

Original Research Article

## Occupational Health of Brick Workers of India

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### ABSTRACT

Brick workers are one of the most vulnerable unorganised working class of India. It is often found that the brick workers suffer from morbidities because of indecent work and the unhygienic living environment. Nonetheless, it is a less studied subject in India. Thus, paper assessed the causative factors explaining the morbidity in brick workers, further the prevalence of disease and loss of household income on health care, and find out the gap in demand and supply of public healthcare facilities. In this study, the latest round of National Sample Survey data (2014) that is “A Key Indicators of Social Consumption in India: Health” conducted from January to June 2014 were used. The binary logistic regression was run for the analysis of background characteristics and the probability of illness. The findings revealed that the self-reported morbidity among brick workers was around 11%, while it was 10% in the general population during the last 15 days of the survey. The most frequent occurrences of ailments in the brick kiln workers were injuries and infections. Out of total workers who were suffering from morbidity due to some accident or injury during the last 15 days of the survey, almost 57 % of them reported a loss of household income in their treatment. Among those, only 10% of the brick workers covered by healthcare schemes, rest of the 90% did not possess health insurance. Hence, the brick workers suffer from living environment induced communicable disease and work environment induced injuries. The workers do not avail a proper treatment because of unaffordability as well as the inaccessibility of healthcare facilities.

**Key Words:** Unorganised Workers, Morbidity, Communicable Diseases, Public Health Care Facilities, Brick Workers

### INTRODUCTION

There were 68, 942, 14 workers engaged in the brick kiln industry of India (NSS 2014). Out of them 30, 550, 62 were female, and rests were male. The brick workers are unorganised workers they are notable to organise themselves in pursuit of their common interest, due to certain constraints likethe casual nature of employment, ignorance, illiteracy, a small and scattered size of establishments. [1] In India, it was estimated that more than 90% of workforces were dependent on the informal sector for their livelihoods and almost 50% National Income evolved from this sector. [2] The workers of the unorganised/informal sector live and work in the unhygienic conditions, therefore; they

are prone to various infectious and chronic diseases. The chronic poverty and disease have pushed the family of unorganised workers into debt, and it is quite often difficult for them to meet their day to day needs, and contingencies which indeed include health care. [3] Another problem related to informal workers as general and brick workers as particular are the casual relationships between employers and employees. These workers do not share fixed employee, and employer relationship and even do not get the social security benefits because of their informal work status. [4]

The brick kiln industry is one of the least mechanised industries. Consequently, workers do the hard work. The working

processes in this industry spin around cutting clay, preparation and moulding of bricks and loading and unloading of baked and unbaked bricks. Workers do not get formal or informal training and safety equipment such as a mask when they carry baked bricks from the chimney; subsequently, workers exposed to the flying ashes of bricks. Further, the firemen lit the fire in the chimney for the baking bricks and continuously monitor it without a boot and other safety equipment. Most of the brick kiln use woods and coal for baking the bricks that make the brick kiln workers susceptible to high exposure to air pollution and it has an adverse health effect on the workers.<sup>[5]</sup> Due to air pollution at the kiln, a significantly higher proportion of chest symptomatic diseases have been found among brick kiln workers compared to the general population.<sup>[6]</sup> Apart from air pollution, brick workers also suffer from varieties of musculoskeletal disorders and discomforts. Obstinate working posture and heavy physical work also significantly lead to morbidities particularly in brick moulders.<sup>[7]</sup> The others, occupational hazards often faced by the brick workers include foot cutting while mixing the soil with spades, body ache and fever.<sup>[8]</sup> The children are also exposed to health hazards. They suffer from stomach pain, lungs and skin problems. Often, due to lack of care, they also become malnourished.<sup>[9]</sup> The risks of health injuries in brick kilns have reported that is also an eye-opener to visualise children, who are engaged in brick-making activity, have to start work even before sunrise, sieving coal dust. They have to stand for hours in knee-deep water; mud and straw prepare dough for the bricks. They work very close to the fire while making the kiln and their working hours could range from 10 to 14 every day. They carry as many as 10 to 12 bricks at a time, each brick weighing as much as two kilograms. These children, thus get exposed to health hazards such as diseases that affect the skin, lungs, stomach and also malnutrition and exhaustion, which they

have to suffer at a very tender age.<sup>[9]</sup> Keatinge's<sup>[10]</sup> observation, however, varies differently from that of Jayachandran's view. According to him, brick making does not involve extreme occupational hazards, but it requires considerable physical effort and exposure to extremes of temperature. They live at sites and are exposed to heat, cold waves and air pollution. However, the International Labour Organisation (ILO) recommended that 'the location of the worker's housing should ensure that workers are not affected by air pollution, surface run-off, sewage or other wastes'. (R115 - Workers' Housing Recommendation, 1961 (No. 115) <http://www.ilo.org/ilolex/english/recdisp1.>)

