

ACCIDENT AND OCCUPATIONAL INJURY FREQUENCY AND AWARENESS AMONG ADOLESCENT GOODS TRANSPORT WORKERS IN DISTRICT RAWALPINDI

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ABSTRACT

Objective: To determine the frequency and types of different injuries among adolescent goods transport workers, to assess the awareness and work related factors associated with occupational injuries.

Study Design: Analytical cross-sectional study.

Place and Duration of Study: Study was conducted in Goods Transport Areas in District Rawalpindi, from Jan 2017 to Dec 2017.

Material and Methods: Study was conducted among Goods Transport Workers in District Rawalpindi. A sample size of 350 using W.H.O. sample size calculator was taken and non – probability purposive sampling was done. After taking informed consent the data was collected for assessment of occupational injuries. Data were analysed using SPSS version 22. Confidence interval was set to be 95% with 5% margin of error.

Results: Total 350 adolescent workers were included in study. Mean age was 16.5 ± 1.7 years and 311 (88.9%) workers worked for more than 8 hours/day. The frequency of occupational injury among goods transport workers was found to be 249 (71.1%). In a proportion of workers 131 (37.4%), hand was the most affected part and laceration was the common type of injury in 126 (36%) workers. Almost half of the sample, 178 (50.9%) workers had awareness about occupational injuries. The majority 324 (92.6%) of the adolescent workers did not use personal protective equipment. Significant associations were found between job satisfaction ($p=0.006$), working extra hours ($p=0.001$), job stress ($p=0.00$) and injury frequency.

Conclusion: Injury prevalence among goods transport workers was high. The study revealed that the adolescent workers had high perception of hazards but they were also exposed to hazardous situations more frequently. Many factors related to higher injury frequency including working for extra – hours, irregular shifts, stress at work.

Keywords: Adolescents, Goods Transport Industry, Occupational injury, Prevalence.

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INTRODUCTION

Occupational injuries as a preventable general public issue has been acknowledged over the previous decade¹. These injuries pose major public health and socioeconomic developmental problems. However, efforts towards investigation of determinants of occupational injuries among goods transport workers are very minimal in developing countries².

Workforce in Low Middle Income Countries (LMIC) has always been under a great risk of occupational injuries/diseases due to poor working conditions and lack of social protection³. Occupational injuries/diseases are always

considered leading problems for workers, especially in less developed countries. Right now, they represent 15% of worldwide disability adjusted life year (DALY) losses. This extent will rise to a high scale if no preventive measures are taken and it is evaluated that by the year 2020, injuries will contribute to 20% of all DALY losses^{4,5}.

Adolescents are individuals between the ages of 10-19 years⁶. Adolescent health is an important public issue in our part of world. Research indicates that in adolescents there is a close relationship among physical, cognitive, and psychosocial developmental processes, resulting in greater risk-taking behaviour⁷.

Much consideration has been given in the recent 20 years to adolescent work injuries. Many

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Received: 16 Apr 2018; revised received: 12 Jun 2018; accepted: 10 Aug 2018

investigations have been done to distinguish risk factors in adolescent labourers resulting in injuries⁸.

International labour organisation (ILO) reports show that while 2.2 million individuals pass on consistently every year because of work related injuries or illnesses, more than 270 million labourers are injured and an expected 160 million endure occupational diseases. The report says this dismal toll likewise costs the worldwide economy an expected 4% lost gross in domestic product⁹.

According to the Pakistan Economic Survey 2013-14, Pakistan is the 10th largest country in the world in terms of labour force¹⁰. Occupational health and safety (OHS) is miserable in Pakistan because of many factors such as inadequate medical facilities, lack of specific laws for OHS, and illiterate workforce. In Pakistan, there is no national system for recording occupational injuries and work-related causalities, and the majority of accidents are not reported to the labour department, so there is a lack of available data. OHS is not a top priority in the country due to the lack of resources and unavailability of professional skills¹¹.

The time has come that the governments and social organizations give due significance to adolescence wellbeing as an essential territory of general human services.

