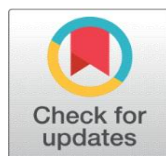


AN EMPIRICAL STUDY ON SOCIO-ECONOMIC CONDITION AND WORKING PROBLEMS OF BRICK KILN WORKERS OF NORTH 24 PARGANAS, WEST BENGAL

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DOI

[10.29121/shodhkosh.v3.i2.2022.3015](https://doi.org/10.29121/shodhkosh.v3.i2.2022.3015)

Funding: This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

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ABSTRACT

Brick kiln workers in West Bengal represent a critical yet under-explored segment of the state's labor force, forming an essential component of the informal economy. Predominantly composed of seasonal migrants from marginalized communities, these laborers endure severe working conditions characterized by long hours, minimal wages, and hazardous environments. This research delves into the socio-economic realities of brick kiln workers, examining their patterns of migration, labor dynamics, and the structural inequalities they face. Utilizing a mixed-methods approach, the study draws on extensive fieldwork, including surveys and in-depth interviews, to provide a comprehensive understanding of the workers' lived experiences. The analysis reveals systemic exploitation, lack of social security, and a persistent cycle of poverty exacerbated by insufficient access to healthcare, education, and housing. Additionally, the research highlights the gendered dimensions of labor within kilns, where women and children often contribute to the workforce without formal recognition or adequate protections. The findings underscore the urgent need for policy interventions aimed at improving labor rights, ensuring occupational safety, and providing avenues for social mobility. By shedding light on the plight of brick kiln workers, this study calls for a re-evaluation of labor laws and advocates for the integration of these workers into broader development frameworks.

Keywords: Brick Kiln Workers, Marginalized Communities, Socio-Economic Condition, Hazardous Environment, Occupational Safety

1. INTRODUCTION

Brick kiln workers in West Bengal form a crucial labor force underpinning the construction industry, a sector integral to both urban and rural development. Despite their pivotal role in the production of one of the most essential building materials, these workers remain among the most marginalized and vulnerable groups in the region. Comprising a substantial portion of India's informal labor market, brick kiln laborers often endure deplorable working conditions and are subjected to numerous forms of exploitation and socio-economic exclusion. The brick kiln industry in West Bengal is marked by a complex interplay of migration, labor hierarchies, and economic necessity. Workers typically migrate seasonally from impoverished rural areas, driven by a lack of sustainable livelihoods in their native villages. These migrants, who often belong to Scheduled Castes, Scheduled Tribes, and other disadvantaged communities, face a series of interconnected challenges: low wages, debt bondage, lack of social security, unsafe working conditions, and limited access to basic amenities like clean water, healthcare, and education. The cyclical nature of this migration reinforces existing inequalities, creating barriers to upward mobility and perpetuating a cycle of poverty. Moreover, brick kiln labor is heavily gendered, with women and children contributing significantly to the workforce. Women often perform labor-intensive tasks while also managing domestic responsibilities, yet they receive little to no formal recognition or equitable remuneration. Children, too, are engaged in labor either directly or indirectly, contributing to the perpetuation of child labor and educational deprivation. The informal and often undocumented status of these workers renders them invisible

in policy frameworks, leaving them unprotected by labor laws and social welfare schemes. This research seeks to provide an in-depth analysis of the socio-economic conditions of brick kiln workers in West Bengal, focusing on their patterns of migration, labor practices, and the structural factors that contribute to their exclusion and vulnerability. By exploring these themes, the study aims to generate insights into the systemic issues facing brick kiln workers and suggest potential pathways for policy interventions. It also seeks to understand the broader implications of labor exploitation in the brick kiln industry on economic development and social equity.

2. LITERATURE REVIEW

The socio-economic conditions and labor dynamics of brick kiln workers in West Bengal have been the subject of various academic inquiries, though research in this field remains somewhat limited. The existing literature paints a grim picture of the workers' hardships, highlighting issues such as systemic exploitation, lack of labor rights, and the cyclical nature of poverty among this marginalized group.