According to ILO, housing should ensure structural safety, reasonable levels of decency, hygiene and comfort. Moreover, the workers are dispossessed of the fundamental human rights to housing, medical care, necessary social services, and the right to security in the event of sickness, disability.<sup>[11]</sup>

Till date, there are no specific labour laws and legislation for the brick kiln workers related to the work and living environment. In India, there is only one labour law which addresses the issues of adequate accommodation for the unorganised workers, i.e. Interstate Migrants Workman Act 1979. However, it partially resolves the issues of the brick workers because it focuses more towards the interstate migrant than the brick kiln workers. According to the Act, every contractor must provide accommodation facilities during the employment period. However, these conditions are never followed by the contractors consequently; workers live in the huts during cold winter and hot summers. The poor ventilation, congestion, lack of sanitation facilities like open drainage, the absence of a bathroom and latrine facilities, safe drinking water and the cooking fuels are the major issues in their residential areas.

The paper is organised into following sections. The first section is an introduction, followed by a literature review. The next section explains the

research methodology and database. The third section highlights the nature and morbidity pattern among brick workers. Section four explores the healthcare scheme and program for the brick workers. The last section concludes with some suggestions and policy recommendations.

## **MATERIALS AND METHODS**

This study, based on the 71<sup>st</sup> round of NSS conducted in India from January to June 2014. In this round, NSS carried out a large-scale sample survey regarding social consumption related to health. It is a primary source of the quantitative information on the health sector, particularly morbidity, hospitalisation, the extent of the receipt of pre-natal and post-natal care of women, expenditure incurred on treatment received from public and private sectors, use and cost of AYUSH treatment. In the survey a stratified multi-stage sampling design adopted for both rural and urban areas. The survey collected information using household as well as individual schedules. The household and individual response rates were >95%. All these details were mentioned in the NSS 71<sup>st</sup> round. The data were obtained from its report. For the employed persons, to record the industry of work, 5-digit classification of National Industrial Classification Code (NIC-2008) was used in this report. In the NIC code, 2008, the industry was classified into five categories. The first is a section, and then the section has divided into the division. Further, the division has been categorised into several groups of industries, and a group of industries has been divided into the class of industries and at the last class of industries has been bifurcated into subclasses. Here, brick manufacturing industry comes under section 'C' Manufacturing. In the industrial division, it has been placed under the manufacture of the other nonmetallic products' (NIC code 23). In groups of industries, it has kept in 'manufacture of non-metallic mineral products' (NIC code 239) and class of brick manufacturing industry is 'Manufacture of

clay building materials' (NIC code 2392) and further, this class has been classified into subclasses, and one of the subclasses is 'brick manufacturing' (NIC code 23921). Thus, the information about the health conditions of the brick workers extracted from the unit level data. The binary logistic regression is applied in the study. Here, the dependent variable is morbidity reported during last 15 days of the survey, whereas independent variables are age, sex, marital status, the level of education, the source of drinking water, drainage and latrine facilities. The Statistical Package for the Social Sciences (SPSS) version 21 and Microsoft Excel were used for the data analysis. Descriptive statistics, cross-tabulations and logistic regression applied to the data representation.

## **RESULTS AND DISCUSSION**

### **Morbidity and Nature of Ailment**

The morbidity rate in brick kiln workers is comparatively higher than the general population during the last 15 days of the survey, while the sharp gap in the level of morbidity did not find between male and female brick workers. Across the various age groups, the level of morbidity was the highest in a 0-14 year of age group, followed by 30-49 and 15-29 age groups. Here, the striking picture is that the child labour of the brick workers is more likely to be ill than the other age groups. The occurrence of morbidity was the highest among unmarried workers subsequently currently married and widowed. Though this industry is one of the hazardous industries of India; it employs a large number of children who belong to minor age group. The educational status and level of morbidity in brick workers exhibited that the morbidity rate was comparatively higher among illiterate workers than the educated ones. Ignorance towards hygiene and their rights they live in very pathetic conditions.

