



Research Paper

OCCUPATIONAL HEALTH RISKS OF BEEDI ROLLERS REINVESTIGATED: ISSUES AND EVIDENCE

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People occupied in beedi manufacturing are facing a number of health risks. This study examine whether there is an association between the work duration and the level of occupational illness. It also tests if the occurrence of occupational health issues is dependent of gender. The results are based on a survey schedule conducted at four different areas of Chavakkad Panchayat of Thrissur district in Kerala among 60 respondents engaged in beedi rolling. Chi-Square test for independence of attributes and Kruskal-Wallis Test is used to test the hypothesis. It is inferred that longer work spans makes instances of occupational health issues more likely. However there was not enough evidence to assert that women are more prone to be occupationally ill.

Keywords: JEL J28, JEL J81, Occupational illness, Beedi rolling

INTRODUCTION

Beedi industry is predominantly a home-based industry in India which employs over 4 million people, the lion share being women. In India, Beedis outsell cigarettes by a ratio of eight to one (Joshi *et al.*, 2013) accounting for about 48% of tobacco consumption in the country.

Kerala, though does not produce any of the raw materials for the industry is positioned among five major beedi producing states in India (Mohandas, 1980) housing over 300,000 beedi workers of which women constitute 80% (Ramachandran, 2008). Beedi manufacturing in Kerala is typically unorganized

in nature and is concentrated in the four districts of Cannanore, Calicut, Palghat and Thrissur.

There have been a number of studies pertaining occupational health issues of beedi rollers in different places. Mohandas (1980) made a comprehensive survey of the socioeconomic conditions of beedi rollers in Kerala. He reported high incidence of occupational diseases owing to exposure to tobacco and postural problems arising out of the monotonous work. Nakkeeran, Pugalendhi (2010) accounted respiratory, gastrointestinal, and osteological problems among beedi rollers in four districts of Tamil Nadu. Yasmin *et al.* (2010) shed some light on the work-

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related health issues of female beedi rollers in Patna, Bihar. The study identified lower haemoglobin levels and SGPT (ALT) enzyme concentration among beedi rollers. Joshi *et al.* (2013) made an epidemiological survey of occupational health hazards among beedi workers of Amarchinta, Andhra Pradesh and noticed that almost 90% of the workers developed pain in various body parts, the prominent among them being shoulder pain, back pain and neck pain. Prakash Vyas (2013) examined the association between occupational tobacco exposure and health risks among women beedi rollers in Ajmer. The tobacco dust contain toxic nitrosamines which is readily absorbed by body tissues giving rise to cough, breathlessness, ocular and dermatological health issues. The ocular manifestations among beedi rollers were furthermore discussed by Mittal *et al.* (2008). Umadevi *et al.* (2003) made a study on the

Cytogenetic effects in workers occupationally exposed to tobacco dust. An increase in frequencies of chromosomal abbreviations was observed among the exposed group. Mahimkar Bhisey (1995) made similar inferences. Bagwe Bhisey (1995) pointed out the elevation of mutagenic burden among beedi industry workers. Kuruvilla *et al.* (2002) investigated on occupational dermatoses in beedi rollers. Occurrences of callosities and nail changes were argued to be associated with the extent of work. Mandelia *et al.* (2010) analyzed the effects of occupational tobacco exposure on fetal growth and claimed that exposure beyond 6 h per day has trivial but definite adverse effects. Frequent occupational health issues reported among beedi rollers is listed in Table 1.

This study seeks to examine whether there is an association between the work duration and the level of occupational illness. It has been

Table 1: Common Occupational Illness Found Among Beedi Rollers

Type	Illness
Skeleto-Muscular	Pain in Shoulder/Neck/KneeCramp/Swelling in limbsRheumatism/Posture problemsMuscular entropy
Respiratory	TB/Chronic BronchitisAsthma/BreathlessnessCough/SneezingThroat burningCold/Allergy
Gastrointestinal	Abdomen painAcidity/Gas troubleVomiting/DiarrheaConstipation
Neurological	HeadacheGiddinessNausea
Others	Eye problemsEye watering/Eye burning/Poor visionSkin diseasesCallosities/Nail discolorationCytogenetic/Gynecological problemsLoss of Appetite/Tiredness
<i>Source: Compiled from various sources</i>	

Table 2: Instances of Frequent Occupational Illness Under Different Work Duration

		Frequent occupational illness (facing more than three issues per week)	
		Yes	No
Working for more than 6 hours	Yes	33 (55)	04 (6.66)
	No	09 (15)	14 (23.33)
Note: Figures in parentheses give percentage			

proposed that higher occupational exposure to tobacco leads to higher probability and persistence of health risks (See Nakkeeran, Pugalendhi, 2010; Umadevi *et al*, 2002). Besides exposure to tobacco flake, longer work hours are believed to cause multiple health problems (See Kuruvilla *et al.*, 2002; Francis, 2013). Furthermore, it is held that women are more vulnerable to health risks associated with beedi rolling (See Hemanalini *et al.*, 2010; Joshi *et al.*, 2013). The study also intends to test if the occurrence of occupational illness is dependent of gender.