Chakraborty (2015) and Mandal (2017) have emphasized the exploitative labor arrangements in the brick kiln industry, which is primarily characterized by debt bondage and informal employment. Workers are often recruited through a system of wage advances, which effectively traps them in a cycle of debt. These studies underscore the structural power imbalances that place laborers at a perpetual disadvantage, with kiln owners maintaining significant economic and social control. The system of bonded labor, though illegal, persists due to the absence of stringent enforcement mechanisms and the precarious economic conditions of the workers.

Basu (2013) explores the seasonal migration of brick kiln workers, many of whom hail from economically backward regions of West Bengal and neighboring states. This migration is driven by poverty, landlessness, and a lack of alternative livelihood options. Basu argues that migration, rather than providing an avenue for economic betterment, often exacerbates vulnerabilities, as migrants face difficulties in accessing social services, including education and healthcare. Additionally, the transitory nature of their work contributes to their social and political invisibility, with local governments often neglecting their needs.

Sarkar and Ghosh (2018) have focused on the gendered division of labor within brick kilns. Women workers, though integral to brick production, remain largely invisible in official records and earn significantly less than their male counterparts. Their roles, which include molding and carrying bricks, are physically demanding, yet they are often perceived as "unskilled" labor. Furthermore, women often bear the dual burden of labor and domestic responsibilities, limiting their opportunities for rest and personal development. Studies have also highlighted the engagement of children in brick kilns, either as direct laborers or as helpers to their working parents, which perpetuates the cycle of poverty and hinders educational attainment.

Das (2015) showed that the some psychosocial factors like monotony at work, job dissatisfaction, and poor relationship with the managers of the brick field perceived inadequacy of income and unpleasant work environments have a relationship between Low Back Pain among female workers of Brick field. Workers in brick fields who were exposed to dust during work had worse lung function and much more respiratory symptoms.

Ray et al. (2016) provide evidence of severe occupational health hazards, including respiratory diseases, musculoskeletal problems, and chronic fatigue, resulting from prolonged exposure to heat, dust, and hazardous conditions. The lack of protective measures and medical care further compounds these health challenges, creating a life of perpetual physical strain for the laborers.

Mukherjee (2019), have critiqued the inadequacies of labor laws in addressing the plight of brick kiln workers. Despite labor legislation, such as the Inter-State Migrant Workmen Act (1979) and the Bonded Labour System (Abolition) Act (1976), enforcement remains weak, and many workers are unaware of their rights. Mukherjee advocates for stronger state intervention enhanced monitoring mechanisms, and the inclusion of brick kiln workers in social protection schemes.

The literature collectively emphasizes the urgent need for comprehensive policy reforms and the empowerment of labor unions to address these systemic issues. While some studies propose improvements in labor conditions through stricter regulation, others suggest that sustainable change must also address the root causes of migration and poverty. The interdisciplinary nature of the challenges—spanning economic, social, and health dimensions—calls for a holistic approach to uplift the brick kiln workforce. This literature review underscores the significant gaps that still exist in the understanding of brick kiln workers' experiences, particularly in the areas of gender dynamics, child labor, and effective policy implementation. The present research aims to build on this foundation, providing a nuanced understanding of how migration and labor exploitation intersect to shape the lives of brick kiln workers in West Bengal.

3. STUDY AREA

North 24 Parganas District is the main study area in this research paper. Brick kilns have been selected randomly in Barasat II and Deganga Block along the banks of River Bidyadhari originating near [Haringhata](#) in [Nadia District](#) and then flowing through Deganga, Habra and Barasat areas of [North 24 Parganas](#) before joining the [Raimangal River](#) in the [Sundarbans](#). 8 brick kilns along the banks of River Bidyadhari have been studied in this respect. These Brick kiln are KBM, NMP, MBF, TBF, ABF, MKS, BBS, SAGL.



Kohinoor Brick Manufacturer (KBM)

4. OBJECTIVES OF THE STUDY

The following objectives have been the focus of the study

1. To Analyze the Socio-Economic Profile of Brick Kiln Workers
2. To Investigate Working Conditions and Occupational Hazards
3. To Examine Patterns of Migration and Labor Mobility
4. To Explore the Impact of Brick Kiln Work on Children and Education
5. To Study Wage Structures, Employment Contracts, and Workers' Rights
6. To Evaluate the Role of Government Policies and Labor Welfare Programs
7. To Provide Recommendations for Policy Interventions

5. DATABASE AND METHODOLOGY

DATABASE: The research draws on both primary and secondary data sources to ensure a comprehensive analysis of the working and living conditions of brick kiln workers in West Bengal.

