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An evidence-informed policy brief
on occupational health hazards
among *bidi* workers

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Overview

- 1 A review of 95 research studies in India show that bidi workers have high prevalence of respiratory, musculoskeletal, gastrointestinal, neurological, skin, and cardiovascular disorders in addition to diseases of the eye, ear, nose and throat.
- 2 Most of bidi workers are women, and studies have reported higher risk of cervical cancer, decreased fertility, increased frequency of miscarriages and increased risk of anaemia and pregnancy induced hypertension amongst them.
- 3 Children of bidi workers tend to have low birth weight, are small for gestational age and more likely to have stunting, respiratory and gastrointestinal illnesses.
- 4 The magnitude of literature on the high prevalence of disease conditions and the consistency in evidence from case-control studies indicate a potentially causal relationship between bidi workers and adverse health outcomes because of their occupation, hazardous work environment and socio-economic conditions.

Key recommendations

- ✓ Bidi rolling work needs to be classified as a hazardous process under existing regulations and laws including the Occupational Safety, Health, and Working Conditions Code 2020.
- ✓ Alternative sources of livelihood, safe working conditions and compensation are required to mitigate the detrimental effect in people engaged in bidi work.
- ✓ Multi-state cohort studies and cluster randomised controlled trials on targeted interventions must be undertaken to improve health, well-being and working conditions of bidi workers.



Introduction

Tobacco control is a crucial pillar in the Government of India's strategy to address the burden of communicable and noncommunicable diseases (NCDs). India has one of the world's largest publicly funded National Tobacco Control Programme¹. The prevalence of adult tobacco use reduced by 17% between 2009-2010 and 2016-2017². This decrease in tobacco prevalence stands testimony to the positive impact of strong policy initiatives and strategic support from all stakeholders including civil society organisations.

Bidi^a is the most common smoking product in India – with 85% market share. The bidi industry is estimated to employ about 4.9 million³ people, predominantly in the unorganised sector. Women comprise 90% of the workforce and a majority roll bidis from their homes. However, people engaged in bidi work face stark disadvantages, not just in terms of income, but also health, safety and more. The average annual wage of a bidi worker is just 17% of the average annual wage of a person engaged in other manufacturing sectors⁴. The exposure to tobacco, nicotine, dust, and other particles (absorbed through cutaneous and nasopharyngeal route), endangers their own health as well as that of their families and communities.

This policy brief is an outcome of a high-quality systematic review, whose methods were registered⁵ before its conduct. The review provides a comprehensive summary of all research evidence on occupational health hazards of bidi workers, their families, and communities in India.



Key findings of the study

As part of the development of this policy brief, 95 studies conducted on occupational health hazards of bidi workers in India have been reviewed and analysed. Most studies were from Karnataka (n=22), Tamil Nadu (n=21), West Bengal (n=14), and Maharashtra (n=12). Studies were majorly cross-sectional (n= 58) or case-control (n=26) by design.

All studies consistently reported a high prevalence of disease conditions or related symptoms, across all organ systems of the body.

^a*Bidi* is made by rolling a dried, rectangular piece of temburni leaf (*Diospyros melanoxylon*) with 0.15-0.25 g of sun dried, flaked tobacco into a conical shape and securing the roll with a thread.

Prevalence of disease conditions amongst bidi workers



Musculoskeletal diseases

The prevalence of musculoskeletal disease was as high as 87%. Symptoms reported include back pain, body ache, shoulder pain, neck pain, knee pain, joint pains, spondylitis, and tiredness.



Respiratory diseases

The prevalence of a respiratory disease was as high as 52.5%. Other specific symptoms reported include:

- Tuberculosis (1% to 39.6%)
- Asthma (1.8% to 60.4%)
- Chronic bronchitis (31.6%)



Cardiovascular diseases

The prevalence of specific cardiovascular diseases in bidi workers was high.