DATA AND METHODOLOGY

A schedule survey was conducted to collect responses from a sample of 60 people employed in beedi rolling. Respondents were chosen from four different areas of Chavakkad Panchayat of Thrissur district in Kerala where Kajah Beedi Company (which employs around 45,000 workers) is situated. Chi-Square test for independence of attributes was administered to check whether occupational illness is independent of the work span. Kruskal-Wallis Test (H Test) is used to check whether there is a significant difference between the occurrences of occupational illness among men and women with different work durations.

χ^2	16.91
$\chi^2 \alpha = 0.05, d.f = 1$	3.841
Decision	Reject H_0

RESULTS AND DISCUSSION

Table 2 shows the instances of frequent occupational illness among those working more than and less than six hours a day.

Chi-Square test for independence of attributes was administered to check (at a significance level of 0.05) whether the instance of frequent occupational illness is independent of work duration. The result of the test is summarized in Table 3.

The null hypothesis of independence is rejected which exemplifies that the frequent occurrences of occupational health problems is dependent on the hours engaged in beedi rolling. This is consistent with the findings of Mandelia *et al.* (2010) who revealed the adverse effects of exposure beyond 6 h (at the time of pregnancy) on fetal growth. Chattopadhyay *et al.* (2006) also discovered a measured decline of lung volume among the exposed subjects as the duration of exposure increased. The results indicate that people working for more than six hours a day are more vulnerable to frequent occupational health issues.

	Low(0-3 years)	Medium(4-7 years)	High(above 7 years)
0-10	05 (8.33)	03 (05)	02 (3.33)
10-15	04 (6.66)	12 (20)	06 (10)
>15	02 (3.33)	11 (18.33)	15 (25)

Note: Figures in parentheses give percentage

χ^2	11.77
$\chi^2 \alpha = 0.05, d.f = 1$	9.488
Decision	Reject H_0

Table 4 depicts the association between years engaged in beedi rolling and persistence of health problems.

The test for independence was employed again to test (at a significance level of 0.05) if the persistence of illness is independent of the number of years engaged in beedi rolling. The result of the test is summarized in Table 5.

The null hypothesis of independence is rejected which illustrate that the persistence of occupational health problems is dependent on the number of years engaged in beedi rolling. This is consistent with the claims of Umadevi *et al.* (2002) who observed a rise in the frequencies of chromosomal abbreviations with increase in years of service in the exposed subjects. The

result shows that people working for more number of years are facing higher persistence of occupational health problems. Francis (2013) also shared this view.

Table 6 illustrates the gender-wise and working hours-wise distribution of occupational health issues

Kruskal – Wallis Test was used to check (at a significance level of 0.05) whether there is a significant difference between the occurrences of occupational illness reported among men and women with different work duration. The result of the test is summarized in Table 7.

Evidence suggests that there is no significant difference between the occurrences of occupational illness among men and women irrespective of work duration. The association between work hours and occurrences of occupational illness is already established. Cases of occupational health issues are reported more among women because the absolute number of

	Men working > 6 hours	Men working < 6 hours	Women working > 6 hours	Women working < 6 hours
Area 1	12	16	25	13
Area 2	8	18	15	8
Area 3	16	10	22	20
Area 4	19	11	9	5

Note: Multiple responses.

χ^2	1.9136
$\chi^2 \alpha = 0.05, d.f = 1$	7.815
Decision	Do not Reject H_0

women beedi rollers is more. This is in contrast to the findings of Joshi *et al.* (2013) which stated that women are more prone to occupational illness due to less tolerance to fatigue and less physiological working capacity.

CONCLUSION

People occupied in beedi manufacturing are facing a number of health risks. Longer working hours makes frequent instances of occupational health issues more likely. The finding can be extended to longer time periods as there are high chances of persistence of occupational illness among those working for more number of years. There was not enough evidence to assert that women are more prone to be occupationally ill. However the results are to be cautiously interpreted and cannot be generalized unless universally proven by similar tests.

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