- **Primary Data:** The core data for this study was collected through extensive fieldwork conducted across 8 randomly selected brick kiln sites along the banks of River Bidyadhari of Barasat II and Deganganga Blocks of North 24 Parganas of West Bengal. The primary data sources include:

STRUCTURED SURVEYS: Questionnaires administered to a sample of 200 brick kiln workers, covering demographic details, income levels, working hours, health status, and access to welfare services.

INTERVIEWS: In-depth, semi-structured interviews with 25 workers, including women and child laborers, to gain a nuanced understanding of their lived experiences and challenges.

FOCUS GROUP DISCUSSIONS (FGDS): Conducted with small groups (6–10 people per group) to explore communal issues, such as family dynamics, social stigmas, and collective concerns over employment conditions.

HEALTH ASSESSMENTS: Collaboration with local healthcare professionals to conduct basic health screenings of workers, recording common illnesses and injuries.

- **SECONDARY DATA:** The research also incorporates secondary sources for a broader contextual understanding, including:
 - Government reports and labor department statistics on the brick kiln industry.
 - Academic studies, NGO reports, and policy papers focusing on labor rights, migration, and child welfare.
 - Media articles and documentation highlighting key issues affecting the brick kiln sector.

6. METHODOLOGY

The research methodology employs a mixed-methods approach, integrating both qualitative and quantitative research techniques. This combination allows for a holistic exploration of the complex dynamics surrounding brick kiln labor.

- **SAMPLING FRAME:** The study identified a comprehensive list of brick kilns in the targeted districts through local labor departments and community leaders.
- **SAMPLE SIZE:** A total of 200 brick kiln workers were selected using a **random sampling** method. The sample was stratified based on variables such as gender, age group, and migrant status to ensure representativeness.
- **SELECTION CRITERIA:** The study included workers who were employed full-time during the active season (typically November to May) and excluded temporary or occasional laborers to focus on long-term impacts.
- **QUANTITATIVE ANALYSIS:** Survey data were analyzed using Microsoft Excel. Descriptive statistics (e.g., Percentage and frequency distributions) were used to summarize the socio-economic status of workers. Cross-tabulations were performed to explore relationships between variables, such as income level and health status. Satisfaction Index (SI Values) have been calculated to understand the perception level of the workers.
- **QUALITATIVE ANALYSIS:** Interviews and FGDs were analyzed using thematic analysis. Key themes were identified and categorized, providing in-depth insights into workers' experiences and perceptions.
- **HEALTH DATA ANALYSIS:** The results from health screenings were examined to identify common health trends. Statistical correlations between workplace hazards and specific health issues were drawn.

7. RESULTS AND ANALYSIS

1. SOCIO-ECONOMIC PROFILE OF BRICK KILN WORKERS

Table 1: Demographic Profile of the Respondents

Category of Workers	Frequency	% of Frequency (f)
Male	240	60%
Female	160	40%
Total	400	100%

Source: Primary Survey, November-December, 2021

Table 2: Age Group of the Respondents

Age Group	≤12	12-18	18-25	25-35	35-45	45-50	≥50	Total
f	15	23	72	99	96	57	38	400

Source: Primary Survey, November-December, 2021

Table 3: Cast Profile of the Respondents

Cast	SC	ST	OBC	Others	Total
f	260	60	52	28	400
% of f	65%	15%	13%	7%	100%

Source: Primary Survey, November-December, 2021

The study revealed that a significant proportion of brick kiln workers belong to marginalized communities, with low levels of education. Approximately 60% of workers are male, while females constitute about 40%, often assisting male counterparts in various tasks. The average age of workers ranges from 18 to 45 years, with many starting work as adolescents. 65% of the works belong to SC category in compare to other caste group.

