

Occupational Health Hazards among Workers in Garment Factories in Bangladesh: A Cross-Sectional Study

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Abstract

Introduction: Garment workers constitute a lion share of the total labour force in Bangladesh, which bring most of the country's foreign currency. The competitiveness of the garment industry in the world market is seriously affected by the ill health of the workers, since ill health decreases the labour productivity to a great extent. The competitiveness of the garment industry in the world market is seriously affected by the ill health of the workers, since ill health decreases the labour productivity to a great extent. **Objective:** To find out the occupational health hazards among the workers, working in different garment factories in Bangladesh. **Materials and Methods:** This descriptive study was conducted from January 2013 to June 2013. Total sample was 145 and purposive sampling technique was followed for data collection, which was done by face to face interview by an interviewer. The data was collected on a structured questionnaire. Data was analyzed by computer by SPSS version 17.0. **Results:** Out of 145 respondents, majority (40%) were found in the age group of 16-20 years where mean age was 23.30 years with S.D. of ± 6.92 years. Among all the respondents, 89% were female. 45.52% were educated institutionally. 52.4% respondents were machine operator, but maximum (75%) were unskilled and 72% had length of job between 2-7 years. 91% respondents normally worked for 8-9 hours. 85.5% did 2-3 hours overtime. In the last one year 64.8% had no accident but minor cut, burn or injury was faced by 28.3%. Most of the (44%) respondents did not complain about physical environmental pollution but 33.8% complained of noise pollution. Majority (84.8%) told that doctor & nurse were constantly present in their factory and they were satisfied with their health facilities. Maximum (51%) respondents suffered from headache or shoulder pain. Majority did not mention any permanent illness. In this study the prevalence of occupational health hazards was 88.28%. A significant relationship was found between noise pollution and headache (P value 0.014). **Conclusion:** More emphasis should be given to the workers to improve their health condition and working environment, so that they can increase their efficiency which can ultimately increase the production and add GDP to the country. Government should provide more fund for research purposes in order to improve the condition of the working population and their working environment.

Keywords: Occupational Accidents, Bangladesh.

1. Introduction

Work related injuries are a major public health problem. These result in serious socio-economic consequence. By taking appropriate measures we can prevent it. It has been found that, more than 2 billion people suffer from work related injuries and two million die as a consequence of these injuries every year. The estimated economic cost by work related injuries and disease is equivalent to 4% of world's gross national product and much higher in developing countries. Unfortunately the working group comes mainly from these countries. Furthermore, most of the workers around the world do not have access to occupational health services. In developed countries, 20-50% of workplace have access to some kind of occupational health services. For the developing countries the percentage is only 5-10%.¹

In Bangladesh, according to 2010-11 survey of BGME, Export Promotion Bureau, Bangladesh Bank, compiled by BGMEA, the number of garment factories are 5150, total number of workers is 3.6 million, products of about US \$17914.46 million is exported from ready-made garment factories and total US \$22924.38 million worth of products are exported, 79.15% of RMG's is utilized for national export.²

Generally in Bangladesh the garment workers suffer from vertigo, headache, low backache, joint pain, respiratory distress, anaemia, female diseases, and dysentery. They also suffer from needle prick injury, cut injury and burn injury.³

The competitiveness of the garment industry in the world market is seriously affected by the ill health of the workers, since ill health decreases the labour productivity to a great extent. Most of the health problems that the garment workers suffer arose from physical environmental factors, including long working hours, absence of leave facilities, congested and overcrowded working conditions, absence of health facilities and safety measures, absence of staff amenities, lack of safe drinking water etc. (Livelihood pattern of rural women garment workers at Dhaka city)

Garment workers constitute a lion share of the total labour force in the country, which bring most of the country's foreign currency. But workers were exploited easily due to lack of technical knowledge and training. So, due to the importance of the occupational health this study was conducted to find out about the occupational health hazards among the workers in selected garments factories in Bangladesh.

2. Materials and Methods:

2.1. Study Area:

This cross sectional study was conducted among the garment workers of Tejkuni Para, Tejgaon and Dakshinkhan, Uttara in Dhaka city (The capital of Bangladesh) during the period from January 2013 to June 2013.

2.2. Sample Size:

Target population was workers of garment factories. Workers who were working in the factories, workers of both sexes, workers who were willing to take part in the study voluntarily and who were cooperative were included. Workers who were not willing to take part or non-cooperative were excluded. Purposive sampling technique was followed for data collection. Final Sample Size was 145.

