Research Article

Prevalence and perceptions about tobacco use among migrant construction workers: A community-based cross-sectional survey

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ABSTRACT

Background: Construction sector is a booming industry with many hazardous activities. The prevalence of tobacco use among construction workers is very high because of their working patterns and lack of recreational activities. **Objectives:** The objectives of the study were to assess the prevalence of tobacco use and ascertain the factors influencing it among migrant construction workers. **Materials and Methods:** A cross-sectional community-based study was done on 300 construction workers in old Mahabalipuram road of Chennai selected by multistage random sampling from 100 construction units. They were assessed using the Global Adult Tobacco Survey India individual questionnaire. Epi-info-8 and SPSS-21 software was used for analysis. **Results:** The prevalence of current tobacco use either in the form of tobacco smoke or smokeless tobacco was 51%. The prevalence of smokeless tobacco use was 33.7% while for tobacco smoke use, it was 29%. The proportion of participants reporting alcohol consumption was 55.7%. Only 24% were free from substance use. 95.3% believed that smoking causes a major illness, whereas only 89.7% had similar kind of belief about smokeless tobacco. The majority (80.7%) were exposed to the ill effects of smoking and quit tobacco messages, but only 38.7% of those had thought about quitting tobacco. **Conclusions:** Tobacco use is an important public health problem, especially in developing countries like India and workers in the construction industry have a very higher prevalence. Specific intervention programs are warranted to reduce the burden of tobacco use related morbidity among these workers.

KEY WORDS: Tobacco Use; Migrants; Construction Workers; Global Adult Tobacco Survey; Smokeless Tobacco

INTRODUCTION

Tobacco use is a major cause of preventable mortality and illness, leading to over 5 million deaths each year.[1] The prevalence of tobacco use is high in India.[2,3] Worldwide, about 1 million people die from smoking-related diseases annually and it is expected that this death number will reach 2 million a year by 2025.[4] Tobacco use is an important contributor to global mortality and morbidity.[5] Majority of the cardiovascular diseases, cancers, and chronic lung diseases are directly attributable to tobacco consumption. According to the World Health Organization (WHO) report on the global tobacco epidemic in 2017, average rates of current smoking among adults have declined globally from 24% in 2007 to 21% in 2015. But, the death toll due to tobacco consumption is expected to rise worldwide to over 8 million deaths yearly by 2030, and the vast majority of these deaths are projected to occur in developing countries like India.[1] India's tobacco problem is very complex, with a variety of smoking forms and an array of smokeless tobacco products. India ranks third in global tobacco production and consumes almost 50% of it is produced domestically as reported by Jhanjee in 2011.[6] India is the world's largest democracy and is also the second largest consumer of tobacco. Global Adult Tobacco Survey

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(GATS) is a global standard for systematically monitoring adult tobacco use and tracking key tobacco control indicators. In 2017, in India, GATS 2 was released. GATS 2 was a household survey of 74,037 persons, aged 15 or more, conducted in all 30 states of India and two union territories in 2016–17. The first GATS was conducted in 2009–2010. GATS 2 results found a 6% decline in tobacco use prevalence, from 34.6% in GATS 1 to –28.6% in GATS 2.[7] The decline in prevalence was equivalent to a 17% relative decrease, and the number of tobacco users has reduced by about 8.1 million. Apart from smoking tobacco, various forms of chewable tobacco consumption are highly prevalent in India.[8] The construction sector is a booming industry and involves many hazardous activities. Migrant labor in the industry is susceptible to various health and occupational hazards. The booming Indian economy and its accompanying regional disparities in growth have for long fuelled internal migration of labor within the country. Evidence suggests that highly mobile male migrants are more likely to engage in greater high-risk behaviors. Economic independence at a young age, staying away from the family, work-related stress, peer pressure, etc., make the migrant labor highly prone to adopt the many high-risk behaviors,[9] including substance use at a very early age. Many studies conducted across the country have documented a high prevalence of various high-risk behaviors and the resulting morbidity and mortality in them.[4,10-13] Even though there are numerous national level surveys on tobacco use available among the general population, there are very few community-based surveys documenting tobacco and alcohol use among migrant workers. In developing countries like India, although the construction industry is making rapid strides, their health is almost neglected. The stress induced by migration itself along with unstable living situations and poor working conditions is likely to increase the risk of substance abuse, including smoking, in this population. There is a lack of knowledge with regard to the identification of factors responsible for tobacco use in India at community level so that it can be acted on. Furthermore, the prevalence levels vary from region to region. Suitable plan for quitting keeping in mind this vulnerable group of workers can be developed depending on their educational status, type of tobacco used, and their knowledge regarding tobacco use. Hence, we conducted our study to determine the prevalence of tobacco use and factors influencing it in migrant construction workers after getting approval from the Institutional Ethics Committee.