The brick kiln industries are often located away from the main habitat, which also leads to deprivation among workers, for instance, most of the cases they do not get

safe drinking water in such circumstances workers use the same water for the drinking purposes that is available for making mud. Table 1 showed that the level of morbidity was the lowest among those workers who use a bottle and tap water for the drinking purpose, while it was the highest among who use the hand pump and tube well. The occurrence of morbidity was also lesser in those workers who use other sources of drinking water, which includes tanker. Another important measure of sanitation is latrine facilities. The morbidity rate was significantly higher among those workers who did not use latrine facilities. It was almost two times higher among those who did not have this facility than those who possessed it. The occurrence of the ailment was comparatively higher among those brick workers who did not have drainage facilities in their residential areas than those who had *kutchha* and *pucca* drainage facilities on their premises.

**Table: 1 Morbidity Rate in Brick Workers during Last 15 days of the Survey (n=1609)**

Background Characteristics	Percentage
Sex	
Male	5.44
Female	5.21
Age	
0-14	4.29
15-29	2.22
30-49	3.07
50-59	0.61
60 & Above	0.47
Marital Status	
Never Married	5.13
Currently Married	4.88
Widowed	0.64
Divorced/Separated	0.00
Education	
Not Educated	5.93
Educated	4.72
Sources of Drinking Water	
Bottle/Tap	2.83
Hand pump/Tube well/	5.35
Others	2.47
Latrine Facilities	
Yes	3.89
No	6.76
Drainage Facilities	
Kutchha	2.60
Pucca	2.04
No Drainage	6.01

Data Source: Unit Level Analysis (NSS 71th Round) 2014

### Nature of Ailments

The nature of ailments reflected that the injuries and infections were the most

frequent occurrence of ailments among brick workers. Other ailments reported by brick workers were Gastrointestinal, Respiratory and Cardiovascular, Genitourinary diseases. Data revealed that the reporting of infections was higher in children than the other age groups (table 2). The lack of the sanitation facilities leads to a set of problems; for instance, high exposure to infections and communicable diseases. [12-13] In this milieu, the paper explores the level of morbidity, the nature of the ailment, health-seeking behaviour and health insurance among in brick workers in India.

**Table 2 Nature of Ailments in the Brick Worker**

Nature of Ailments	Percentage
Infections	3
Psychiatric & Neurological	0.12
Cardiovascular	0.41
Gastrointestinal	0.27
Genitourinary	0.88
Injuries	95.32
Total	100

Data Source: Unit Level Analysis (NSS 71th Round) 2014

### Health Seeking Behaviour

It was estimated that almost 11% of brick kiln workers reported illness due to the hazardous conditions on their work site while only 7 % received treatment. There is around a 4% gap in demand and supply of the treatment. Nature of the treatment reflected that all the brick kiln workers went for Allopathic medicines and none of them received other treatments like Indian system of medicine (*Desi medicine: Ayurveda, Unani or Siddha*) *Homoeopathy Yoga & Naturopathy and other*. The level of care showed that 50% treated their ailments in the private hospital and 45% were received treatment from public hospital and PHC/dispensary/CHC / and 5% through a mobile medical unit. It reflects that the brick workers are one of the most deprived working class of India they largely depend upon the private hospital for their treatment. There were two main reasons stated by the brick workers for not availing the government facilities; the first reason was required particular service was not available in the government hospital, and secondly,

non-satisfactory quality of government health care services (table 3).

**Table 3 Reasons for not availing government Health Care Facilities by the Brick Workers**

Reasons for not Availing Government Sources	Percentage
Required Specific Services Not Available	48.74
Available but Quality not Satisfactory	13.99
Quality Satisfactory but Facility too far	2.80
Quality Satisfactory but Involves Long Waiting	
Other	34.47

Data Source: Unit Level Analysis (NSS 71th Round) 2014

Due to dependence on the private health care, a significant loss of household income was reported by the workers. Out of total workers who were suffering from morbidity during the last 15 days of the survey, almost 57% of them reported a loss of household income in the treatment. The average losses of household incomes, during medical treatment, reported by them were on average 480 rupees.

The scheme of health expenditure of the brick workers is shown in table 4. Almost 90% brick workers were not covered by any health insurance schemes that were one of the leading causes of loss of the household incomes among them. The role of employer-supported health protection was almost negligible in the scheme of health expenditure. The contribution of nongovernmental agencies is also insignificant. Very few workers were getting benefited from various government schemes of health expenditure.