2.3. Data Collection and Analysis:

Data was collected through face-to-face interviews of the respondents with the help of a pretested semi structured interview schedule. There were two parts; questions related to socio demographic characteristics and questions related to work related injuries. Written informed consent was taken from the respondents. Data was entered into Microsoft Office Excel® software in codes and analysis was done by SPSS software version 17.0®. Descriptive statistical analysis, which included frequency, mean and percentages, was used to characterize the data.

Approval for this study was obtained from Dhaka Medical College Ethics Committee. The authors followed the recommendations of the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Statement in writing this article.¹⁴

3. Results:

3.1. Socio-Demographic Characteristics of the Respondents:

Table 1 shows that among 145 respondents, the highest 58 (40.0%) respondents were found between the age group of 16-20 years and the least 2 (1.4%) were found between the age group of 41-45 years. Most of the respondents (89%) were female. Majority of the respondents (45.52%) received institutional educations. The highest (52.4%) of the respondents worked as machine operator, followed by (28.3%) worked as helper and the least 2 (1.4%) of the respondents worked as lineman.

3.2. Work related and accident characteristics of the Respondents:

Table 2 shows the highest number of respondents, 49.7% had length of job between 2-7 years. The least 1.4% respondents had job length ≥ 20 years. 91.0% respondents had 8-9 hours of duration of work per day. 85.5% respondents had duration of overwork of 2-3 hours per day. maximum (44.1%) respondents had no problem with their physical environment, while 33.8% complained of noise and 9.7% about inadequate light. Training on how to exit during emergency, extinguishing fire, about first aid and health education were done by 86.2%, 75.2% and 50.3% respondents respectively. Only 2.8% respondents did not have any facilities to prevent accident at the factory they worked. Maximum 74 (51%) respondents suffered from headache or shoulder pain in last one year. 30 (20.7%) respondents had been suffering from peptic ulcer disease. Permanent illness those of the respondents had been suffering from were depression (11%), rheumatism (6.2%), hypertension (4.8%) and

asthma (0.7%). 64.1% respondents had none of the above mentioned permanent illnesses.

3.3. Accidents faced by the respondents during last one year:

Figure 1 shows that majority 94 (64.8%) had no accident in last one year. 41 (28.3%) of the respondent had minor injury or cut or burn, 3 (2.1%) had major injury, 5 (3.4%) respondents had fainting and rest 2 (1.4%) respondents had other accidents.

3.4. Relationship among Headache with Physical Environments and Periodic Physical Checkup:

Table 3 shows Among 145 respondents, 51 percent respondents implied that they suffered from headache in the last one year. The χ^2 value implied that there exist a significant positive relationship between physical environment and headache. χ^2 test for the relationship between headache and noise pollution, inadequate ventilation and overall physical environment produced P values of 0.014, 0.106 and 0.058 respectively. Headache was found to be moderately associated with periodic health checkup. 44.3 % of the respondents who received periodic health checkup complained of headache while 57.3% of the respondents who didn't received periodic health checkup complained of headache. Here P value was found to be 0.116.

4. Discussion:

This descriptive cross sectional study was aimed at finding out the occupational health hazards among 145 garment workers of both sex and without any age limitation.

In our study, among 145 respondents, the highest 58 (40.0%) were found in the age group of 16-20 years and the least 2 (1.4%) were found in the age group of 41-45 years. The mean age of the respondents was 23.30 year with a S.D. of ± 6.92 ranging from 11-45 years. More or less similar picture was found in some other studies. Age profile by Jahan M¹⁰ in her study showed that two thirds of the workers belong to the age group of 15-22 years. In another study done by Parimalam P et. al (2007)¹⁴ found that relatively young age (28.2 ± 6.8 years) were employed in cutting & stitching section of garment factories. The overall mean age, 28.5 years, ranging from 14 to 69 years was found by Tadesse T, Kumie A (2007)¹ in a study conducted in Ethiopia.

In our study 9 (6.2%) respondents were found in the age group of 11-15 years. Under 16 years of age, these children should not be employed, according to "Employment of Children's Act 1938". Moreover they are inexperienced & prone to injury. Joshi et. al (2011)⁴ also found 24.7% children less than 16 years of age in their study conducted in ten small scale industries of Kathmandu Valley.