Table 4: Wage Structure of the Respondents

Daily Wage Rate (Rs)	≤100	100-200	200-300	300-400	400-500	≥500	Total
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f	22	34	290	24	30	0	400
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Source: Primary Survey, November-December, 2021

Table 5: Money Lending Status of the Respondents

Response	f	% of f
Yes	300	75%
No	100	25%

Source: Primary Survey, November-December, 2021

Most workers live below the poverty line, with an average daily wage between ₹200 to ₹300, which is insufficient to cover basic needs, forcing them into cycles of debt. The lack of financial security was evident, as 75% of surveyed workers reported borrowing money regularly from local moneylenders at high-interest rates. Wages vary widely based on the type of work, with a lack of standardized payment systems. Payment delays are common, and wages are sometimes withheld as a coercive measure. Women workers, especially, earn significantly less than their male counterparts, highlighting a gender pay gap. Many migrant workers receive advances from labor contractors, binding them to the kiln owners for the entire work season. These advances often create a cycle of debt bondage, limiting workers' freedom and subjecting them to exploitative labor conditions.

2. EDUCATIONAL PROFILE OF BRICK KILN WORKERS

Table 6: Educational Status of the Respondents

Levels of Education	Primary	Secondary	Under Graduate	Graduate	Illiterate	Total
f	120	100	20	0	160	400
% of f	30%	25%	5%	0	40%	100%

Source: Primary Survey, November-December, 2021

Table 7: Reason for selecting work in Brick Kilns

Reasons	Low Family Income	Unemployment	Family Occupation	Others	Total
f	92	104	156	48	400
% of f	23%	26%	39%	12%	100%

Source: Primary Survey, November-December, 2021

Most of the workers in the brick kiln are illiterate. Only 25%-30% are slightly educated. This has indulged them for selecting work in the brick kilns. Family tradition (39%) is the reason behind this selection.

3. WORKING CONDITIONS AND OCCUPATIONAL HAZARDS

Table 8: No. of Hours Spent in Brick Kilns

No of Hours	Less than 6 Hours	6-8 Hours	9-10 Hours	Greater than 10 Hours	Total
f	20	60	240	80	400
% of f	5%	15%	60%	20%	100%

Source: Primary Survey, November-December, 2021

Table 9: Disease and Health Problems of the Respondents

Health Issues	Muscular-Skeletal	Heart Disease	Respiratory Problems	Asthma	Skin Problems	Total
f	136	84	100	48	32	400
% of f	34	21	25	12	8	100%

Source: Primary Survey, November-December, 2021

The research identified harsh and unsafe working conditions. 60% of the workers work in the brick kilns more than 9 hours. Temperatures at the kilns frequently exceed 40°C, with exposure to fine dust particles leading to respiratory problems. Nearly 65% of workers reported frequent respiratory issues, while others suffered from musculoskeletal problems due to heavy lifting. About 80% of workers experience health problems but have limited access to medical care. Only 15% have regular access to health services, often resorting to traditional or unlicensed practitioners. There is also a lack of awareness about occupational safety measures, and only 10% of workers reported receiving any form of safety training or equipment. The research found that over 85% of workers do not have formal contracts, making them susceptible to exploitation. Many workers are unaware of their labor rights, and bonded labor practices were observed in some cases, especially among indebted families.

The study documented significant levels of child labor, with approximately 20% of children from worker families actively engaged in labor-intensive activities. These children often assist in carrying bricks or preparing raw materials, which hampers their educational opportunities. Many children of brick kiln workers are deprived of education, with school dropout rates as high as 40%. The lack of nearby schools and the necessity for children to supplement household income were primary factors driving this trend.

4. MIGRATION PATTERNS AND LABOR MOBILITY

The majority (around 70%) of workers are seasonal migrants, traveling from rural districts within West Bengal, Murshidabad, Nadia, Birbhum, and South 24 Parganas in particular. The push factors include lack of employment opportunities in their home regions, poor agricultural yields, and low income. North 24 Parganas also attracts a large number of laborers from neighboring states like Bihar and Jharkhand. These migrants typically belong to marginalized communities and face severe poverty and lack of employment opportunities in their home regions. A significant feature of the migration pattern is the family-based nature of migration. Entire families, including men, women, and children, migrate to work at the kilns. Women make up around 30-40% of the workforce and are involved in carrying, loading, and arranging bricks. Children are also present, and although child labor is officially illegal, reports suggest that children often assist in lighter tasks or are left in hazardous environments. Migrant workers live in overcrowded and unhygienic temporary shelters near the kiln sites, without access to clean water or sanitation facilities. The transient nature of their work prevents them from integrating into local communities, adding to their vulnerability.