Limited data regarding morbidity and mortality related with occupational injuries is available on adolescents. Although the number of child labourers is generally high, data on occupational hazards and injuries is insufficient. The study was planned to determine the prevalence and risk factors for occupational injuries among working adolescents because injury at this level will be of greater risk to their future. This study would add to the body of limited data presently available.

MATERIAL AND METHODS

The study design was analytical cross sectional study. It was conducted from Jan 2017

to Dec 2017. The setting chosen for the study was Rawalpindi District. Data was collected from adolescent workers (10-19 years) in the following areas: Gandummandi, Pirwadhai, R.A. Bazar, Chungi 22 number, Bus stations, Railway stations and Commercial plazas e.g. Saddar etc. The total sample size was calculated keeping in mind objectives of this particular study by considering different parameters and using W.H.O. sample size calculator with 95% confidence level, 5% margin of error and an estimated population proportion of 63%, it was computed to be 350. Non-probability purposive sampling was done. The study included adolescents (10-19 years) goods transport workers. The researcher collected the data initially from Gandummandi in the outskirts of Rawalpindi and then moved to other areas. The incharge was asked about the adolescents working there and then these adolescents were interviewed. A validated and structured questionnaire "The Prevalence and Associated Factors of Occupational Injury among Workers" was used¹². The questionnaire was in English and translated to Urdu at time of interviewing workers. Cronbach alpha score measured for different items of the questionnaire was found to be within a range of 0.7-0.8. Pilot testing of questionnaire was done using 5% of the anticipated sample size. Time required to complete the questionnaire was 15 min. Interview was done at the respective workplaces of these workers. Data was coded and confidentiality was maintained. SPSS version 21 was used for analysis of this data. Descriptive statistics like frequency, percentages and proportions were measured. Mean and standard deviation were used to calculate the values of work related factors and socio-demographic and behavioural factors of workers. Chi square test of significance was applied in order to see the relationship between injury prevalence and work related factors. A p -value ≤ 0.05 was taken as significant.

RESULTS

The total number of participants were 350. Table-I illustrates workers baseline characteristics. The mean age of the participants was

16.5 ± 1.7 years (range = 12-19 years). The maximum number of participants in the study were 17 years old which makes 25.1% of total sample and minimum number of participants were 12 years old which accounts for 2.9%. The majority of the respondents 255 (72.9%) were able

Table-I: Socio-demographic properties of participants (n=350).

Characteristics	Frequency (n=350)	Percentage
Age (Years)		
12	10	2.9
13	13	3.7
14	16	4.6
15	49	14
16	61	17.4
17	88	25.1
18	71	20.3
19	42	12
Educational Status		
Unable to read and write	6	1.7
Able to read and write	255	72.9
Primary	74	21.1
Middle	12	3.4
Matric	3	0.9
Employment Status		
Permanent	53	15.1
Contract	297	84.9
Monthly Salary		
<15000	267	76.3
>15000	83	23.7
Job Title		
Loader	113	32.3
Un-loader	78	22.3
Both	159	45.4
Work Experience		
>6 months - 5 years	269	76.9
6-9 years	81	23.1

to read and write but their education was less than primary. A quarter of the sample i.e., 74 (21.1%) were having primary qualification however only 3 (0.9%) were matric qualified workers. The majority of the participants 297 (84.9%) were having jobs on contractual basis

while only 53 (15%) workers were having permanent jobs.

Occupational injury prevalence in goods transport workers was found to be 71.1% while 101 workers (28.9%) did not suffer injury (figure).

Few work environment related factors were selected for bivariate analysis as shown in table-II which showed that working for extra hours was

Table-II: Bivariate analysis of work environment related factors.