Some of the studies showed a higher age group of the worker. In Yashio city, Saitama, Japan, Nakata A. et. al. (2006)⁵ found that among 1298 workers the mean age was 46 year, age ranging from 16-78 years. They also found that a large number of worker 30.3% were in the age group 50-59 years. They showed that among 913 male respondents factors like, younger age group (30-39 years) had increased risk (27%) of occupational injury. The injury was enhanced by other factors also like current smoker 58.8%, insomnia symptoms 23% and presence of Some of the studies showed a higher age group of the worker.

In our study about 89% were female workers whereas, only 11% were male. Most of the studies in garment factories revealed the dominance of female workers. We may predict that the female workers are satisfied with fewer wages and they are less demanding but they work sincerely. Parimalan P et.al (2007)⁶ calculate the percentage of male and female workers in different sections of garment factories.

In cutting section it was almost equal but in stitching and finishing section female were more, about 67% and 57% respectively. A reverse ratio of sex was observed in the study done by Tadesse, T. & Kumie A (2007)¹. They found 754 (78.4%) males and 208 (22%) females with a sex ratio 3.7:1 respectively.

Our study revealed that majority of the respondents (45.52%) received institutional educations. but still a few number (15.2%) of respondents was illiterate. Highest 76 (52.4%) respondents worked as machine operator, and 41 (28.3%) worked as helper. Yet 109 (75%) of the respondents were unskilled and 36 (25%) were skilled. It seems that without or with some training the factory owners give permanent appointment to the worker as a machine operator. A little bit different picture was found in the study done by Jahan M⁷ where, 8 (26.6%) workers had no formal education but could sign their names, 6 (20%) had education at primary level and up to class eight each. The number of helpers was more 24 (80%) than the operators 6 (20%). A higher percentage was found in the study done by Tadesse T, Kumie A (2005)¹. About 161 (50.2%) and 295 (46%) respondents of two different industries had attended secondary school respectively.

Most of the workers had length of job for 2-7 years and their percentage was 72 (49.7%). 46 (31.7%) had length of job ≤ 1 year. Only 2 (1.4%) had length of job more than 20 years. Maximum numbers of workers 132 (91%) performed their duties for 8-9 hours. But sometimes 124 (85.5%) workers had to do overwork for 2-3 hours more. For this they get extra monetary benefit and tiffin. With a fewer wage and extended working hour the workers do not want to continue their job for a longer period. Akhter S. et. al. (2010)⁸ found significant relation for wage category and health problem, where P value was 0.35.

In our study 44.1% respondents had no problem with their physical environment. 33.8% complained of noise pollution. Overcrowding in workplace (13.8%), problem with safe drinking water (15.9%), inadequate light (9.7%) and inadequate ventilation (4.1%), dirty workplace (9%), no separate toilet facilities (5.5%) all these were environmental problems which may lead to different health problems of the workers.

On reviewing accidents faced by the respondents in the last one year we found that 94 (64.8%) did not face any accidents in the last one year. 41(28.3%) had minor injury/cut/burn. Chandra N, Parvez R (2011)¹³ did a comparative study on male and female workers between 30-35 years. They observed some environmental factors which caused occupational injury or, accident to the workers. Injury with machine needles was found to be more among the workers –male 54.5% and female 45.4%. They observed other accidents such as, injury by scissors, electric shock more among female (12.7%) by electric wires, superficial burn more among male (10.9%), too much noise, dust problem due to improper ventilation and problem due to vibration. Parimalam, P. et. al (2007)⁶ also reported some accidents along with other health problems. Of them a high percentage, 78% had needle piercing injury. It seems that they are not using protective measures and also the workers were not skilled enough to that particular work or may be mentally disturbed otherwise. Tadesse T et al. (2005)¹ revealed that out of 322 injured respondents within one year, 55 (17.1%) were hospitalized and 40% remained in hospital for more than 24 hours. Major injury was 3 (2.1%) in our study.

More or less similar environmental problems were found by Jahan M.¹⁰ in her study among 5 garment factories. Only one factory was overcrowded, congested, poorly ventilated and workers also complained noise pollution. All the factories were devoid of adequate toilets and safe drinking water. Joshi et al (2011)⁴ in their study found that major causes of occupational hazards were due to long working hour, unsafe working conditions, lack of supervision and training, use of old machinery and equipment, overcrowded production unit with very congested space, working with machines and equipments, use of electricity, use of chemicals in industries and dusty work sites.