5. AWARENESS AND ACCESS TO WELFARE PROGRAMS

Only 25% of the workers are aware of government welfare schemes such as healthcare and financial assistance. Among those aware, bureaucratic hurdles and lack of documentation prevent most from benefiting from these programs. The analysis suggests that existing policies are insufficiently enforced. Labor inspections are rare, and local authorities often overlook the dire conditions due to the economic significance of brick production in the region.

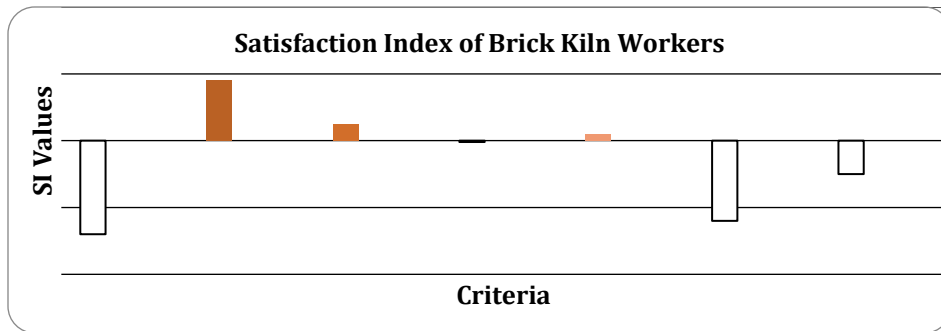
8. DISCUSSION AND IMPLICATIONS

A method is used for presenting the satisfaction manner of the workers associated with brick kilns by calculating Satisfaction Index after Hall, Yen and Tan (1975). The formula of *Satisfaction Index* is: $SI = (fs - fd) / N$; where, SI = Satisfaction Index, fs = Number of Satisfied Respondents, fd = Number of Dissatisfied Respondents, N = Total Number of Respondents.

Table 10: Satisfaction Index of the Respondents

Criteria	Satisfaction Levels	f	SI
Wage	Yes	60	-0.700
	No	340	
Infrastructure	Yes	290	+0.450
	No	110	
Working Condition	Yes	225	+0.125
	No	175	
Health Issues	Yes	180	-0.010
	No	220	
Security	Yes	210	+0.050
	No	190	
Child Labor	Yes	80	-0.600
	No	320	
Seasonal Work	Yes	150	-0.250
	No	250	

Source: Primary Survey, November-December, 2021



The findings highlight the need for urgent policy interventions to improve the socio-economic status and working conditions of brick kiln workers in North 24 Parganas. Despite some awareness of government schemes, systemic barriers continue to exclude these workers from accessing welfare benefits. There is a critical need for the implementation of more stringent labor laws, improved health and safety standards, and better educational access for children. The prevalence of child labor and gender disparities in wages reflect broader social inequities that require targeted interventions. Addressing these issues will necessitate a holistic approach, combining local government action with non-governmental organizations' support.

9. RECOMMENDATIONS

These following recommendations aim to balance economic viability with improved labor welfare and environmental sustainability in the brick kiln industry.

1. IMPROVEMENT OF WORKING CONDITIONS:

- **WAGES AND COMPENSATION:** Implement fair wage practices in accordance with labor laws to ensure that brick kiln workers are compensated justly for their labor. Wage disbursement should be made transparent and timely to avoid exploitation.
- **HEALTH AND SAFETY MEASURES:** Provide necessary safety equipment (like masks and gloves) and regular health check-ups for workers. Initiate awareness programs about occupational hazards and preventive measures to minimize accidents and health risks.
- **ACCESS TO BASIC AMENITIES:** Establish proper living quarters with clean drinking water, sanitation facilities, and healthcare support for workers and their families.

