Original Article

OCCUPATIONAL HEALTH PROFILE OF BEEDI WORKERS IN COASTAL KARNATAKA

Madhusudan M[1], Dipak Patil[2], Jayaram S[3]

Financial Support: None declared
Conflict of interest: None declared

How to cite this article:
Madhusudan M, Patil D, Jayaram S. Occupational Health Profile of Beedi Workers in Coastal Karnataka. Natl J Community Med 2014; 5(2):157-160.

Author's Affiliation:
Dr. Madhusudan M,
Email: madhugowda001@gmail.com

Correspondence:
[1]Assistant Professor, Dept. of Community Medicine, MVJ Medical College and Research Hospital, Bangalore; [2]Assistant Professor, Dept. of Community medicine, K.J. Somaiya Medical College, Mumbai; [3]Professor, Dept. of Community Medicine, A.J. Institute of Medical Sciences, Mangalore

Date of Submission: 28-02-14
Date of Acceptance: 24-05-14
Date of Publication: 30-6-14

ABSTRACT

Background: In India there are close to 5 million beedi workers. Beedi rolling mainly leads to two types of occupational diseases, long hours of continuous sitting in an improper working posture and injurious effect of inhaling tobacco fume. Objective was to study the socio-demographic profile and morbidity profile of beedi workers.

Methodology: A cross sectional study was done among beedi workers in urban field practice area of A.J. Institute of Medical Sciences from April 2010 to March 2011, which consisted of 1035 families with a total population of 4434. In a defined area house to house survey was done and all currently working beedi workers (at least from past 6 months) were included in study. A pretested semi-structured questionnaire was used to collect data regarding socio demographic profile, work pattern and health problems after informed consent. The data was analysed using SPSS windows version 16.0 software.

Results: The study comprised of 439 beedi workers, 431(98.2%) were females and 8 (1.8%) were males. Mean age of the study subjects was 40.8 years (SD 11.3), 98 (22%) subjects were illiterates.Average monthly beedi income was Rs.882.6 which contributes 14.3% of the household income. Out of 439 study subjects, 241(55%) were having illness at present and most common morbidity was musculoskeletal problem in 152(34.6%) study subjects.

Conclusions: Majority were female beedi workers. Beedi rolling plays an important role in the household economy. Most common morbidity was musculoskeletal problem, followed by eye and respiratory problems.

Key-words: occupational diseases, tobacco, beedi workers, morbidity.

INTRODUCTION

"Bidis" or "beedis" are slim, hand-rolled, unfiltered cigarettes. According to government estimates quoted by International Labour Organization, there are close to 5 million workers involved in rolling of beedis in India. Dakshina Kannada district accounts for nearly half of the beedi manufacturing in Karnataka and 17 per cent in the country as a whole.[1]

Beedi rolling leads to two types of occupational diseases. The injurious effect of inhaling tobacco fume causes one of them and the other is result of long hours of continuous sitting in an improper working posture. Diseases like tuberculosis, asthma, allergy and continuous cold belong to former, while backache, body ache, stomach pain, gastric trouble, piles and rheumatic complaints belong to second category.[2]

Although the potential of above diseases exists among beedi workers, occupational health hazards of beedi workers remained neglected since long time and there is a need to study health hazards among beedi workers and to reduce it, if not eliminate the hazards of beedi workers for greater safety and health. Hence present study was done to assess the socio demographic profile and morbidity profile of beedi workers.

METHODOLOGY

The study was conducted in the Urban field practice area of A. J. Institute of Medical Sciences, Kavoor which consisted of 1035 families with total population of 4434 (Male: 2232, Females: 2202). This cross sectional study was conducted with complete enumeration of population during April 2010 to March 2011

All the beedi workers (both gender) currently working from at least 6 months residing in above defined area were included in the study (n= 439).

Permission was obtained from the Institutional Medical Ethics Committee. In the study area defined, a house to house survey was done. Beedi workers in

each house working from at least past 6 months were taken as study subjects. An assurance to the subject about confidentiality of the subject's data was ensured. The pretested semi-structured questionnaire was administered by the investigator and the information was collected regarding socio demographic profile, work pattern and morbidity pattern.