Work environment related factors	Occupational injury		Adjusted odd's ratio (95% C.I.)	p-value
	Yes	No		
Extra Hour				
Yes	210	69	0.33 (0.25,0.43)	<0.001
No	39	32		
Working shift				
Day	68	22	0.32 (0.20,0.52)	0.284
Rotating/irregular	181	79		
Hazard perception				
Yes	158	71	0.52 (0.44,0.62)	0.27
No	91	31		
Risk taking tendencies				
Yes	182	73	0.52 (0.44,0.63)	0.77
No	67	29		
Decision making authority				
Yes	47	11	0.63 (0.56,0.72)	0.07
No	202	90		
Workplace supervision				
Yes	29	16	0.62 (0.54,0.69)	0.288
No	220	85		
Safety training				
Yes	73	33	0.60 (0.52,0.68)	0.536
No	176	68		

significantly associated with occupational injury while working shift, hazard perception, risk taking tendencies, decision making authority, workplace supervision and safety training were not significantly associated.

Among the behavioural factors selected for bivariate analysis as shown in table-III, job satisfaction, job stress and injury prevention showed significant association with occupational injury while cigarette smoking, PPE use, harassment/disagreement with co-workers and sleep

disturbance did not show any significant association.

DISCUSSION

The study showed higher prevalence of injuries in adolescents' goods transport workers. A study done by Runyan *et al* depicted that 15-45% of adolescent workers suffer work restriction or permanent disabilities which is harmful at such a younger age¹³. If we collect data of the last 50 years, decreased mortality in early age has been greater than decreased mortality patterns in

should be taken to provide education with some incentives to adolescent workers.

Status of employment of these workers were not satisfactory. It was because majority of the workers were having contractual jobs (daily/weekly/monthly basis) and after the contract, they would be jobless if they were not hired further. This higher rate of workers doing contractual jobs were also associated with higher injury prevalence i.e. 3/4th of the sample who were doing contractual jobs suffered injury. These results were in accordance with the study conducted by Probst *et al* which revealed that contingent workers reported more job insecurity than permanent workers. Contingent workers also exhibited lower levels of safety knowledge, compliance and safety participation¹⁶.

In the study, a very small proportion of workers were using PPE while a significant

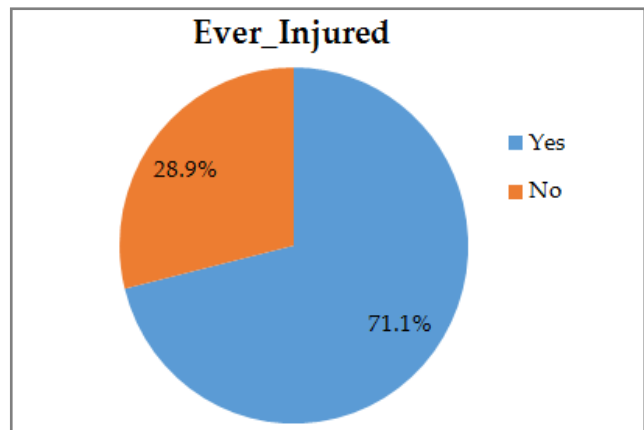
Table-III: Bivariate analysis of behavioural factors.

Behavioural factors	Occupational injury		Adjusted odd's ratio (95% C.I.)	p-value
	Yes	No		
Jobsatisfaction				
Yes	139	40	0.28 (0.20,0.41)	0.006
No	110	61		
Job stress				
Yes	207	65	0.57 (0.47,0.68)	<0.001
No	42	36		
Cigarette smoking				
Yes	94	31	0.61 (0.53,0.70)	0.72
No	195	70		
Injury prevention				
Yes	180	47	0.62 (0.53,0.72)	<0.001
No	69	54		
PPE Use				
Yes	13	5	0.63 (0.56,0.71)	0.917
No	236	96		
Harassment/disagreement				
Yes	62	22	0.62 (0.54,0.70)	0.31
No	167	79		
Sleep disturbance				
Yes	155	70	0.52 (0.44,0.62)	0.212
No	94	31		

adolescents¹⁴.

