



A Sociodemographic study on the health hazards and economic challenges of sawmill workers in Chhattisgarh and Odisha State of India

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Article Info

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[Received 09-09-2024,
Accepted 22-11-2024,
Published 30-11-2024]

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Abstract

Dust concentration: Dust from the Wood is fine, powdery wood debris resulted from wood processing (like cutting, grinding, drilling, sanding) in sawmill. This cross-sectional study was conducted on sawmill workers, where workers were occupationally exposed to wood dust particles during cutting wood by machines at their workplace, in different zones of Raigarh of Chhattisgarh (7 Sawmill) and Sundargarh, Odissa state (6 Sawmills) of India, from August 2022 to Feb-2023.

To conduct this cross-sectional study, 150 male sawmill workers were randomly selected from 13 sawmills in Chhattisgarh and Odissa. The present study is deals with the economic challenges of saw mill labourers. This study found that the majority of sawmill labourers are facing the problem of low wages as compared to heavy work. Medical checkups should be done per month. They need good salary, hygiene at working site, medical facility, loan facility improve the health as well as the family life.

Keywords: Sociodemographic, economic challenges, sawmill workers, Chhattisgarh, Odisha

Introduction

Work-related respiratory disorders are prevalent across all industrial sectors, contributing to approximately 60% of total disease- and injury-related mortality, and accounting for nearly 70% of deaths attributed to occupational illnesses [1]. The World Health Organization (WHO) has reported that inadequate occupational health and diminished worker productivity may result in an economic burden of 10–20% of a nation's Gross National Product (GNP) [29].

Empirical evidence by Fatusi and Erhabor [2] highlights a significant inverse correlation between the duration of occupational exposure and pulmonary function parameters. Similarly, Sakariya et al. [3] identified restrictive lung disease among workers exposed to wood dust. Kulkarni et al. [4] also reported a substantial decline in respiratory function linked to prolonged exposure in similar environments. Ige and Onadeko [5] observed that the most frequently reported symptoms among exposed workers included rhinorrhea, sneezing, and productive coughing. Furthermore, longer exposure durations were associated with an increased prevalence of respiratory symptoms and a higher risk of airflow obstruction [6].

Occupational exposure to wood dust is also recognized as a significant carcinogenic risk, particularly for nasal and sinonasal cancers [7]. The risk of malignancies and workplace injuries is heightened in industrial settings [8]. Wood dust has been classified as a Group 1 carcinogen by the International Agency for Research on Cancer (IARC) [9], and hardwood dusts are listed as carcinogenic under European Union Directive 1999/38/EC [10].

Dust produced during wood processing operations—such as cutting, grinding, drilling, and sanding—is fine and powdery in nature. Inhalation of this particulate matter may lead to a range of symptoms, including coughing, chest tightness, wheezing, dyspnea, sneezing, and headaches [11,12]. Prolonged exposure to wood dust is linked to a spectrum of respiratory conditions, such as rhinitis, chronic bronchitis, asthma, hypersensitivity

pneumonitis, and both upper and lower respiratory tract symptoms, with symptom severity increasing with longer exposure durations [12–14].

Recent longitudinal research using a large cohort of British Columbian sawmill workers and their families has further elucidated the occupational and environmental determinants of a wide range of adverse health outcomes [15–26]. In addition to respiratory issues, workers in such environments are at elevated risk for ocular conditions including pterygium, pingueculum, dry eye syndrome, senile cataract, and age-related macular degeneration [27–28].

OBJECTIVE:

To know about Socio-demographic profile of the respondents.

Identify the health awareness, hazards and economical challenges of the saw mill workers from different states (Selected regions of Chhattisgarh and Odisha State).

Research Methodology

This cross-sectional study was conducted on sawmill workers, where workers were occupationally exposed to wood dust particles during cutting wood by machines at their workplace, in different zones of Raigarh of Chhattisgarh (7 Sawmill) and Sundargarh, Odisha state (6 Sawmills) of India, from August 2022 to Feb-2023.

To conduct this cross-sectional study, 150 male sawmill workers were randomly selected from 13 sawmills in Chhattisgarh and Odisha. The inclusion criteria for the study group were: (1) sex—male gender; (2) age—21–60 years; (3) working in Sawmill. This study was reviewed and approved by the ethical review committee of the Shri Balaji Institute of Medical Science, Raipur Mowa, Raipur (CG) - 492001, Chhattisgarh, India. All participants signed the written informed consent for participation and the use of data in the research. Moreover, the participants were given the freedom to participate in this study. We have taken the

proper permission from the sawmill managers regarding this study.

