

Impact of duration of occupational exposure on physical and mental health of construction workers in Lahore, Pakistan

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ABSTRACT

Background: Construction industry is one of the most hazardous and accident prone occupation causing around 270 million accidents and 2 million deaths annually. In Pakistan reporting of incidence of occupational injuries and accidents is low. The present study aimed to determine the physical and mental health profile of construction workers in Lahore, Pakistan.

Subjects and methods: An analytical cross-sectional study was conducted among construction workers in Lahore from January 2020 to September 2020. The study included 181 participants by using non-probability convenience sampling technique. Data was collected by using a self-structured, pre-tested questionnaire. Data was analyzed using SPSS version 23. Chi-square test was applied and p-value ≤ 0.05 was taken as significant to find out association with duration of occupational exposure.

Results: Maximum number of the participants 55 (30.4%) was between age group 26-35 years and 97 (53.6%) were illiterate. Among 181 participants, 112 (61.87%) were found to be hypertensive, 98 (54.1%) were drug abusers. The total duration of hours spent on work per day was reported more than 10 hours in 50 (27.6%) of the participants. A significant association was observed between duration of occupational exposure and presence of chronic illnesses (p value=0.028) and mental health issues (p=0.041). A significant association (p-value= 0.026) was also found with duration of exposure with drug abuse. Bad effect of health on job performance was reported by 97 (53.6%) of the workers and 71(39.2%) of the workers reported restricted movements after injury during occupational exposure.

Conclusion: In this study, a relatively higher prevalence of chronic diseases, injuries and stress has been reported by construction workers, negatively affecting their occupation. Significant associations are seen with duration of exposure and its impact on physical and mental health.

Keywords:

Construction workers, Physical health, Mental health, Occupational injuries

INTRODUCTION

According to the International Labor Organization, the construction industry is one of the most hazardous and accident prone occupation causing around 270 million accidents and 2 million deaths annually.¹ Construction sector comprises of 7% of total world employment, making it the largest industrial employer due to the increased demand of infrastructure projects.² One out of every three accidents occur at a building construction site and the factors that lead to such hazardous situation cannot be quantified due to many reasons. Therefore, the occupational data is not recorded in countries like Pakistan.³

Developing countries like Pakistan, India, Bangladesh, and China are more labor intensive than

the developed countries.⁴ According to United Nations Population Fund 2013, Pakistan has a total of 59.74 million workforce, of which 45.98 million are males and 13.76 million are females.⁵ The Global construction Industry generates 12% of the world's gross domestic product and is expected to grow rapidly in coming years.⁶ Long working hours have been associated with an increased risk of cardiovascular diseases.⁷

The construction worker job is exposed to different type of risks like dust, heavy load, hot climate, sleeping problems, extended working hours, heights, noise, vibration, and chemicals.⁸ High rates of accidents are caused due to lack of first aid facilities, lack of use of personal protective equipment, poor information system and lack of safety regulations.⁹ Many studies have documented high rates of smoking, alcohol and substance abuse in the construction industry.¹⁰ A study showed that 4/5th of the workers had symptoms of musculoskeletal pain.¹¹ Incidence of chest and breathing problems is high due to poor working conditions.¹²

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Occupational injuries result in absence from work, loss of productivity, permanent disabilities and even fatalities.¹³ It is obvious that health deterioration is a major issue in laborers worldwide but there is scarcity of data and research in this field in Pakistan.

The aim of this study was to analyze the impact of duration of exposure in working environment with various health problems among construction workers in Lahore.

SUBJECTS AND METHODS

This analytical cross-sectional study was conducted in construction workers at Lahore from January 2020 to September 2020. WHO sample size calculator was used for sample size estimation by taking prevalence of 13.5% from previous studies. The study included 181 participants by using non-probability convenience sampling technique. All workers of age 18-60 years who were directly involved in the process of construction for last one year and were willing to participate, were included in the study. Data was collected by using a self-structured pre-tested questionnaire after taking approval (IRB Number M-19/042/-CM) from IRB Akhtar Saeed Medical and Dental College, Lahore. Study participants were interviewed after obtaining an informed consent and their confidentiality was highly maintained during and after the study. Data was entered and analyzed using SPSS version 23. Data was presented in the form of frequency tables, bar charts and pie charts. Chi square test was applied and p-value of ≤ 0.05 was taken as significant to find out impact of duration of occupational exposure with health conditions of these construction workers.