Majority of the participants were about the age of 17 years and most of them were although able to read and write to some extent but they were having education less than primary. A study revealed that half (50.4%) of adolescent workers attended secondary and higher education¹⁵. This difference may be due to higher education standards in foreign countries. Steps

Figure: Injury prevalence of workers.



proportion of workers were not using. Major reason of not using PPE was lack of availability. A study conducted by Kearney *et al* indicated that personal behaviour of using personal protective equipment was less¹⁷. There was no trend of using PPE among workers and their organizations where they were working. Many reasons could elaborate this e.g. the equipment needs expenditure to buy which organizations are not willing to do and also other reasons like some workers said that they did not use them because they were not comfortable with them while working or they felt that their work

performance decreased while using them. Many workers did not have any safety and health education about using PPE and they also did not know the importance of using them.

Out of many problems faced by these adolescent workers, one was that their working shifts were not regular. Instead, mostly shifts of workers were found to be rotating and irregular which imposed severe hazards on their health and sleeping patterns and when their health and sleep would be disturbed, the chances of getting injured would automatically be more because they would not be able to give their 100% at work and their focus would be compromised. CDC analysed data from NHIS (national health interview survey) conducted in 2010 showed that 30% of U.S. adolescent workers reported sleep deprivation i.e. <6 hours while recommended sleep is almost 8 hours. In the study, 64% respondents reported sleep deprivation which is more than double than U.S. analysis. The difference may be attributed to better working condition in U.S.¹⁸.

Besides this, there was also a problem of working more than normal working hours. Working hours has been described as 8 working hours a day or 48 hours/week. In the study, majority of the sample were working for more than 48 hours/week which was a major risk factor for injuries.

Majority of the workers were aware about what hazard was and how it could be a risk factor for their health. More than half of workers had hazard perception due to their occupational factor. A study done by Remoundou *et al* revealed that perceptions of risk were associated with adoption of protective behaviours¹⁹. Important point was that majority of the workers did not have decision making authority i.e. if some job was risky, they could not say no to that job and they had to do it at the expense of their health by taking risk, this was also important because majority of the workers said that they had the ability to avoid an accident while less than half sample said that they did not have the

ability to avoid an accident and when its written in their fate, it would happen for sure and no one could prevent this to happen.

Other factors related to injuries among these adolescents included lack of workplace supervision. Workplace supervision is necessary as these were young people, energy levels were high, risk taking tendencies were there, mostly had not any safety training before and also most of them were working on contractual jobs or on daily wages which means that there was no guarantee of jobs. A study conducted in North Carolina where 38% youth workers reported that supervisors had interest only in "doing the job quickly and cheaply"¹⁷. Sleep disturbance was also a contributing factor to injury and when workers were asked about causes of this, mostly said that they had to do work for more than 8 hours and also rotating and irregular shifts were the main causes of their changing sleep patterns. Another study conducted by Graves *et al* showed that decreased sleep at night was related with increased chances of occupational injury in adolescents²⁰.

Job stress and job satisfaction were two important factors for workers because if a worker was having stress at work and dis-satisfaction with their job, risks of getting injured become increased. In the study, most of the workers said they were having stress at their jobs. A study done by Chin-Shan *et al* to determine the effect of job stress also indicated that job stress negatively affects safety behaviour in terms of safety compliance²¹. A study done by Hoboubi *et al* also showed that work-related stress usually influences individual and organizational issues including behavioural, mental, as well as physical outcomes, performance, job satisfaction, and organizational commitment²². Less than half of workers were smokers. A study done by Kalaboka *et al* on tobacco smoking among adolescents showed that 15.6% of the adolescents were regular smokers, 7.7% occasional smokers, 17.9% experimental smokers and 4.8% ex-smokers²³. These results were in accordance with this study. This behaviour of adolescent workers

might be attributed to many factors including stress at work.

CONCLUSION

Injury prevalence among goods transport workers was high. The study revealed that the adolescent workers had high perception of hazards but they were also exposed to hazardous situations more frequently. Many factors related to higher injury frequency including working for extra - hours, irregular shifts, stress at work.

CONFLICT OF INTEREST

This study has no conflict of interest to be declared by any author.

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