

Original Research Article

Perceptions and morbidity profile among women beedi workers: a cross-sectional study

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ABSTRACT

Background: Beedi rolling is a major source of income for rural women in India but exposes them to tobacco dust and ergonomic strain, leading to considerable morbidity. Misconceptions regarding its safety and poor awareness of welfare schemes aggravate the problem. Objectives were to assess the perceptions regarding occupational hazards and to document the morbidity profile among women beedi workers.

Methods: A descriptive cross-sectional study was conducted among 181 selected women beedi workers in Nizamabad from January to March 2025. Data on socio-demographics, perceptions, and self-reported morbidities were collected using a pre-tested questionnaire. Descriptive statistics like frequency and percentages were calculated.

Results: Among participants, 29.3% were under the age group 15-24 years and 61.3% were married. While 62.4% recognized that tobacco dust is harmful, only 15.5% reported using protective gear. A significant proportion (50.3%) perceived beedi rolling as safe due to its home-based nature. Common morbidities included musculoskeletal pain (60.8%), headache (49.7%), chronic cough (45.9%), breathlessness (34.3%), eye irritation (30.9%), skin problems (19.3%), and menstrual irregularities (13.8%). Awareness of government welfare schemes was low (19.9%), yet 60.2% expressed willingness to leave beedi rolling if alternative livelihoods were available.

Conclusions: Women beedi workers exhibit a high burden of musculoskeletal and respiratory morbidity alongside partial awareness of occupational hazards and limited adoption of protective practices. There is an urgent need for targeted health education, ergonomic interventions, improved dissemination of welfare schemes, and the development of sustainable alternative livelihoods.

Keywords: Beedi workers, Morbidity profile, Perceptions, Occupational health, Women workers, Tobacco dust

INTRODUCTION

In India, beedi rolling is a prominent informal sector occupation which employs over 4.5 million workers in India, with nearly 70% being women.¹ Beedi rolling is perceived as convenient, home-based employment that allows women to contribute financially without leaving domestic responsibilities. However, this occupation exposes workers to various health hazards due to prolonged sitting, repeated rolling and continuous exposure to tobacco dust.

Among female beedi workers, these exposures result in a high prevalence of health problems, such as musculoskeletal disorders, respiratory conditions, eye disorders, skin conditions, neurological symptoms, and gynaecological difficulties.²⁻⁵ Musculoskeletal problems are the most commonly reported morbidity, attributed to repetitive hand movements and prolonged sitting during beedi rolling.^{2,3} Respiratory and eye problems arise primarily from inhalation and direct contact with tobacco dust respectively, which also increases the risk of systemic absorption of toxic substances through the skin

and mucous membranes.³ Gynecological morbidities have also been documented, with some studies reporting a strong association between the duration of beedi rolling and reproductive health issues.^{5,6}

Despite the significant health risks, awareness regarding occupational hazards and use of safety measures among women beedi workers remain low. Most workers do not practice protective measures such as wearing gloves or masks, and hygienic practices like hand washing after work are inconsistently followed.^{3,5} Understanding workers perceptions and health problems is essential for designing effective interventions. This study was conducted to assess perceptions of occupational risks and morbidity profile among women beedi workers.

Objectives

Objectives were to assess the perceptions of women beedi workers regarding occupational health hazards associated with beedi rolling, to determine the prevalence and pattern of morbidity among women beedi workers.

METHODS

Study design

Community based descriptive cross-sectional study design used in this study.

Study area and population

The study was conducted in Madhapur gram panchayath, a region with a high concentration of home-based beedi workers in Nizamabad district. The target population consisted of adult women (aged ≥ 18 years) who had been engaged in beedi rolling for at least one year.

Study period

Study conducted from January 2025 to March 2025.

Sample size

Based on the prevalence of morbidity ($p=78.3\%$) from Tyagi et al allowable error(d) of 6%, and 95% confidence interval ($Z_{\alpha/2}=1.96$), sample size was calculated as 181.⁷

$$N=(1.96)^2 \times (0.783 \times 0.217) / (0.06)^2 = 181$$

Sampling technique

Purposive sampling method was used.