Objectives

The objectives are as follows:

1. To assess the prevalence of tobacco use among migrant construction workers.
2. To ascertain the factors influencing the tobacco use in migrant construction workers.

MATERIALS AND METHODS

Study Design

This was a cross-sectional community-based study (With individual face to face interview).

Study Area

The study area was Old Mahabalipuram Road area of Chennai Metropolitan City, which is having a high-density of migrant construction worker establishments.

Reference Population

The study population was representative of the whole of migrant construction workers in Chennai.

Inclusion Criteria

Migrant construction workers working in the construction field at least for the past 1 year were included in the study.

Sample Size

Based on various studies reported, the prevalence of tobacco was taken as ~20%. According to the formula to calculate the required sample size to estimate the proportion of an illness

$N = Z^2PQ/d^2$

Where
N = required a sample size
P = reported prevalence
Q = 1- P
Z = value of Z at 95% confidence interval
D = allowable level of error

$$N = \frac{(1.96)^2 \times 0.20 \times 0.8}{0.05 \times 0.05}$$

N = 245

Thus, approximately 300 individuals were included in the study.

Selection of Study Subjects

Any living area of construction workers accommodating more than 100 people was taken as a study unit. Approximately 100 such study units were identified, and a serial number was allotted to each of them. Using simple random sampling, 30 such study units were selected to be included in the final study. From each of the study units, 10 participants were selected by simple random sampling after allotting serial

numbers to the residents. Thus, the sampling method used was multi-stage simple random sampling.

Study Tools

Validated and standardized, GATS India individual questionnaire was used for the assessment of tobacco smoking and smokeless tobacco consumption GATS India questionnaire had elicited information about the following:

a. Background characteristics
b. Tobacco smoking
c. Smokeless tobacco
d. Cessation
e. Second-hand smoke
f. Economics
g. Media and information
h. Knowledge, attitudes, and perceptions.

WHO recommended that the alcohol use disorder identification test was used to collect data regarding alcohol use in the study population.

Pilot Survey

A pilot survey will then be carried out on 20 individuals to test the feasibility of the administration of tools in the field setting.

Ethical Considerations

Approval of the Institute Ethics Committee, Chettinad Hospital and Research Institute was obtained. Informed written consent in the mother tongue of the participants was obtained from the respondents before recruitment in the study (Annexure I). All possible information regarding the study was be given to the respondents. Confidentiality of the respondents was maintained. Respondents were given the option of quitting from the study if so desired by them. No element of compulsion was exerted.

Analysis of Data

Epi-info-8 and SPSS-21software was used for analysis of the data collected. The outcome variable was the prevalence of tobacco and alcohol use. Sociodemographic factors, knowledge, exposure to media, and smoking in the family members were taken as explanatory variables.

RESULTS

A total of 323 persons were contacted, and 23 (7.1%) of them refused to participate. Busy with the work, feeling tired, and not interested were the reasons for non-participation. A total of 300 participants were included in the final analysis.

Majority of the study a participants were between 20 and 40 years (73%) and the proportion of people below 20 years and above 40 years was 11.3% and 15.7%, respectively. The majority (89%) of the participants were males, and females constituted only 11% of the study subjects. Out of 300 participants, 24.7% were illiterates, 36.4% studied up to primary school, 31.6% completed schooling up to secondary school, and only 7.3% of them completed formal education beyond high school. Majority of them were working with the private contractors (72%), the remaining people were either involved in government outsourced work or self-employed [Table 1].