- Hypertension (16.50% to 65.8%)
- Hypotension (3.4% to 30.8%)
- Ischemic heart disease (3.4% to 14%)



Skin problems

The prevalence of skin diseases was 37%. Other specific symptoms included:

- Anaemia (indicated by pallor/ pale skin) (15% to 53%)
- Itching (3.8% to 20%)
- Tanning or pigmentation of skin or hands (12% to 44%)
- Nail pigmentation or discoloration (6.67% to 21.5%)



Eyes

The prevalence of any eye problem was as high as 77%. Other specific symptoms reported include:

- Eye pain (2% to 35%)
- Watering from eyes (5% to 81%)
- Burning, itching, redness and irritation (7.3% to 40%)
- Potential toxic optic neuropathy (17.5%)



Gastrointestinal diseases

The prevalence of gastrointestinal symptoms was as high as 70%. Other specific gastro-intestinal symptoms reported included:

- Loss of appetite (3% to 60%)
- Gastric pain (2.4 % to 39.81%)
- Constipation (21.2% to 26.6%)
- Acidity (40% to 60.19%)
- Peptic ulcer (45%)



Health issues specific to female bidi workers

A majority of bidi workers are women and studies identified women health issues specific to female bidi workers, pregnant women engaged in bidi rolling and their families.

- Female workers engaged in bidi rolling were two times more likely to suffer from cervical cancer as compared to non-bidi workers.

In comparison with non-bidi workers, female bidi workers had increased:

- Miscarriages (37.1% versus 11.5%)
- Decreased fertility rate (84 % versus 91.94%)
- Increased frequency of abortions (12.16% versus 2.42 %)
- Uterine problems (17.5% versus 6%)
- Pregnant women engaged in bidi rolling were 1.4 times more likely to be anaemic in comparison to non-bidi female workers, at three times increased risk of pregnancy induced hypertension and 2.5 times increased risk of foetal growth restriction.
- A high amount of urine cotinine levels was found in pregnant bidi workers as compared to unexposed non-bidi workers, (2ng/mL to 500ng/ml) denoting exposure to harmful components of tobacco, which impact foetal circulation and consequently negative foetal outcomes.
- New-borns of mothers engaged in bidi rolling during pregnancy were at 1.9 times more risk to be born with low birth weight and 1.7 times more risk to be small for gestational age in comparison to mothers who did not engage in bidi rolling.



Health issues in children of bidi workers

- Infants belonging to households involved in bidi rolling activity were at 1.3 times more risk of suffering from respiratory and gastro-intestinal illnesses as compared to homes with no bidi rolling activity.
- School going children of 36–59 months, whose mothers were bidi workers were twice more likely to have stunting (improper growth and development in children due to malnutrition and few other factors).
- Children engaged in this work were reported to have a high prevalence of headache and body pain (87%), respiratory issues like cough, tuberculosis, asthma (6%), breathlessness and giddiness (4%).

For almost all disease conditions where case-control studies existed (n=26) the risk or relevant occupation diseases in bidi workers was higher in comparison to those who are not engaged in this occupation. This indicates a potentially causal relationship.



Recommendations for policy makers

Bidi rolling is a hazardous process leading to very high prevalence of respiratory, musculoskeletal, gastro-intestinal, skin, cardiovascular, oral and eye diseases in bidi workers. Evidence also indicates that bidi workers are at higher risk of diseases compared to those who are not engaged in this occupation. Based on the analysis of evidence synthesized from 95 studies on bidi workers in India, instituting a comprehensive set of policy measures to alleviate their health and well-being are highly recommended:

- ✓ Classification of bidi rolling work as a hazardous process under various domestic legislations at national and subnational levels including the Occupational Safety, Health and Working Conditions Code 2020 (OSH Code).
- ✓ Prioritising the health of women bidi workers by integrating tailored programmes that address their health needs (including screening for cervical cancer and respiratory diseases) with existing government initiatives under National Health Mission and Ayushman Bharat.
- ✓ The Union Government may explore the feasibility of adopting policy measures to dis-incentivize bidi work as a home-based informal sector. Bringing bidi rolling work under the ambit of the organized sector, governed by extant laws and regulations will ensure safety and protection of all bidi workers and their families, leading to better wages and improved access to various welfare schemes.

- ✓ A multisectoral plan for re-skilling bidi workers aligned to Article 17 of WHO Framework Convention on Tobacco Control to provide alternative sources of livelihood, which are equally or more remunerative.
- ✓ Conduct a cost estimation study to understand the direct and indirect costs borne by bidi workers, the public health system and economy to guide policy and decision-making.
- ✓ Assess causality by undertaking multi-state cohort studies and cluster randomised controlled trials on targeted interventions to improve health, well-being and working conditions of bidi workers.
- ✓ Bridge research gap by conducting studies on occupational health of bidi workers with specific standard clinical diagnostic criteria instead of symptom-based studies.

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