After completion of the oral interview, general physical examination including recording of anthropometric measurements comprising of height, weight, waist circumference and hip circumference were recorded.

Statistical Tests: The data was entered onto a computerised Excel (Microsoft Excel 2007) spreadsheet and analysed using SPSS (Statistical Package for Social Sciences) version 16. Descriptive Statistics and Chi-Square Test were employed to analyse the data, statistical significance was fixed at $p<0.05$.

RESULTS

The study comprised of 439 subjects from 341 households (more than one beedi worker was present in 68 households) out of 1035 households in defined area. Majority of them were females (431(98.2%)) and 8(1.8%) were males and 142(32%) were in the age group 35 to 44 years. The mean age of the study subjects was 40.8 years (SD 11.3). In present study none of the subjects were below 18years of age. (Table 1)

Out of 341 households, 185 (54%) households monthly per capita income was Rs.1000 – 1999. Also found that in lesser per capita income group (<Rs 1000) average household size was 6.62, proportion of beedi workers 50.75 and dependency ratio of 53.5% compared to 3.20, 40.3% and 5.3% respectively in higher per capita income group(≥ Rs 3000) (Table 2).

Out of439 subjects, 432(98.4%) were beedi rollers and only 7 (1.6%) belonged to others category which includes labellers, wrappers, helpers and sub-contractor.

The mean height of female subjects was 1.50m (SD: 0.06) and male subjects was 1.64m (SD: 0.05). Mean weight of female was 51.82kg (SD: 10.14) and male was 56.12kg (SD: 11.87). Mean waist circumference of female was 85.77cm (SD: 11.3). Mean waist circumference of male subjects was 83.25cm (SD: 7.28).

It was observed that 296(67%) of study subjects were not having any illness in past 6 months and 5.5%, 11%, 10% and 6.5% of the subjects were having one, two, three and four or more spells of illness in past 6 months respectively. Multiple spells of illness in past 6 months was present in 27.5% of study subjects.

Out of 439 of study subjects, 241(55%) were having illness at present. Most common being musculoskeletal symptom (152), followed by eye symptoms (137), respiratory symptoms (53), and other symptoms (87). Others include weakness, easy fatigability, dental problems, dermatological symptoms, gastritis, headache, menstrual problems, constipation & chicken pox.

Table 1: Demographic Profile and Work Characteristics of Beedi Workers (N=439)

Characteristics	Freq. (%)
Age (years)	
18-24	24(5.5)
25-34	107(24.5)
35-44	142(32)
45-54	110(25)
≥55	56(12.8)
Mean ±SD	40.8±11.3
Educational status	
Illiterate	98(22)
Primary	115(26)
Middle	147(34)
Secondary	69(16)
PUC/Degree	10(2)
Religion	
Hindu	336(77)
Muslim	98(22)
Christian	5(1)
Marital status	
Married	329(75)
Not married	36(8.4)
Widowed	67(15)
Divorcee / separated	7(1.6)
Category of beedi work	
Beedi roller	432(98.4)
Others	7(1.6)
Length of service (years)	
<5	47(11)
5-10	58(13)
10-15	77(18)
16-20	61(14)
21-25	58(13)
>25	138(31)
Mean ±SD	20.3±11.4
Working days/ week	
<3	28(7)
3-5	200(45)
>5	211(48)
Mean ±SD	5.24±1.06
Working hours/ day	
<3	39(8.9)
3-6	318(72.4)
>6	82(18.7)
Mean ±SD	5.6±1.4
Beedies rolled/ day	
<300	83(19.2)
300-500	179(41.4)
501-800	154(35.6)
>800	16(3.7)
Mean ±SD	83(19.2)