Only 24% of the study participants were free from substance use. Hence, the proportion of participants using at least one substance was 76%. The proportion of people who are current tobacco users (either tobacco smoke or smokeless tobacco) was 51%. The prevalence of smoking in the study population as estimated by the proportion of people, who are current smokers, was 29%. The prevalence of smokeless tobacco use was 33.7% as estimated by the proportion of participants currently using smokeless tobacco products. The proportion of participants reporting alcohol consumption was 55.7%. Out of current smokers, 69% were daily smokers, and the remaining 31% were less than daily smokers. Among the former smokers, 75% were daily smokers, and the remaining 25% were less than daily smokers [Table 2].

Exposure to information about the ill effects of smoking and quit tobacco messages was assessed. Majority of the participants (80.7%) were exposed to this kind of health education on television. The proportion of subjects exposed to quit tobacco messages in newspapers and magazines was 40.3%. The proportion of participants exposed to similar messages on radio, billboards, and cinema theatres was 20.7%, 4%, and 2.6%, respectively. Only 62(20.7%) of the

Table 1: Sociodemographic characteristics of the study population (n=300)

Parameter	Frequency (%)
Age	
<20	34 (11.3)
20–39	219 (73.0)
40–49	47 (15.7)
Sex	
Male	267 (89.0)
Female	33 (11.0)
Educational status	
No formal schooling (Illiterate)	80 (24.7)
Up to primary schooling	109 (36.4)
Up to Secondary schooling	95 (31.6)
College/University completed	16 (7.3)
Type of employment	
Working in a government contract	62 (20.7)
Working with a private contractor	216 (72.0)
Self Employed	14 (4.7)
Do not know	8 (2.7)

study subjects were exposed to health warnings on cigarette packets, and out of this 62, only 24 (38.7%) had thought about quitting tobacco because of these messages [Table 3].

Television was the most common source of exposure to tobacco promotion messages, as reported by 171(57%) of study participants was television followed by place of purchase of tobacco products (28%). The proportion reported similar exposure in newspapers or magazines, radio, posters, and billboards was 13.3%, 2.6%, 2.3%, and 5.3%, respectively. Cinema/theater was another important source of exposure to tobacco promotion campaign as reported by 11.3% of participants. A minor proportion of participants 1.3% had also reported similar exposure on public transport or public places [Table 4].

In the study population, 95.3% of the people believed that smoking causes a major illness, whereas only 89.7% had similar kind of belief about smokeless tobacco. The proportion of subjects who believed that smoking causes stroke, heart attack, and lung cancer were 87%, 90.3%, and 95%, respectively [Table 5].

DISCUSSION

Tobacco use is a global pandemic and is one of the leading causes of preventable deaths worldwide.[14] In developing countries like India, the construction industry is making rapid strides. However, on the whole, the health of the migrant construction workers is almost neglected. Construction workers have one of the highest substance abuse rates, among the major industries due to their working patterns, lack of recreational activities, lack of education, misconceptions, and taboos.[4] Tobacco is deadly in any form or disguise. Tobacco leads to clearing of forests for cultivation, stripping fuelwood for curing, and forest resources for packaging thus damaging the environment. The construction sector is a booming industry and involves many hazardous activities. Migrant labor in the industry is susceptible to various health and occupational hazards. Hence, our population for final analysis included 300 migrant construction workers. The prevalence of current tobacco use either in the form of tobacco smoke or smokeless tobacco was high (51%) among construction workers in our study. The prevalence of smokeless tobacco use was 33.7% while for tobacco smoke use, it was 29%. Majority (95.3%) believed that smoking causes a major illness and was exposed (80.7%) to the ill effects of smoking and quit tobacco messages. However, only 38.7% of those had thought about quitting tobacco. Workers in the construction industry are single and are often migrating. Their working patterns, lack of recreational activities make them indulge in tobacco use and other substance abuse. Our study adds to the very few community-based studies that have evaluated the prevalence and factors associated with tobacco use among construction workers in India.

