

FIRE HAZARD IN READYMADE GARMENT FACTORIES AND ITS IMPACTS ON WORKERS IN DHAKA METROPOLITAN AREA, BANGLADESH

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Abstract

Mirpur *Thana*, located in the northwestern part of Dhaka Metropolitan Area (DMA) is one of the most affected areas of fire in the RMG factories due to a large number of factories are operating in this area. Fire in the RMG sector has become a very common event in the recent years and causing colossal damage of lives and properties. The ultimate victims of fire in the factories are RMG workers because they become dead and injured and their livelihood held back. The present study based on the primary field investigation (including open ended questionnaire interview with a total of 70 workers), key informant interviews attempts to identify workers' opinions on fire hazard issues and to understand the consequences, of how these problems become linked with the workers' issue.

Key words: Fire hazard, Readymade garment factory, Dhaka Metropolitan Area, Garment workers, Weighted average index

Introduction

Fire is an important phenomenon from the very beginning of human civilization and the present world could not beg to be excused the essentiality of fire. Fire often becomes disastrous for human lives and habitat when it can spread accordingly if no effective measures are taken. Fire hazards have been frequently occurring events in the urban as well as in rural areas due to an increasing number of people getting involved in the economic, industrial and other activities (IRW 2012). Major fire hazards in the Readymade Garment (RMG) industries have occurred in different countries of the world and a large number of people have died inhumanly. This made the RMG workers more vulnerable as well as to become more practical to tackle the situations. The garment sector plays an important role in the economic development of Bangladesh. The sector accounts for 81 percent of total export earnings of the country. It employs directly around 3.6 million people, and 80 percent are women (BGMEA 2016). The garment sector currently consists of 5600 factories of various sizes, although around 3,500 are under operation (Muhammad 2011). The dirty secret of the steady growing RMG sector of Bangladesh is that the underpaid workers are treated as disposable objects (Claeson 2012). Many RMG factories fail to follow the most basic standards of health and safety issues of the workers. The rapid growth of the factories has led to the conversion of many buildings, built for other purposes, and ultimately used as garment factories. These are

often built-up without the required permits and standards from the concerned authorities. Many factories have constructed unauthorized floors or have increased the workforce and machinery beyond the safe capacity of the building. Many factories continue their operations at day and night in order to meet production targets. The establishment of factories or the conversions of residential or commercial buildings into garment factories has often been done as quickly and as cheaply as possible, which results in widespread safety problems including faulty electrical circuits, unsafe buildings, inadequate emergency exits and inadequate firefighting equipments (Clean Clothes Campaign 2012). RMG sector is facing lot of problems in the recent time in the entire world. At least 289 workers were trapped and died in a factory fire in Karachi, Pakistan on September 11, 2012 (ILO 2012). Local trade union leaders have reported that the factories do not follow the regulations and continue their operation without the required permission and registration. Most of the exit doors remain locked, reportedly to prevent theft. There were no fire exits and windows were barred. Surviving workers reported that stairs and exit ways were blocked with piles of finished merchandise (Claeson 2012). The recent major fire incident which occurred in Tazreen Fashions Ltd. could be recognized the largest fire tragedies in the history of RMG sector of Bangladesh. This factory located at Nischintopur in Ashulia, in the outskirts of DMA. The total number of deaths were 111 (ASK 2012) and more than 300 workers were injured (AMRC 2013). After the occurrence of major accidents in this sector, a lot of accidents are still happening in this sector of many countries of the world, e.g. China, India, Italy, Pakistan, Russia etc. The RMG workers, the driving force of economy in Bangladesh, are playing significant role in the growing production of this sector. Their safety issues are not considered always. Hence, they are exploited and deprived from the legitimate rights. Fires became a major problem in Bangladesh's garment industry for more than two decades and these caused the deaths and injuries of hundreds of workers over the years (Hossain 2014). They work hard for the development of factory and owners, but corporate greed often spoils their lives and hopes. They also work hard for the development of country's economy but they get very little in return. There are rules and regulations for the protection of the workers safety and rights but these are not implemented. The RMG workers lead a miserable life in the metropolitan areas with their limited earnings. Government, Bangladesh Garment Manufacturers and Exporters Association (BGMEA) and the international buyers are emphasizing on fire safety issue of this sector. They are adapting various measures to improve the fire safety practices and these have certainly reduced the fire incidents and losses significantly (Wadud *et al.* 2013).