Selection of subject

To conduct this cross-sectional study, 150 male sawmill workers were randomly selected from 13 sawmills in Chhattisgarh and Odisha. The local sawmills of Raigarh of Chhattisgarh (7 Sawmill) and Sundargarh, Odisha state (6 Sawmills). Raigarh is a city in northern Chhattisgarh known as the 'Cultural capital of Chhattisgarh'; Apart from its cultural heritage, the city of Raigarh is also known for its Kosa (a fine silk) and rich deposits of coal reserves. Sundargarh District was constituted on the 1st January, 1948, out of the two ex-States of Gangpur and Bonai, which merged with Odisha on that day. True to its name, this beautiful District of Sundargarh with about 43 percent of its total area under forest cover and

numerous colourful tribes dotting its landscape and with abundant mining potential is bounded by Ranchi District. Workers from the chosen respondent do a variety of tasks like Lifting, carrying, pulling, and pushing the timber is all included.

Questioner Survey

The questionnaire considered in three parts first to collect the Sociodemographic data of each participants i.e. age, gender, educational qualifications, marital status, income, duration of working and addiction, second part includes hazards (noise, dust), health problems (deafness, low back pain, cough, breathlessness, chest pain, dust allergy, chest tightness, sneezing, asthma, pterygium), third part includes Heavy workload, Low salary, Holidays facility, Occupation stability, Pension facility, Loan facility, medical facility etc.

Table 1: Sociodemographic characteristics of sawmill workers

Variables		Frequency (150)	(%)
Age	21-30	47	31.33
	31-40	58	38.66
	41-50	36	24
	Above 51	9	6
Gender	Male	150	100
	Female	00	00
Educational Qualification	No formal education	85	56.66
	Primary	22	14.66
	Secondary	28	18.66
	10 std and above	15	10
Duration of working	Upto 1 year	68	45.33
	More than 1 year	82	54.66
Marital Status	Unmarried	47	31.33
	Married	96	64
	Widow	07	4.66
Income per month	Upto- 9000	62	41.33
	Upto-12000	46	30.66

	Uptp-13500	32	21.33
	Upto- 15000	10	6.66
Addiction	Smoker	98	65.33
	Non-smoker	52	34.66

P Value is 0.0001

The majority of the participants were aged between 31–40 years (38.66%), followed by those aged 21–30 years (31.33%). A smaller proportion belonged to the 41–50 age group (24%), and only 6% were above 51 years of age. All participants were male.

In terms of educational background, more than half of the workers (56.66%) had no formal education, while 14.66% had completed primary education, 18.66% had secondary education, and only 10% had education up to the 10th standard or above.

Regarding work experience, 54.66% had been employed in the sawmills for more than one year, while 45.33% had been working for up to one year. Most participants were married (64%), while 31.33% were unmarried, and 4.66% were widowed.

Monthly income varied, with 41.33% earning up to ₹9,000, 30.66% earning up to ₹12,000, 21.33% earning up to ₹13,500, and 6.66% earning up to ₹15,000. Addiction patterns revealed that 65.33% of workers were smokers, while 34.66% were non-smokers.

Table 2: Prevalence of health hazards regarding Sawmill workers

variables	Frequency (150)	%	P Value
pterygium	27	18	0.0001
noise	112	74.66	
Dust	129	86	
deafness	39	26	
low back pain	89	59.33	
cough	52	34.66	
breathlessness	19	12.66	
chest pain	14	9.33	
dust allergy	8	5.33	
chest tightness	31	20.66	
sneezing	17	11.33	
asthma	5	3.33	

The prevalence rates of pterygium in labour population observed was 27 (18%), NOISE 112 (74.66%) is the second highest among other, where as Dust problem is highest 129 (86%), deafness was 39(26%), the symptoms of cough 52(34.66%), breathlessness was observed 19 (12.66%), low back pain 89(59.33%), chest pain was 14(9.33), dust allergy in labours was 8 (5.33), chest tightness 31 (20.66%), sneezing problem 17 (11.33%), some of the labours had The Asthma 5(3.33%).