In our study, the prevalence of current tobacco use either in the form of tobacco smoke or smokeless tobacco was 51%, higher compared to general population. Richa *et al*.[2]

Table 2: Summary of substance use among construction workers (*n*=300)

Prevalence of current tobacco use	Frequency (%)
Current users	
Any tobacco	153 (51.0)
Tobacco smoke	87 (29.0)
Smokeless tobacco	101 (33.7)
Past users	
Tobacco smoking	8 (2.7)
Smokeless tobacco	5 (1.7)

Table 3: Exposure to information about the dangers of tobacco or quit tobacco consumption (*n*=300)

Type of media	*n* (%)
Newspapers or in magazines	121 (40.3)
On television	242 (80.7)
On the radio	62 (20.7)
On billboards	12 (4.0)
Cinemas/Theaters	8 (2.6)
Did you notice any health warnings on cigarette packages?	62 (20.7)
In the past 30 days have warning labels on cigarette packages led you to think about quitting? (*n*=62)	
Yes	24 (38.7)
No	35 (56.5)
Do not know	3 (4.8)

Table 4: Exposure to tobacco promotion messages in the past 30 days

Media/place of exposure	*n* (%)
In-store where cigarettes are sold	84 (28.0)
Newspapers or in magazines	40 (13.3)
On television	171 (57.0)
On the radio	8 (2.6)
Posters	7 (2.3)
On billboards	16 (5.3)
Cinemas/Theaters	34 (11.3)
Public transport buses/Bus stations/railway station/public walls	5 (1.7)

Table 5: Knowledge and perceptions about the ill effects of tobacco

Knowledge and perceptions	*n* (%)
Who believed smoking tobacco cause serious illness?	286 (95.3)
Who believed smoking cause stroke (blood clots in the brain that may cause paralysis)	261 (87.0)
Who believed smoking cause heart attack?	271 (90.3)
Who believed smoking cause lung cancer	285 (95.0)
Who believed smokeless tobacco cause serious illness?	269 (89.7)

