daily which have some serious health effects such as genotoxic, carcinogenic, cardio-respiratory, gynecological and neurological effects. These workers are maintaining monotonous awkward sitting postures for prolong period of time which also increases the work related musculo-skeletal disorders (WRMSDs) among them. Using of personal protective equipments (PPEs), maintaining proper work-rest cycle, using sitting bench/chair with back support may give some positive results regarding the occupational health issues of these workers. Proper education, awareness programme and hands on training by government bodies and NGOs regarding the adverse conditions of this sector may also be helpful for the workers engaged in this beedi making process.		
2013	Srinivasan, S., and Ilango, P. [34]	At Khajamalai of Trichy District, Tamil Nadu, India, 76% female beedi workers reported about health problems or health related issues due to their occupation.	Acknowledgement		
2015	Singh, J. K., and Singh, P. [35]	The study shown that women beedi workers exposed daily to poor environmental and unhygienic conditions with prolong awkward setting positions which lead to different occupational disease and disorders.	I am thankful to my institution, Krishnath College, Berhampore, Murshidabad, West Bengal for all kind of support to complete this present study. I am grateful to the authors whose research papers are cited in this review work. I am also thankful to Akash Sanyal, Sabiruddin Sarkar and Sk Fimeuddin, M.Sc. students, Department of Physiology, Murshidabad University, for their support and encouragement during the study.		
2017	Kaup, S., et al., [36]	Clinical signs of potential toxic optic neuropathy (TON) were found among one out of six beedi rolling workers in rural areas of Karnataka, India.	REFERENCES		
2018	Rathore, A. and Ugargol, A. P. [37]	In Karnataka, India, it was reported that beedi workers were suffering from musculoskeletal, GI, respiratory and gynecological disorders with eye, skin, cytogenic and blood related problems.	[1] Lal, P. G., and Wilson, N. C. (2012), "The Perverse Economics of the Bidi and Tendu Trade. Economic and Political Weekly." (Available online at: https://www.researchgate.net/publication/262842790_The_Perverse_Economics_of_the_Bidi_and_Tendu_Trade .)		
2018	Burman, P., and Itri, N. K. [38]	It was observed that beedi rolling workers suffered from headaches, nausea, throat ache, burning eyes, respiratory disorders with various musculoskeletal disorders particularly severe pain on vertebral column due to their prolonged awkward working postures.	[2] Tata Institute of Social Sciences, Ministry of Health and Family Welfare, Government of India (2018), "Global Adult Tobacco Survey GATS 2 India 2016-17." (Available online at: https://www.who.int/tobacco/surveillance/survey/gats/GATS_India_2016-17_FactSheet.pdf)		
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