Our study revealed that most of the respondents received proper health care facilities. This will certainly minimize health problems among the workers. Maximum workers (84.8%) got medical services by constant presence of doctor or, nurses. 78.6% workers received primary treatment and free medication. 48.3% had periodic health checkup, 44.1% had pre-placement examination. About 78.6% female workers had maternity leave and 64.1% female worker availed day care facilities. 80.7% workers were satisfied with canteen facilities which are essential to maintain sound health. 80% found to use cap, mask and apron to prevent dust borne diseases. Health insurance was provided to 13.1% respondents.

A dissimilar picture was found in two studies conducted by Akhter S. et al (2010)⁸ and Jahan M.¹⁰. About health facilities Akhter S et al⁸ found that 43% did not know about the medical facilities, 13% workers were not getting proper medical care, only 44% were getting first aid treatment. Female availed only 30 days maternity leave. Jahan M.⁷, in her study found that, the workers of 5 garment factories were deprived of treatment facilities. All the factories had first aid box to take care of minor accidents but regular doctor was absent. Child care facilities were also absent. Only one garment strictly enforced in wearing of masks and gloves but others did not provide masks to the workers. All the factories were devoid of canteen facilities.

Another study was conducted by Saleha I. T. N. and Hassim, I. N. (2006)⁹ among the industries in Negeri Sembilan, they took “Noise” as environmental problem and with this objective they assessed the respondents compliance to Hearing Conversation Programme (HCP). They found 461 (23.9%) had hearing impairment and 101 (5.2%) had standard threshold shift.

Different health problems in last one year were detected among the workers were headache or shoulder pain (51%), backache (24.83%), joint pain (8.28%), eye strain (7.61%) and other problems including general weakness, hearing problem, tuberculosis, skin problem, insomnia (8.28%). It is interesting that all of the respondents have suffered from some kind of health problems in last one year.

Similar findings were found in the study conducted by Akhter S. et al. (2010)¹², Parimalam P. et al (2007)⁶ Jahan M.⁷. Thomas S. (2011)¹¹, Chand A. (2006)¹⁰ and Joshi et. al. (2011)⁴ Parimalam P. Kamalamma N, Ganguli A. K. (2007)⁶, in their study showed that all the worker 59% were aware of the benefits of the personal protective measures. Yet in cutting section only 4% and in stitching & finishing section none of them use these protective measures for improper fitting and other causes.

We also searched for permanent illness among the respondents such as peptic ulcer 30 (20.7%), depressive illness 16 (11%) hypertension 7 (4.8%), rheumatism 9 (6.2%), asthma 1 (0.7%), heart disease 2 (1.4%). Maximum 93 (64.1%) respondents had none of the above mentioned permanent illness or, any other illness.

Thomas S (2011)¹¹ also found similar type of findings, where 12.66% had knee pain, 5.096% had stomach pain and 1.9% suffer from blood pressure, 30% were affected by asthma, 35% had stretch of job, 0.82% experienced mental tension. Chand A. (2006)¹² also found some other illness, like obesity, bladder and kidney problem and psychological stress.

Our study showed the prevalence of occupational health hazards both occupational accidents & health

problems about 128 (88.28%) in the previous 1 year period. Nakata A et al (2006)⁵ found only the prevalence of occupational injury among the workers was 35.6%. They statistically found that males (43%) had a higher injury rate than female (17%) All these permanent illness and health problems may develop due to chronic exposure of physical environmental factors. These illnesses can be screened by pre-placement health examination and minimized by periodic health checkup. Other health facilities must reduce the health problems and these illnesses. Health and safety training and regular supervision of workplace also improve the present condition of the workers and the workplace.

Although this study was carefully prepared, there were some unavoidable limitations. First of all, the study was conducted only on a small size of population. It could not represent the exact picture of common health hazards among the garment workers of Bangladesh. The study topic was quite sensitive as there was a tragic accident which took place recently among garment workers in Savar, Bangladesh.¹³ Time allocated for data collection and research procedure was not sufficient enough due to tight study schedule. Many respondents preferred not to disclose their actual working environment and health facilities. The report may suffer from selection bias as the study area was selected purposively. Finally, we have to mention that logistic support was limited.

The current study done in Dhaka city may not be the true picture of all garment factories in Bangladesh. Further studies in a much wider field are needed. Improvement in health status of garment workers is obvious. We want a prosperous Bangladesh by giving emphasis on this sector. Government must take necessary steps immediately.