estimated the prevalence of tobacco use as 46.3% in their study on rural adults. GATS 2 results found a 6% decline in tobacco use prevalence, from 34.6% in GATS 1 to 28.6% in GATS 2.[7] According to GATS 2, 68% of smokers, 17% of bidi smokers, and 50% of smokeless tobacco users purchase loose tobacco.[7] Almost 40% of tuberculosis deaths in the country is associated with smoking.[15] Among current smokers in our study, the prevalence of smokeless tobacco use was 33.7% while for tobacco smoke use, it was 29% while Laad *et al*.[12] in their study identified that the prevalence of smoke and non-smoke form of tobacco was 21.6 % and 46.1%, respectively. However, Parashar *et al*.[16] in their study observed a higher proportion (91%) of tobacco users among construction site workers of Delhi, and out of those, 49% were using smokeless tobacco, 29% were consuming bidi/ cigarette, and 22% were consuming both. This difference could be due to variations in cultural, social factors among the various study populations. The mean age of workers in their study[16] was 32.1 ± 11.6 years and similarly in our study majority of the population were aged between 20 and 40 years (73%) and Lead *et al*.[12] also observed majority (64.8%) of their workers were in the age group of 20–40 years. Similar to their study,[16] the majority of our participants were males (89%). In our study 24.7% were illiterates, and 36.4% studied up to primary school, while in their study,[16] <½ (44.2%) were illiterate, and one-third (33.7%) completed primary education. In our study, the majority of the study population were working with the private contractors (72%) while the remaining people were either involved in government outsourced work or self-employed. Parashar *et al*.[16] in their study observed that 72.1% were laborers and 27.9% were involved in skilled and other types of work. On the whole, only 24% of our study participants were free from any substance use. The proportion of participants using at least one substance in our study was 76%. Tobacco is used in India in many forms.[17] India is one of the fewer countries in the world where the prevalence of smoking and smokeless tobacco use is high and is characterized by the dual use of these tobacco products.[18] Tobacco use in India is a big burden in terms of its magnitude and use in different forms. Smoking has been prohibited in public places nationwide since 2008. Apart from smoking tobacco, various forms of chewable tobacco consumption are highly prevalent in India.[8] Of all the common smoking forms of tobacco, bidi is the most popular product in India, especially in rural areas.[8] Cigarette smoking is the second-most popular form of tobacco smoking in India and is observed mainly in urban areas.[8] In our study, 95.3% of the subjects believed that smoking causes a major illness, whereas only 89.7% had similar kind of belief about smokeless tobacco. Parashar *et al*.[16] in their study observed that tobacco as cause of cancer was named by 55.8%, while other diseases named were cough (39.5%), tuberculosis (17.4%), and other diseases (25.6%) while in our study, the proportion of subjects who believed that smoking causes stroke, heart attack, and lung cancer were 87%, 90.3%, and 95%, respectively. Laad *et al*.[12] in their study observed that majority (79.4%) knew the adverse effect of tobacco consumption. Parashar *et al*.[16] in their study observed that warning labels lead to the thought of quitting tobacco in 62.8%. In our study, majority (80.7%) were exposed to ill effects of smoking and quit tobacco messages on television, but only 20.7% were exposed to health warnings on cigarette packets and out of this only 24 (38.7%) had thought about quitting tobacco. Laad *et al*.[12] also observed that nearly about half (47.8%) had thought of giving up the habit. However, <3rd (27.7%) had made any attempts. Parashar *et al*.[19] in their study observed that 73% had the intention to quit. Parashar *et al*.[16] in their study observed that most commonplace (97.4%) for tobacco consumption was workplace while in our study Television was the most common source of exposure to tobacco promotion messages (57%) followed by place of purchase (28%). Liu *et al*.[4] in their study identified that migratory lifestyle was associated with current smoking behaviors among construction workers. Construction laborers confront many stressors which pose challenges to their physical and mental health, and their work is characterized by instability and low, unpredictable wages. The unique stressors associated with the migratory, working, and living circumstances of these laborers make them vulnerable to risk factors that may affect their physical health status, mental health, and drinking patterns. Employment-driven migration is mainly from the "relatively less developed" states to large metropolises and other large cities, wherein the migrants get absorbed in low-paid jobs in the unorganized sectors.[20] The workers' living conditions are poor with the denial of basic amenities to maintain the standard of living, making them prone to health problems.[20] Professional and program advice to quit smoking is very effective and more programs, and health-care professionals must be employed to prevent construction workers, especially those young to abstain from the use of tobacco.[21,22]

The strength of our study lies in the fact that it is a community-based study. Our study adds to the very few community-based studies that have evaluated the prevalence of tobacco use in construction workers in India, and these results will go a long way understanding the magnitude of the problem besides creating awareness for taking interventional measures at the community level. Our study was only a simple descriptive cross-sectional, and hence the strength of evidence is low. Our study is limited by small sample size and its sampling frame. A large multi-center study at the national level is the need of the hour for policy making and acting on with further interventions. The final outcome of our study could have been affected by reporting bias of study subjects in our study.

CONCLUSION

Tobacco use is an important public health problem, especially in developing countries like India and in a population with high-risk such as migrant construction workers. The

prevalence of current tobacco use was very high among construction workers in our study compared to that in the general population. Although majority of them believed that smoking causes a major illness and were exposed to the ill effects of smoking and quit tobacco messages, only <½ of them had thought about quitting tobacco. As majority of workers in the construction industry are males, illiterate and often migrating along with their working patterns, lack of recreational activities, they indulge in tobacco use and other substance abuse. In the wake of the high prevalence of various high-risk behaviors, documenting the exact burden of tobacco and other substance use among migrant workers and understanding the factors influencing it will help us in designing and implementing appropriate interventions at the community level. There is an urgent need to curb the use of tobacco among the sub-groups of the population with higher prevalence. Tobacco control policies in India should adopt a targeted, population-based approach to control and reduce tobacco consumption in the country. Immediate intervention programs are warranted to reduce the future burden of tobacco-related morbidity among these workers.

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