Materials and Methods

The main objective of the study to assess the present condition of fire hazards in the RMG factories of DMA. The study analyses various factors such as not following rules and regulations, unplanned factory building, limited compliances, inadequate fire fighting equipments, negligence of the authority and workers' ignorance etc. which are

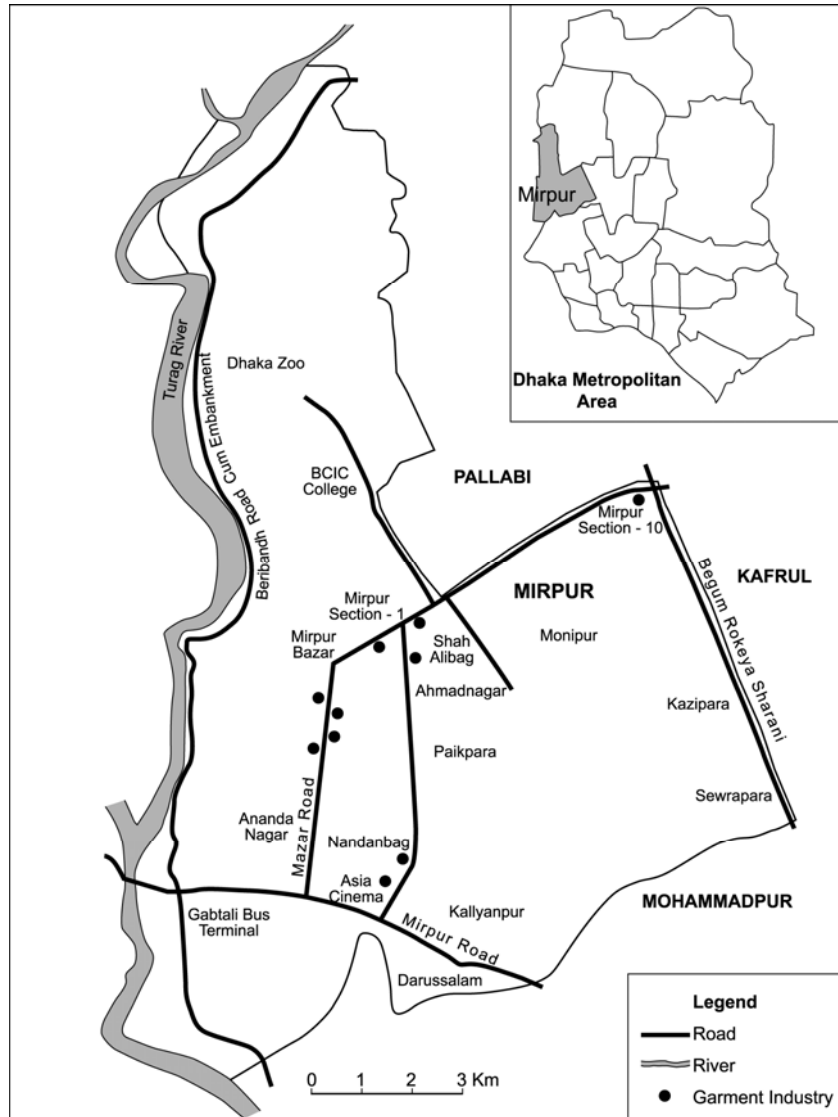
worsening the existing situation to make the RMG sector more vulnerable for fire hazard. Moreover, this study focuses on the impacts on the workers due to fires in the RMG sector. Most of the RMG industries are located in the urban area or vicinity to urban area in Bangladesh. The garment industries grew in DMA remarkably in the last few years. The present study area is Mirpur (Sub-district) *Thana* which is under DMA (Fig. 1). There are 120 factories which are located in Mirpur *Thana* (BBS 2010). There are few factories which are operating their production without permission of the concerned authority. Thus, the study area was selected based on the location of factories, presence of large number of factories and workers. In order to conduct the study, Mirpur *Thana* area was selected based on the following considerations:

- a) Significant numbers of garment factories are located and substantial numbers of workers are working in this area in compare to the other parts of the capital Dhaka.
- b) The factories of the study area are affected by fires in the last few years and the numbers of casualties are mentionable.
- c) This area is not a recognized industrial zone, but lot of industries established in a scattered way without considering the problems of the surrounding communities and environment.
- d) The area is termed as ‘Mixed Area’ of DMA, combining both the planned and informal types (Ahmed *et al.* 2014) and is considered mainly a residential area, and also simultaneously used for commercial and industrial purposes (Haq *et al.* 2012).

For this study, the required data and information were collected from both primary and secondary sources. About 51,232 workers are engaged in RMG sector in Mirpur *Thana* (BBS 2010). The primary data were gathered through a survey conducted on 70 RMG for the purposes of the study. Many of them are the victims of fires in the factory and few of them have observed the accident, from 10 factories of the study area (Fig. 1). Furthermore, 10 key informants (KIs) such as fire safety specialists, fire fighters, academicians, researchers, NGO personnel, workers’ leaders etc. were interviewed to get in depth information on various issues which are related with the fire in the RMG factories. Secondary sources of information were published and unpublished research works relevant to the theme of the study. These include books, journal articles, research reports, document of the government offices, NGO documents, conference proceedings, government laws and regulations, locally published news paper reports and maps etc.

Weighted Average Index (WAI) analysis combines choice weights and question weights to produce a single index for all responses. It has been used to analyze various types of social scaling including various steps for effective fire hazard control, fire impacts on the workers, workers’ opinion regarding the authority’s steps (Table 1). A five point scale used to determine agreements, perceptions of the quality or performance, degree of satisfaction, and level of development in terms of fire risk. The scale represents

very high, high, moderate, low and very low with respective weights such as 1.0, 0.8, 0.6, 0.4 and 0.2. Basically, it assesses the results from the question score analysis and computes a weighted average of those results using the question weights.



Source: Modified from Banglapedia 2012

Fig. 1: Location of surveyed garment factories in Mirpur thana.

Table 1. The WAI for Assessing the Level of Workers' Issues.

Workers' issues	Very low	Low	Moderate	High	Very high
Various steps for effective fire hazard control	0.0-0.20	0.21-0.40	0.41-0.60	0.61-0.80	0.81-1.0
Fire impacts on the workers	0.0-0.20	0.21-0.40	0.41-0.60	0.61-0.80	0.81-1.0
Workers' opinion regarding the authority's steps	0.0-0.20	0.21-0.40	0.41-0.60	0.61-0.80	0.81-1.0

In WAI the score of each item is calculated by the following formula:

$$WAI = \frac{fVL(W_1) + fL(W_2) + fM(W_3) + fH(W_4) + fVH(W_5)}{N}$$

Where,

WAI=Weighted Average Index $W_1=0.2$

fL = frequency of low $W_3=0.6$

fH= frequency of high $W_5=1.0$

N=total number of items

N

fVL= frequency of very low $W_2=0.4$

fM= frequency of moderate $W_4=0.8$

fVH= frequency of very high

Results and Discussion

Causes of Fires in the Garment Factory: Fires occurred in the garment factories due to various reasons. The highest percentage of workers mentioned the main cause of fire is electric short circuit, whereas the lowest percentage of respondents opined as the overheating. The figures were 100 percent and 8.57 percent respectively. Low quality electric apparatus and improper checking of electric apparatus are propagating the problems. Excessive heat in the boiler of the factory, explosion occurs and subsequently fires broke out in the factory and this was mentioned by 44.29 percent workers. Flammable materials are stored in the factory without considering the danger of fire and this reason was mentioned by 37.14 percent workers. Transformer explosion became one of the major causes of fire in the factory which was reported by 24.29 percent workers. Only 24.29 percent respondents demonstrated that canteen kitchen is a source of fire in factory (Table 2). The workers also reported other causes such as friction of machinery, smoking in the factory, sabotages, lack of caution, bad housekeeping etc. as the causes of fires in the factories.