5. Conclusion:

Our study reveals the occupational health hazards among workers of garment factories in Dhaka city. The study has conducted under such a circumstance when a great havoc took place in “Rana Plaza”, Savar¹³ near Dhaka city, where more than thousands of garment workers died and many of them were physically and mentally injured. As these garments are highest export earner of our country, this incidence must alert the garment owners, as well as, the government of Bangladesh about occupational safety-security, health and welfare of the workers. In our study, majority (40%) are found in the age group of 16-20 years and 89% of them are female. Though these young female workers have access to employment but their poor working environments and occupational hazards exposure make them vulnerable to certain risks. Study reveals in the last one year about 64.8% had no accident but minor cut, burn or injury were faced by 28.3%. Most (44%) of them did not complain about physical environmental pollution but 33.8% complained of noise pollution. Majority was satisfied with their health facilities, which is really encouraging. A significant relationship was found between noise pollution and headache (P value 0.014). Our study shows the prevalence of occupational health hazards about 88.28% in last year. Occupational health hazards may be due to chronic exposure of physical environmental factors. Pre-placement health examination, periodic health checkup, health education and safety training and regular supervision of workplace can improve the efficiency of the workers. Prosperity and productivity of the industry solely depend on the health condition of the workers. So, improvement in health status of garment workers is necessary for our national economic development.

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Table 1: Socio-Demographic Characteristics of the Respondents

Category	Subcategory	Result (%)
Sex	Male	129 (89%)
	Female	16 (11%)
Age Groups (in years)	11-15	9 (6.2%)
	16-20	58 (40%)
	21-25	35 (24.1%)
	26-30	24 (16.6%)
	31-35	10 (6.9%)
	36-40	7 (4.8%)
	41-45	2 (1.4%)
Literacy	Illiterate	22 (15.2%)
	Non- institutional	57 (38.28%)
Types of Job	Institutional	66(45.52%)
	Permanent	120 (83%)
	Temporary	25 (17%)
Types of Employment	Administrative	6 (4.1%)
	Supervisor	3 (2.1%)
	Lineman	2 (1.4%)
	Machine Operator	76 (52.4%)
	Helper	41 (28.3%)
	Others (quality control officer, iron man, folding man, security guard, checking numbers, calf making)	17 (11.7%)

Table 2: Work related and accident characteristics of the Respondents

Category	Subcategory	Result (%)	
Skill of the respondents	Skilled	36 (25%)	
	Unskilled	109 (75%)	
Length of Job (In years)	≤1	46 (31.7%)	
	2-7	72 (49.7%)	
	8-13	15 (10.3%)	
	14-19	10 (6.9%)	
	≥20	2 (1.4%)	
Duration of work per day (In hours)	≤5	3 (2.1%)	
	6-7	8 (5.5%)	
	8-9	132 (91%)	
	≥10	2 (1.4%)	
Duration of overwork per week (In Hours)	≤1	9 (6.2%)	
	2-3	124 (85.5%)	
	4-5	10 (6.9%)	
	≥6	2 (1.4%)	
Physical environment of the factory (percentage exceeds due to multiple response)	No Problem	64 (44.13%)	
	Dirty	13 (9%)	
	Inadequate light	14 (9.7%)	
	Noise Pollution	49 (33.8%)	
	Inadequate ventilation	6 (4.1%)	
	Overcrowding	20 (13.8%)	
	Problem with safe drinking water	23 (15.9%)	
	Separate toilet not present	8 (5.5%)	
	Facilities available to prevent accident (percentage exceeds due to multiple response)	Training on first aid and health education	73 (50.3%)
		Training on extinguishing fire	109 (75.2%)
Training how to exit during emergency		125 (86.2%)	
No facilities present		4 (2.8%)	
Health problems faced in last one year	Headache or shoulder pain	74 (51%)	
	Backache	36 (24.83%)	
	Joint pain	12 (8.28%)	
	Eye strain	11 (7.61%)	
	Others (General weakness, Hearing Problem, Tuberculosis, Skin Problem, Insomnia)	12 (8.28%)	
	Permanent illness of the respondents (percentage exceeds due to multiple response)	Hypertension	7 (4.8%)
Rheumatism		9 (6.2%)	
Depression		16 (11%)	
Asthma		1 (0.7%)	
Peptic ulcer		30 (20.7%)	
None		93 (64.1%)	

Table 3: Relationship among Headache with Physical Environments and Periodic Physical Checkup:

		Headache			χ^2	P Value
		Yes	No	Total		
Noise Pollution	Yes	32 (65.3%)	17 (34.7%)	49 (100%)	6.032	0.014
	No	42 (43.8%)	54 (56.2%)	96 (100%)		
	Total	74 (51%)	71 (49%)	145 (100%)		
Inadequate Ventilation	Yes	5 (83.3%)	1 (16.7%)	6 (100%)	2.613	0.106
	No	69 (49.1%)	70 (50.9%)	139 (100%)		
	Total	74 (51%)	71 (49%)	145 (100%)		
Overall Physical Environment	At least one complain	47 (58%)	34 (42%)	81 (100%)	3.588	0.058
	No complain	27 (42.2%)	37 (57.8%)	64 (100%)		
	Total	74 (51%)	71 (49%)	145 (100%)		
Periodic health check up	Yes	31 (44.3%)	39 (55.7%)	70 (100%)	2.467	0.116
	No	43 (57.3%)	32 (42.7%)	75 (100%)		
	Total	74 (51%)	71 (49%)	145 (100%)		

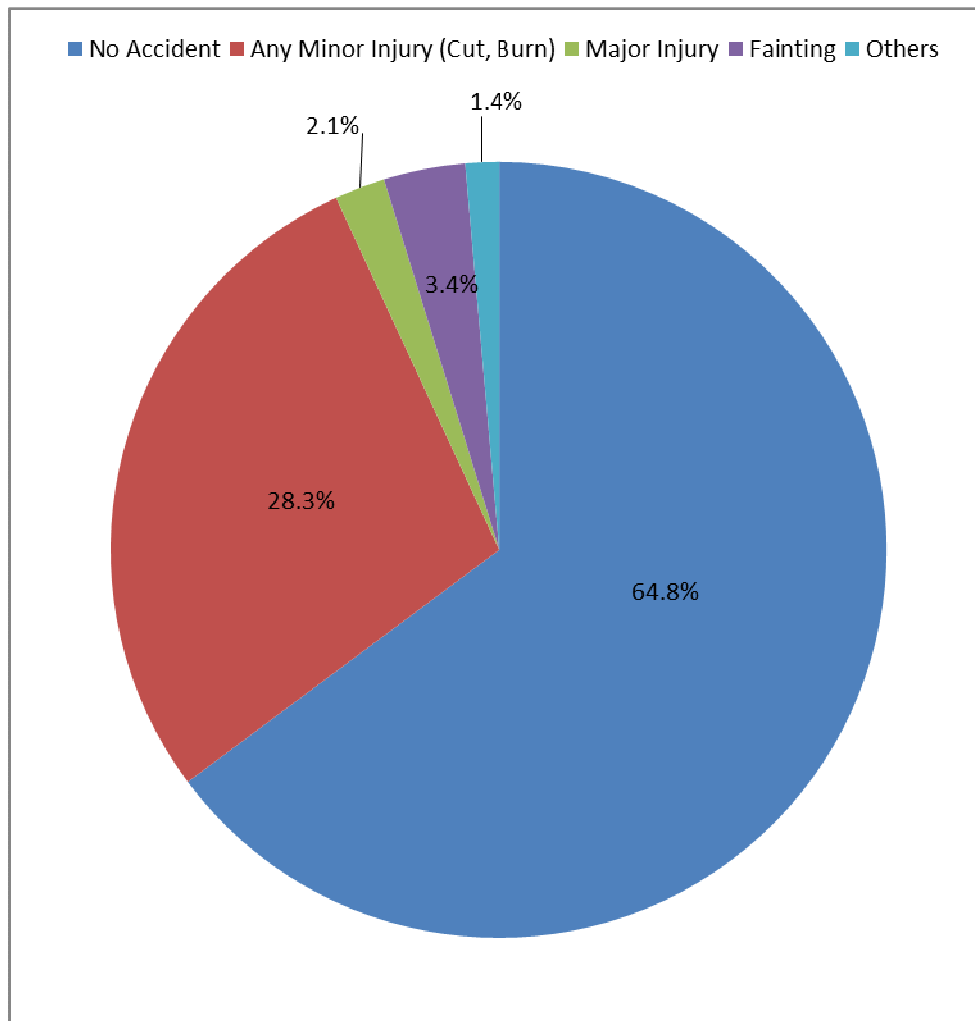


Figure 1: Accidents faced by the respondents during last one year

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