It was observed that as the occupational duration increases the musculoskeletal symptom increases. Among the study subjects with more than 25 years of work duration 42% were having musculoskeletal symptom as compared to 7% of subjects with less than 5years work duration. This finding was found to be statistically significant at p-value <0.01. It was observed that out of 439 study subjects, 137 (31%) were having eye symptoms and as the work duration increases the eye symptoms also increases. Among the study subjects who were working for more than 25 years, 75 (54%) were having eye symptoms as compared to 17% subjects who worked for less than 5

years. This finding was found statistically significant (p <0.01). Most common eye symptom being decreased vision 114(83%) followed by itching of eyes 33(24%), watering from the eyes 26(19%), redness of eyes 14(10.2%) and burning sensation in 10(7.3%). Other problems were present in 87 subjects, out of which 36(42%) were working for more than 25 years. Chronic illness was present in 71(16%) study subjects out of 439 subjects. Most common illness being Hypertension in 43(60.5%) followed by Asthma 14(20%), Diabetes Mellitus 12(17%), Ischemic Heart Disease (9.9%) and others 10(14%). Others include goitre and cancer. On physical examination pallor was present in 233 (53%), dental caries in 118 (27%) and tanning of hands in 53(12%) and others in 21(7.3%) subjects (others include oedema, clubbing and redness of eyes).

Table 2: Distribution of Households by Number of Earning members, Beedi Workers and Dependency Ratio across Monthly Per Capita Income Groups

Monthly per capita income(Rs)	Average household size	Average number of earning members	Average number of beedi workers	Proportion of beedi workers (%)	Average number of dependants*	Dependency ratio	Total household (%)
<1000	6.62	2.92	1.43	50.75	3.7	53.5	89(26)
1000-1999	4.99	3.05	1.26	44.13	1.94	36.4	185(54)
2000-2999	3.77	3.21	1.16	38.65	0.53	11.37	57(16.7)
≥3000	3.20	3.0	1.10	40.3	0.20	5.3	10(2.9)
Total	5.16	3.04	1.28	44.64	2.11	35.8	341(100)

*Non earning members were considered as dependants

Table 3: Distribution of Households by Average Monthly Income, Beedi Income across Monthly per Capita Income Groups

Monthly per capita income(Rs)	Monthly average income(Rs)	Monthly beedi income (Rs)	Proportion of beedi income (%)	Total household (%)
<1000	5499.2	894.6	18	89(26.1)
1000-1999	6860.3	879.2	13.7	185(54)
2000-2999	8587.7	824.5	10.8	57(16.7)
≥3000	11250.0	1170	11.6	10(2.9)
Total	6922	882.6	14.3	341(100)

Table 4: Morbidity profile of beedi workers in association with years of service

Years of service	Musculoskeletal problems		Respiratory problems		Eye problems		Other problems		Total
	Present (%)	Absent (%)	Present (%)	Absent (%)	Present (%)	Absent (%)	Present (%)	Absent (%)	
<5	11 (7.2)	36 (12.5)	3 (5.7)	44 (11.4)	8 (5.8)	39 (12.9)	4 (4.6)	43(12.2)	47 (10.7)
OR(95%CI)	1		1		1		1		
6-10	13 (8.6)	45 (15.7)	3 (5.7)	55 (14.2)	8 (5.8)	50 (16.6)	11 (12.6)	47 (13.4)	58 (13.2)
OR(95%CI)	1.058 (0.423, 2.64)		1.25 (0.2404, 6.50)		1.28 (0.441, 3.721)		0.397 (0.117, 1.34)		
11-15	23 (15.1)	54 (18.8)	9 (17)	68 (17.6)	20 (14.6)	57 (18.9)	15 (17.2)	62 (17.6)	77 (17.5)
OR(95%CI)	0.717 (0.311, 1.695)		0.515 (0.132, 2.008)		0.584 (0.234, 1.460)		0.384 (0.119, 1.238)		
16-20	24 (15.8)	37 (12.9)	10 (18.9)	51 (13.2)	10 (7.3)	51 (16.9)	8 (9.2)	53 (15.1)	61 (13.9)
OR(95%CI)	0.471 (0.201, 1.1)		0.3477 (0.09, 1.343)		1.046 (0.377, 2.89)		0.616 (0.173, 2.185)		
21-25	16 (10.5)	42 (14.6)	8 (15.1)	50 (13)	16 (11.7)	42 (13.9)	13(14.9)	45 (12.8)	58 (13.2)
OR(95%CI)	0.8021 (0.330, 1.94)		0.426 (0.106, 1.70)		0.538 (0.2074, 1.39)		0.322 (0.097, 1.064)		
>25	65 (42.8)	73 (25.4)	20 (37.7)	118 (30.6)	75 (54.7)	63 (20.9)	36(41.4)	102 (29)	138 (31.4)
OR(95%CI)	0.343 (0.161, 0.728)		0.402 (0.113, 1.42)		0.172 (0.075, 0.395)		0.263 (0.088, 0.786)		
Total	152	287	53	386	137	302	87	352	439
	p-value=0.002		p-value=0.302		p-value=0.001		p-value=0.10		