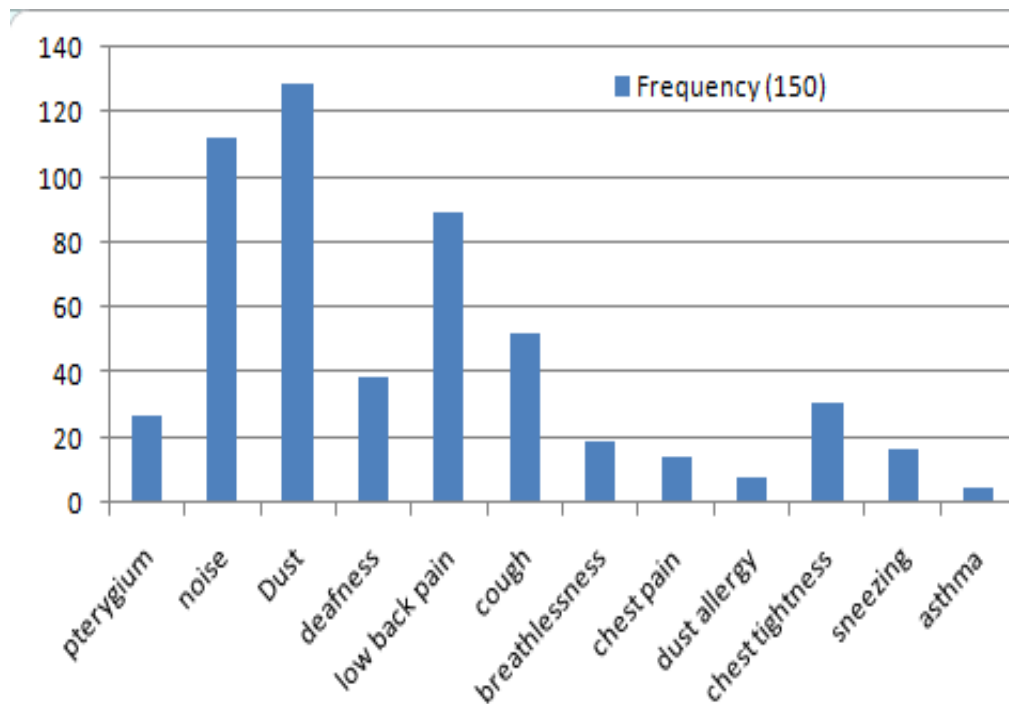


Fig1: Prevalence of health hazards regarding Sawmill workers

All the above observation the main problem is dust particle in the mills, also noise problem should be minimised by using the latest machines. Most of the labourers having the low back pain and cough. The awareness should be conducted in such a local region for the sawmill labourers for their health management.

Table 3: Economic challenges of Saw Mill workers

Variable	Frequency	
	Yes	NO
Heavy Work	145	5
Low wages	121	29
Overtime work	86	64
Holidays facility	10	140
Low increment in salary	109	41
Loan facility	18	132
Occupation stability	55	95
No promotion	96	54
Medical facility	35	115
Pension facility	15	135

The sawmill labourers respond us regarding the economic challenges, the majority of sawmill labourers are facing the problem of low wages as compared to heavy work. Sometimes overtime should be done without any or very low remuneration. Very rare holidays declared when unavoidable circumstances raised or national holidays. Per year increment was shown very low or it may be upto 2-5% only.

In major sawmill the loan facility rarely available, also the medical facility and pension facilities are somewhat present in avg. 50% sawmills.

Discussion

In the present study, the mean age of the sawmill workers was 35.46 years, with all participants being male. The workers surveyed

fell within the age range of 20 to 55 years. This research primarily focuses on the economic challenges faced by sawmill laborers. Findings indicate that the majority of workers endure low wages despite engaging in physically demanding tasks. The study also highlights the absence of essential worker benefits such as regular monthly medical check-ups, occupational stability, and access to financial support mechanisms, including loans from employers.

Conclusion

The present study reveals that majority of the sawmill workers in Chhattisgarh and Odisha are affected by health and economic problems. They need adequate salary, hygiene at working site, medical facility, loan facility improve the health as well as the family life.

Acknowledgments: Authors gladly acknowledge the participation of workers in this study.

Funding: Authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Conflicts of interest: The authors declare no conflict of interest.

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