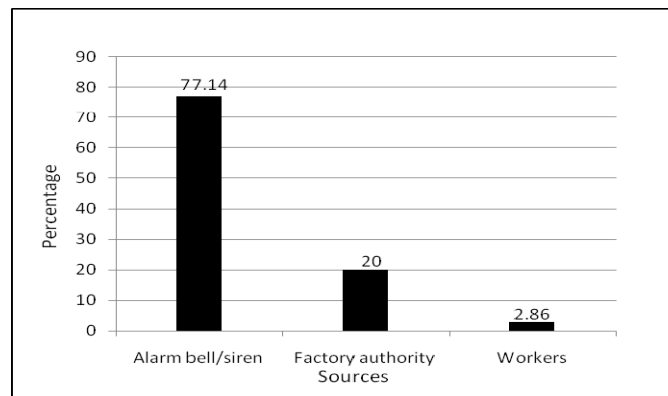
Table 2. Causes of fires in the garment factory.

Causes of fire	Frequency	% of respondents (N. 70)
Electric short circuit	70	100.0
Boiler explosion	31	44.29
Storage of flammable materials	26	37.14
Transformer explosion	20	28.57
Canteen kitchen	17	24.29
Overheating	8	8.57
Others	15	21.43
Total	187	

Source: Field Survey, 2014.

Note: Multiple choices have been considered.

Fire Alarm in the RMG Factories: A fire alarm is a message to the occupants in a factory to be alert about forthcoming fire which may cause enormous damages and casualties. Majority of the workers (77.14 percent) are informed about the fire of the factory through the fire alarm bell or siren (Fig. 2). Among the workers, 20% mentioned that they are informed by the factory management authority to leave the working place due to fire. Sometimes the workers are conveyed the alarm by their colleagues also but very few respondents (2.86 percent).



Source: Field Survey, 2014

Fig. 2. Fire Alarm Sources in the Surveyed Factories.

More than half of the workers (52.9 percent) knew how to operate the fire alarm in the factory and the exact location of fire alarm switches. On the other hand, many respondents (47.1 percent) reported that they do not know the exactly how to operate the switch and its specific location (Table 3). The workers mentioned that due to lack of proper orientation by the factory management many of them cannot operate the alarm system.

Table 3. Whether the Workers Know How to Operate the Fire Alarm.

Fire alarm operation	Frequency	Percentage
Know	37	52.9
Do not know	33	47.1
Total	70	100.0

Source: Field Survey, 2014

Majority of the respondents (92.9 percent) mentioned that the fire alarm systems of the factory are enough loud and clear at present (Table 4). The workers could hear fire alarm loudly and clearly from the entire factory. A very few respondents (4.3 percent) reported that they could hear the alarm from their working area but not clearly. A very few respondents claimed that the alarm systems are not loud and clear in the factory due to the problematic alarm systems.

Table 4. Pattern of Fire Alarm System in the Factory.

Fire alarm system	Frequency	Percentage
Loud and clear	65	92.9
Loud but not clear	3	4.3
Not loud nor clear	1	1.4
Do not know	1	1.4
Total	70	100.0

Source: Field Survey, 2014.

Participation of the Workers in Fire Drill: Fire drill is supposed to be held in a garment factory in quarterly basis i.e. once in every quarter of a year (GoB 2003), but it is not holding in many non-compliant factories at all. Around 43 percent workers illustrated that there is no fire drill in their factory. However, all the factory managers reported that they arrange fire drills regularly. Many respondents (48.5 percent) informed that they participated in the fire drill regularly in their respective factory. Few respondents (8.6 percent) mentioned that they did not participate in the fire drill for a single time (Table 5).

Table 5. Types of Participation of the Workers in Fire Drill.

Participation in fire drill	Frequency	Percentage
There is no fire drill	30	42.9
Participated regularly	34	48.5
Never participated in fire drill	6	8.6
Total	70	100.0

Source: Field Survey, 2014.