Inclusion criteria

Women aged 18 years and above, engaged in beedi rolling for at least 1 year and provided informed verbal or written consent were included.

Exclusion criteria

Women with known chronic conditions unrelated to occupation (e.g., congenital disorders) and those unwilling to participate or unable to complete the interview were excluded.

Data collection tool

A semi-structured questionnaire was developed based on literature review, comprising Socio-demographic details (age, education, marital status, years in occupation), Perceptions and awareness of occupational health hazards, Self-reported morbidity symptoms. The tool was pilot-tested on 10 participants for clarity and reliability and then modified accordingly.

Data collection procedure

Data were collected through face-to-face interviews conducted at the participants' homes or work areas over a period of 4 weeks. Each interview lasted approximately 20-30 minutes and was conducted in the local language. Privacy and confidentiality were ensured throughout the data collection process.

Ethical considerations

Ethical clearance was obtained from the institutional ethics committee. Written informed consent was obtained from all participants before initiating the interview. Participation was voluntary, and participants were allowed to withdraw at any time.

Data analysis

Collected data were entered into Microsoft excel and analyzed using SPSS version. Descriptive statistics such as frequencies, percentages were used to summarize data.

RESULTS

Of the 181 women included in the study, 29.3% were aged between 15 -24 years, 19.3% were between 35 and 44 years followed by 25-34 years (18.8%) and 45-54 years (18.2%), smaller proportions are in the age group of 55-64 years (9.9%). In terms of education level Illiteracy was reported among 35.9% of participants, while 17.1% had completed primary education, nearly half of the participants (47%) were studied up to secondary school and above. Regarding marital status, most participants (61.3%) were married, while 6.6% are widowed or separated and 32% remain unmarried. In terms of occupational exposure, about 1/3rd (33.1%) had 5 to 10 years of work experience, whereas half (50.3%) had been engaged in beedi rolling for more than 10 years (Table 1). Morbidity profile revealed that musculoskeletal pain was the most commonly reported symptom, affecting 60.8% of women, followed by headache in 49.7%, cough in 45.9% and breathlessness in 34.3%. Eye irritation

experienced by 30.9%, skin problems by 19.3% and menstrual irregularities reported by 13.8% of participants (Table 2).

With regard to perceptions, 62.4% of women believed that inhaling tobacco dust was harmful, about 54.7% felt that using protective gear like mask/gloves could help prevent health problems. Interestingly, 50.3% considered beedi rolling to be safe because it is performed at home, reflecting a misconception about occupational risk. Awareness of government welfare provisions was low, with only 19.9% of women reporting knowledge of such schemes. Notably, 60.2% of participants expressed willingness to leave beedi rolling if alternative livelihood opportunities were available. Regarding the practices only small fraction (8.3%) reported washing hands and face frequently while working, less than 1/5th (19.3%) reported taking breaks while working. Similarly, only 15.5% reported using protective gear while rolling beedis was (Table 3).

Table 1: Socio-demographic profile of women beedi workers, (n=181).

Variables	N	Percentage (%)
Age group (in years)		
15-24	53	29.3
25-34	34	18.8
35-44	35	19.3
45-54	33	18.2
55-64	18	9.9
>65	8	4.4
Education level		
Illiterate	65	35.9
Primary school	31	17.1
Secondary school or above	85	47
Marital status		
Married	111	61.3
Widowed/separated	12	6.6
Unmarried	58	32
Years in beedi work (in years)		
<5	30	16.5
5-10	60	33.1
>10	91	50.3

Table 2: Morbidity profile of respondents (Self-reported symptoms).

Health problems	N	Percentage (%)
Chronic cough	83	45.9
Breathlessness	62	34.3
Back and neck pain	110	60.8
Eye irritation	56	30.9
Skin problems (rash, itching)	35	19.3
Headache	90	49.7
Menstrual irregularities	25	13.8

Table 3: Perceptions and practices of beedi workers.