RESULTS

Out of 181 respondents, 55 (30.4%) belonged to 26-35 age group, 100 (55.2%) were residing out of Lahore, 131 (72.4%) respondents were married, 97 (53.6%) were illiterate and 76 (42%) had 10,000–20,000 income per month. (Table 1) Abuse of drug was reported in 98 (54.1%) of the participants. Among these 77 (42.5%) were smokers, 8 (4.4%) reported use of charrs, 3 (1.7%) were cocaine abusers and 11 (6.1%) reported oral tobacco chewing.

Out of 181 respondents 54 (29.8%) had working experience of less 5 years, 55 (30.4%) had experience of 5-10 years, 41 (22.7%) had 15 years of experience in construction industry while 31 (17.1%) had more than 15 years of experience. Majority of the workers 115 (63.5%) reported working for 8-10 hours per day while 50 (27.6%) reported working more than 10 hours.

Approximately 53.61% of the participants reported that their health problems are affecting their performance at work and 71 (39.2%) reported restriction of movement due to injury at their work place. Fatigue at work was reported by 112 (61.9%) of the participants. During last one year, incidence of injury due to some accidents at occupational environment was reported by 91 (50.3%).

Table 1. Socio-demographic profile of construction workers in Lahore, Pakistan

| Characteristics | Frequency | Percentage |
|------------------------|-----------|------------|
| Age in years | | |
| 18-25 | 54 | 29.8 |
| 26-35 | 55 | 30.4 |
| 36-45 | 41 | 22.7 |
| 45-60 | 31 | 17.1 |
| Area of residence | | |
| Lahore | 81 | 44.8 |
| Out of Lahore | 100 | 55.2 |
| Marital status | | |
| Married | 131 | 72.4 |
| Unmarried | 50 | 27.6 |
| Educational status | | |
| Illiterate | 97 | 53.6 |
| Primary | 66 | 36.5 |
| Secondary and above | 18 | 9.9 |
| Salary/Month in rupees | | |
| 5000-10000 | 24 | 13.3 |
| 10001-20000 | 76 | 42 |
| 20001-30000 | 72 | 39.7 |
| Above 30000 | 9 | 5 |

Table 2. Physical and mental health profile

| Characteristics | Frequency | Percentage |
|--|-----------|------------|
| Injury or accident in past during work | | |
| Yes | 91 | 50.3 |
| No | 90 | 49.7 |
| Back pain due to work | | |
| Yes | 99 | 54.7 |
| No | 82 | 45.3 |
| Respiratory problems (n=77) | | |
| Cough | 42 | 54.54 |
| Asthma | 15 | 19.48 |
| Wheezing | 15 | 19.48 |
| Difficult breathing | 5 | 6.5 |
| Skin rash or allergy | | |
| Yes | 63 | 34.8 |
| No | 118 | 65.2 |
| Eye problems in respondents (n=137) | | |
| Watering | 56 | 30.9 |
| Redness | 30 | 16.6 |
| Blurring of vision | 19 | 10.5 |
| Other (Glaucoma, cataract etc.) | 32 | 17.7 |
| Chronic illnesses in respondents (n=160) | | |
| Diabetes | 21 | 13.12 |
| Hypertension | 112 | 70 |
| Tuberculosis | 10 | 6.25 |
| Asthma | 17 | 10.62 |
| Mental health issues in respondents (n=71) | | |
| Depression | 30 | 42.25 |
| Stress/ Anxiety | 37 | 52.11 |
| Suicidal thoughts | 4 | 5.63 |
| History of hospitalization (n=181) | | |
| Yes | 51 | 28.2 |
| No | 130 | 71.8 |

Table 3. Bivariate analysis of physical and mental health profile of construction workers with duration of exposure

| Variable | Years of work as construction workers | | | | Total | p-Value |
|-----------------------------------|---------------------------------------|------------|-------------|-------------------|-------|---------|
| | Less than 5 years | 5-10 years | 10-15 years | 15 years and more | | |
| Eye problems | 39 | 45 | 31 | 22 | 137 | 0.118 |
| Skin rash/allergy | 20 | 18 | 12 | 13 | 63 | 0.689 |
| Mental health issues | 15 | 23 | 15 | 18 | 71 | 0.041* |
| Injury during last one year | 33 | 30 | 31 | 21 | 115 | 0.181 |
| Back pain | 19 | 29 | 26 | 25 | 99 | 0.000* |
| Fatigue | 29 | 34 | 26 | 23 | 112 | 0.313 |
| Respiratory problems | 21 | 19 | 16 | 21 | 77 | 0.019* |
| Chronic illnesses | 22 | 27 | 20 | 23 | 92 | 0.028* |
| Hospitalized during past one year | 11 | 11 | 15 | 14 | 51 | 0.026* |
| Drugs abuse | 20 | 33 | 25 | 20 | 98 | 0.026* |