2. SOCIAL PROTECTION AND RIGHTS:

- **LABOR RIGHTS ENFORCEMENT:** Strengthen the monitoring and enforcement of labor laws, particularly for migrant workers, who often face greater risks of exploitation. Introduce labor cards that track employment history and welfare entitlements.
- **EDUCATIONAL SUPPORT FOR CHILDREN:** Set up mobile schools or learning centers within or near kiln sites to prevent child labor and ensure access to education for the workers' children.

3. MIGRANT WORKER INCLUSION:

- Develop programs tailored to support migrant workers, including language assistance and cultural integration initiatives, to help them adapt and navigate social and bureaucratic structures in their destination communities.
- Strengthen collaboration between sending and receiving states to ensure migrants have access to social security benefits and welfare schemes regardless of their mobility.

4. TECHNOLOGICAL AND ENVIRONMENTAL INITIATIVES:

- **ECO-FRIENDLY TECHNOLOGIES:** Encourage the adoption of cleaner brick production technologies, such as Vertical Shaft Brick Kilns (VSBK) or Fly Ash Bricks, to reduce carbon emissions and environmental degradation.
- **WASTE MANAGEMENT:** Implement measures to manage waste generated during brick production, promoting the recycling of industrial by-products.
- **RESOURCE MANAGEMENT:** Train kiln owners and workers on sustainable resource use, including responsible clay extraction and water conservation methods.

5. POLICY AND REGULATORY FRAMEWORK:

- **STRENGTHEN ENVIRONMENTAL REGULATIONS:** Formulate and enforce stricter environmental norms to mitigate pollution caused by kilns. Regular inspections and emissions testing should be mandatory, with penalties for non-compliance.
- **DATA COLLECTION AND RESEARCH:** Support ongoing research on the socio-economic and environmental impacts of brick kilns. Establish a centralized database to track the industry's labor force, production levels, and environmental footprint.
- **SUBSIDY AND INCENTIVE PROGRAMS:** Introduce financial incentives or subsidies for kiln owners who transition to environmentally friendly practices and ensure compliance with labor and safety norms.

6. COMMUNITY ENGAGEMENT AND AWARENESS:

- **COMMUNITY-BASED MONITORING:** Involve local communities in monitoring and reporting labor and environmental violations. This approach can lead to more transparency and accountability.
- **AWARENESS CAMPAIGNS:** Conduct public awareness initiatives on the environmental and social issues linked to brick kilns, emphasizing the need for sustainable practices.

7. COLLABORATION AND STAKEHOLDER ENGAGEMENT:

- **PUBLIC-PRIVATE PARTNERSHIPS (PPP):** Develop partnerships between government bodies, NGOs, and private kiln owners to implement welfare and sustainability projects effectively.
- **WORKER COOPERATIVES:** Explore the feasibility of cooperative models where workers have a stake in kiln operations, giving them more agency and bargaining power.

8. CLIMATE CHANGE MITIGATION:

- Promote brick production methods that align with climate change mitigation efforts, such as using low-carbon technologies and exploring alternative, sustainable raw materials.
- Integrate brick kiln emissions reduction strategies into broader climate action plans for the state and national levels.

10. CONCLUSION

The brick kiln industry in West Bengal plays a crucial role in supporting the state's infrastructure and economic development but comes at a significant social and environmental cost. This research has highlighted the complex interplay between labor dynamics, environmental impact, and regulatory challenges within the industry. Workers in brick kilns, often comprising vulnerable migrant populations, face harsh working conditions, low wages, and limited access to social protection, perpetuating cycles of poverty and social exclusion. Additionally, environmental degradation, primarily through air pollution and unsustainable resource extraction, underscores the need for immediate interventions to align the industry with sustainable practices.

To address these pressing issues, a holistic and multi-stakeholder approach is essential. Policies must prioritize the well-being of workers by enforcing labor rights and providing access to essential services, while simultaneously pushing for the adoption of eco-friendly technologies. Collaborative efforts among government bodies, industry stakeholders, civil society, and local communities are needed to ensure a sustainable and inclusive future for the brick kiln industry in West Bengal. This research underscores the urgency of balancing economic growth with social equity and environmental sustainability. Future studies should focus on assessing the long-term impact of implemented policies and explore innovative solutions that can transform the industry into a model of responsible production and equitable labor practices.

CONFLICT OF INTERESTS

None.

ACKNOWLEDGMENTS

None.

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