Statements	Yes	No
Tobacco dust is harmful to health	113 (62.4%)	68 (37.6%)
Beedi rolling causes breathing problems	102 (56.2%)	79 (43.8%)
Government provides health benefits to beedi workers	36 (19.9%)	145 (80.1%)
Working from home is safe compared to working in a factory	91 (50.3%)	90 (49.7%)
Willingness to leave beedi rolling if alternate opportunities were available	109 (60.2%)	72 (39.8%)
Protective measures can reduce health risks	99 (54.7%)	82 (45.3%)
Washing hands and face frequently while working	15 (8.3%)	166 (91.7%)
Taking breaks frequently while working	35 (19.3%)	146 (80.7%)
Using protective gear while working	28 (15.5%)	153 (84.5%)

DISCUSSION

Sociodemographic

The present study among 181 women beedi workers revealed that majority of workers belonged to the younger age groups (15-24 years: 29.3%), with more than one-third were illiterate (35.9%) and 61.3% married. These findings are consistent with previous research showing that beedi rolling is predominantly undertaken by socioeconomically disadvantaged women with low educational attainment and family responsibilities. Surya Prabha et al reported even higher illiteracy (72.5%) among women, while Madhusudan et al and Shaikh et al similarly observed low literacy as a predictor of morbidity.^{2,8,9} The proportion of women with secondary education was higher in the present study compared to older reports, suggesting some recent improvements in educational access, female literacy but do not translate into better occupational opportunities.

Morbidity profile

Musculoskeletal problems were the most common morbidity in this study (60.8%), particularly back and neck pain. Similar findings were observed in Kurnool (62.5%) by Surya Prabha et al in Kolar (72%) by Harish and Kamath and in Tamil Nadu (>75%) by Jayakrishnan et al confirming musculoskeletal strain as the predominant occupational health hazard.^{2,11,12} Respiratory symptoms were also common, with 45.9% reporting cough and 34.3% breathlessness, comparable to findings from Kurnool (35%) and Kolar (41.4%).^{2,11} Ocular complaints were reported by 30.9% of workers, similar to the 40% in Kurnool but lower than the >70% reported from Tamil Nadu.^{2,12} Dermatological complaints (19.3%)

and menstrual problems (13.8%) were also noted, reflecting a pattern similar to that documented in multi-regional reviews (Shaikh et al and WHO).^{9,13}

Perceptions and practices

In terms of perceptions, awareness about health risks was moderate, more than half (62.4%) acknowledged that inhaling tobacco dust is harmful and beedi rolling causes breathing problems (56.2%), but the majority did not adopt preventive measures in their daily work. More than half (54.7%) were aware that protective measures can reduce health risks but only minority (15.5%) are using protective gear. Similar gaps were reported by Kumar et al.¹⁴ This indicates that knowledge regarding health hazards does not necessarily translate in to protective practices. Half of the women (50.3%) perceived their job as safe due to its home-based nature, echoing previous studies where women valued home-based flexibility despite health risks (Shaikh et al).⁹ Awareness of government welfare schemes was poor (19.9%), consistent with earlier reports of low utilization of social security benefits (Rao et al and Harish et al).^{11,15} This suggests either inadequate provision of welfare schemes or poor awareness/accessibility of existing programs. Encouragingly, 60.2% of workers expressed willingness to leave beedi rolling if an alternative livelihood was available, similar to findings from West Bengal (Shaikh et al).⁹ This reflects a degree of dissatisfaction with current job. However, economic dependency and lack of alternatives force women to remain in this occupation.

CONCLUSION

Overall, the present study reaffirms the vulnerability of women beedi workers, with high morbidity, poor awareness of protective measures, and inadequate access to welfare. Compared to older studies, morbidity patterns remain unchanged, suggesting limited progress in occupational health interventions. However, the inclusion of perception data in the present study highlights the gap between awareness and practice, and the urgent need for interventions that not only provide health education and protective equipment but also create sustainable alternative livelihood options.

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