**Table4 Scheme of Health Expenditure for Brick Workers in 2014**

Scheme of Health Expenditure	Percentage
Government-funded insurance scheme (e.g. RSBY, Arogyasri, CGHS, ESIS, etc.)	9.46
Employer supported health protection (other than govt.)	0.28
Arranged by a household with insurance companies	0.36
Others	0.04
Not covered	89.87

Data Source: Unit Level Analysis (NSS 71th Round) 2014

### Binary Logistic Regression Analysis of Morbidity Prevalence

There are various causes of morbidity among individuals, but this paper emphasises on the socio-demographic and living environment of the brick workers and its association with the level of morbidity

among them. Table 5 presented the odds ratios of binary logistic regression of morbidity among brick workers. Gender differentials were observed in the prevalence of morbidity among brick workers. Results show that the female brick kiln workers were 1.13 times more likely to suffer from morbidity compared to male workers. The age of the brick workers also had a significant effect on the risk of reporting morbidity. It almost follows the 'J' shaped the relationship between age and level of morbidity. The marital status of the brick workers had also impacted on the risk of ailments. Divorced/separated and currently married brick workers are more likely to report morbidity than the unmarried workers.

The association between the level of morbidity and educational status shows that the chances of morbidity are reducing with a higher level of education. The odds ratio indicates that the educated brick workers 27% less likely to report ailments than the illiterate. It shows that educational attainment can contribute to the reduction of morbidity and the probable reason is health awareness among them.

The living environment had a significant effect on the health of the brick workers. These workers deprived of housing and sanitation facilities that negatively affect their health. The source of drinking water reflects that the rate of morbidity was less among those workers who drink potable water than the others. Results show that those workers who drunk water from the other sources, including tankers, were two times more likely to report morbidity than the bottle and tap water. The other factors of the living environment such as unavailability of drainage facility had negative associated with the level of morbidity. The workers with no drainage facilities were 1.18 percent more likely to report morbidity than those who had at least *Kutch* drainage.

**Table 5, Results of Binary Logistic Regression of Morbidity in the Brick Workers (n=1609)**

Background Characteristics	Odds Ratio	P value	95% C.I.
Sex			
Male			
Female	1.13	0.45	.81- 1.60
Age			
0-14			
15-29	0.71	0.34	.35-1.42
30-49	0.97	0.94	.41- 2.24
50-59	1.93	0.17	.75- 4.92
60 & Above	3.28	0.02	1.23-8.71
Marital Status			
Never Married			
Currently Married	1.48	0.29	.71- 3.07
Widowed	1.40	0.53	.49- 3.96
Divorced/Separated	2.78	0.44	.21-36.18
Education			
Not Educated			
Educated	0.73	0.08	.50- 1.03
Sources of Drinking Water			
Bottle/Tap/			
Hand pump/Tube well	1.19	0.36	.81-1.74
Other	2.14	0.01	1.17- 3.91
Latrine Facilities			
Yes			
No	0.59	0.00	.41- .83
Drainage Facilities			
Kutchha			
Pucca	0.82	0.43	.50- 1.34
No Drainage	1.18	0.47	.75-1.82

## CONCLUSIONS

Brick kiln workers are one of the marginalised working class of India, and they are more suffered from morbidity compared to the general population. This comparatively higher rate of morbidity occurs in brick kiln workers due to their nature of work and living environment, for instance, 85% of workers reported injuries during work. Thus, out of all ailments, the work-related injuries were most pronounced causes of morbidity among them. The second most occurrences of disease among brick kiln worker was the infectious or communicable disease, which is very much associated with their poor living environment, for instance, unsafe drinking water, the absence of latrine and proper drainage facilities and so on. The health-seeking behaviour also reflected that the 4 point gap between morbidity rate and receiving treatment. The level of care revealed that although the workers were poor, most of them received treatment for private health care. The reasons for not availing government facilities were the unavailability of the required specific health

care services. It reveals the gap between needful demand and supply of health care services. In such a scenario, workers highly dependent upon the private healthcare facilities, and that lead to a loss of significant amounts of their household income. Almost 90% of workers did not have any health insurance coverage. That necessitates that there is a need to give attention and insurance of healthcare facility to the brick kiln workers. Their number is almost six to seven million; these numbers cannot be ignored. Therefore, it requires to formulate specific labour laws for the brick workers that address all their issues, including intervention during recruitment, provision of formal training, safety equipment's and proper housing, sanitation facilities and health insurance.

**Conflict of Interest:** The author declares no conflict of interests.

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