*p-value statistically significant

Other than injuries, multiple physical health problems were reported by the participants. Back pain was reported by majority (54.7%). Out of 99 respondents who had back pain, 33 (18.2%) suffered back pain due to bending, 45 (24.9%) due to heavy loads and bricks, 10 (5.5%) due to standing, 8 (4.4%) due to stretching and 3 (1.7%) due to kneeling. Out of 181 participants, 77 (42.5%) reported respiratory problems. Different eye problems were reported by construction workers during the survey constituting 137 (75.66%) of the total. Chronic diseases were reported in 92 (50.8%), with diabetes in (11.6%), hypertension in 44 (24.3%) and asthma in 17 (9.4%), while 10 (5.5%) had tuberculosis. Mental health issues were also reported by the participants. Out of 181, 71 (39.2%) reported mental health issues (Table 2).

Out of 181 respondents, 51 (28.2%) people had history of hospitalization during last one year and among them 16 (8.8%) had gastroenteritis, 10 (5.5%) had malaria, 16 (8.8%) had respiratory tract infections.

Bivariate analysis was done to assess the impact of duration of exposure at working environment with health issues of construction workers. Significant association was found between years of exposure and mental health issues (p-value = 0.041), back pain (p=0.000) and respiratory problems (p=0.019). Significant associations were also found between years of exposure at work with chronic illnesses (p=0.028), hospitalization during the past one year (p=0.026) and drug abuse (p-value=0.026) (Table 3).

DISCUSSION

Construction is one of the most hazardous and complex industries worldwide, which may result in the most fatal occupational illnesses.⁸ Daily wage laborers are forced to take up any type of job due to population growth and decrease in job opportunities.¹⁴

In this study, mean systolic BP of respondents was found to be 128.5mmHg and mean diastolic BP was

81.4 mmHg. 112(62%) participants were found to be hypertensive having blood pressure >120/80mmHg. In another study conducted among construction workers in Ireland, the mean systolic blood pressure was 132.8 mm Hg and the mean diastolic blood pressure was 79.5mmHg.¹² In current study, out of 181 respondents, 54.1% used drugs. However, in India, among the 2,163 workers, 90.2% were tobacco users.¹⁵

In this study, out of 181 respondents, 97 (53.6%) had their job performance affected adversely due to health problems in the last 6 months. In another survey conducted in USA, 481(60.12%) out of 800 workers were affected adversely due to health problems.¹⁶ In present study, in a total of 181 respondents, 112 (61.9%) felt stress or fatigue during their job. Similar findings were observed in a research conducted in USA, where out of 12,161 participants, 4865(40%) felt stressed.¹⁷

In this research, 91 (50.3%) had suffered from injury in the past during their work. In another research conducted in UK, 88% of 1500 respondents did not suffer from any injury while 12% suffered causing deaths of 2% and the injury prevalence among the frontline construction workers was 57.9%. About 37.3% experienced open wound, superficial (15.3%), concussion and internal injuries (15.3%), dislocation and sprains (10.5%), traumatic amputation and deformity (8.5%), fractures (6.8%) and 6.5% suffered from other injuries.¹⁸

In this study, out of 181 respondents, 99 (54.7%) suffered from back pain and among them 33(18.2%) had back pain due to bending, 45(24.9%) due to heavy load or bricks and 18(9.9%) due to standing or stretching. In another research conducted in Netherland, 200(33.3%) of the total participants were suffering from back pain due to bending and stretching.¹⁹ In this study, 114 (63%) participants had difficulty in breathing. In another research conducted in

Japan, 70% of 900 workers were suffering from difficulty in breathing.²⁰

Out of 181 respondents, 71 (39.2%) people gave history of injury that restricted their movement. In a study in China, 15 (5.21%) reported injury that restricted their movements out of 288 respondents.²¹ During this survey, out of 181 respondents, 115 (63.5%) people had any cut or injury while working. In another study at Bangalore, India, 87.5% workers had minor cuts and injuries, 9.6% had cuts, injuries and falls, and 2.9% cuts, injuries, falls and fractures.²² In this study, 71 (39.7%) people were suffering from mental health issues. In another study in India, prevalence of self-reported mental health effects after work among bricklayers were (14%), distress (5%), depression (18%) and post-traumatic stress disorder (11%).²³

CONCLUSION

A high prevalence of chronic diseases, injuries and stress was reported by construction workers in Lahore. Significant associations are seen with duration of exposure and its impact on physical and mental health.

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