DISCUSSION

According to government estimates quoted by International Labour Organization, there are close to 5 million workers involved in rolling of beedis in India. Dakshina Kannada district occupies an important place in beedi industry, accounting for nearly half of the beedi manufacturing in Karnataka and 17 per cent in the country as a whole.[1]

In the present study, out of 439 study subjects, 431 (98.2%) were females. The mean age of the study subjects was 40.8 years (sd 11.3) which is comparable to the findings of study done by Ghosh P C, in 2005 reported mean age of 45.9 years (sd 12.66).[3] More than 90% of the study subjects were female beedi workers, which is supported by various other studies[4,5]. The All India Bidi, Cigar and Tobacco workers Federation in 2001 estimates that women comprises 90- 95% of total employment in beedi manufacturing.[6]

Study done by Vidhubala,[7] in 2008 in Tamil Nadu reported that 9.1% were below 18 years of age, where as in present study none of the subjects were below 18years of age. Another study Rajasekhar, in 2002 reported most of the female workers undertake beedi rolling and the incidence of child labour is low in Dakshina Kannada District.[1]

More number of women involvements can be linked to the ease of learning the skill, its manual operations and work can be carried out at home. A study done by Sudharshan, in 1999 reported that women constituted bulk of beedi workers and employers and their contractors find this arrangement convenient because they can avoid reporting workers to the government and provide legally required benefits.[8]

Mean years of service was 20.33 years. Ninety four percent of workers rolled beedies in living room, 5 % in verandha and only 1% had separate room for rolling beedies. Similar findings were also reported by Sabale.[9]

Study done by Rajasekhar[1], in 2001 showed 2 members per household were involved in beedi activity, compared to 1.28 members per household in the present study and also showed that lesser the monthly per capita income higher the family size and dependency ratio which compels more family members to involve in beedi rolling, hence beedi activity for the lowest income group would become much more imperative and these finding were in concordance with study done by Rajasekhar et al.[1]

Average monthly beedi income contributes 14.3% of the household income with maximum of 18% whose household monthly per capita income is less than Rs. 1000. The beedi rolling plays an important role in the household economy. This is especially so in the case of women, in whom beedi rolling is a principal employment and income earning activity.

In this study 241(55%) were having illness at present. Vidhubala[7] reported 66% were having health complaints[7] and Vinod Sen[2], reported that 67% beedi workers experienced pain in limbs and shoulder, 62.8% headache, 51.43% back pain, 44.3% continuous cold and allergy, 20% eye problems, 17.57% gas trouble and 11.13% asthma.

Beedi workers sitting in improper working posture for longer duration of time makes them more prone to get musculoskeletal symptoms. Similar findings had been reported in a study done by Ghosh [3]Study done by Dharmalingan, showed that the nature of beedi work which involves sitting with forward trunk bent, excessive use of fingers and the constant high tension to meet targets cause number of health problems. The sitting posture leads to a static construction of back muscle, resulting in head, neck, leg and back aches as there is no body movement.[10]

The present study showed that as the work duration increases, respiratory symptoms also increases. Inhaling tobacco dust for longer duration of time makes beedi workers more prone to develop respiratory problems. Similar findings has been reported in various other studies.[1, 2, 3]

CONCLUSION

From the present study findings we conclude that majority were female beedi workers, beedi rolling plays an important role in the household economy both in terms of income and employment particularly for the poorest households and the most common morbidity being musculoskeletal followed by eye and respiratory symptoms.

RECOMMENDATIONS

Creation of awareness among beedi workers regarding proper working posture with arm and back rest; and taking breaks at regular intervals of 1-1.5 hours of continuous work will help to reduce the occurrence of musculoskeletal related problems.

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