The workers (44.3 percent) have enough confidence to face the fire hazard in the factories but they seek more supports from the factory authorities. Among them, 35.7 percent reported that they have a little confidence and 8.6 percent have somewhat confidence to step forward when fire may erupt. Only 11.4 percent workers do not have any confidence at all to fight against the fire in the factories (Table 6).

Table 6. Workers' confidence level to fight against fire.

Level of confidence	Frequency	Percentage
Not confident at all	8	11.4
A little confident	25	35.7
Somewhat confident	6	8.6
Very confident	31	44.3
Total	70	100.0

Source: Field Survey, 2014

Evacuation of Workers in the RMG Factories: The evacuation time is important because it indicates how much a factory authority and the workers are prepared to leave a fire

affected site. Various factors are associated with the evacuation processes in a garment factory building, for instance number of workers, number of floors of the building, size and number of the staircases, occupants' density in the staircase, and evacuation from several floors simultaneously and counter flow of fire fighters (Kobes *et al.* 2010). It is assumed that the fire exits will be used when the doors are open and the distance of main gates is more than the distance of fire exits. A worker must be able to escape from the factory building to a safe place within 2.5 minutes. It takes around 30 second to burn and 90 seconds to full blaze of the flammable materials in the factory. One person can go away 18 meter in one minute when fire happens. The highest percentage of workers mentioned that it takes less than 5 minutes to evacuate the whole factory whereas the lowest percentage of workers opined that 10 to 14 minutes are required for evacuation. The figures were 52.8 percent and 12.9 percent successively (Table 7). However, 34.3 percent respondents told that it takes 5 to 9 minutes to reach a safe place during fire by all.

Table 7. Evacuation Time of the Factory.

Evacuation time	Frequency	Percentage
Less than 5 minutes	37	52.8
5 to 9 minutes	24	34.3
10 to 14 minutes	9	12.9
Total	70	100.0

Source: Field Survey, 2014.

All the workers are evacuated from the factory building following the warning. Most of the workers (94.3 percent) of the surveyed factories followed the fire alarm frequently and only 5.7 percent of the respondents reported that they are confused to follow the warning (Table 8). This evacuation drill usually arranged suddenly without informing the workers so that they can evacuate immediately. However, recent fires in this sector created more awareness among the workers to follow the fire warning properly.

Table 8. Whether the Workers Follow Fire Warning in the Factory.

Fire warning	Frequency	Percentage
Frequently	66	94.3
Irregularly	4	5.7
Total	70	100.0

Source: Field Survey, 2014.

Safe evacuations are the most important aspect of fire safety mechanism. It is important to escape from the engulfing fire and follow the evacuation systems. The majority respondents (61.43 percent) expressed their concerns regarding the number of exit gates because the numbers of evacuees are higher during the emergency period (Table 9). Congested escape routes obstruct the normal flow of evacuation during a fire

significantly which is told by 54.29 percent of workers. Many factories do not have emergency evacuation plan which was reported by 42.86 percent workers. Around 39 percent respondents mentioned about the negligence of the factory management during evacuation. Long travel distances often become responsible for more panic and risk of the casualties of the workers and it was reported by 25.71 percent of the respondents.

Table 9. Problems during the Evacuation.

Problems	Frequency	% of total respondents (N.70)
Inadequate exit gates	43	61.43
Congested escape routes	38	54.29
Do not have emergency evacuation plan	30	42.86
Do not follow emergency evacuation plan	27	38.57
Long traveling distance	18	25.71
Total	156	

Source: Field Survey, 2014.

Note: Multiple choices have been considered.

Majority of workers (97.1 percent) reported that they know the emergency exits while only 2.9 percent are not confirming about the emergency gates. The emergency exits are usually located behind the factory buildings. These gates remained locked in most of the time and often been clogged by the products of the factories.

Measures to Control Fire Hazard: The present study tried to explore the various measures by the workers for effective fire control in the factories. It is observed that 18.6 percent and 45.7 percent respondents reported on follow up fire alarm as very high and high level respectively (Table 10). In the case of always keep preparation, 17.1 percent and 28.6 percent of the respondents opined as very high and high successively. The WAI results of follow up fire alarm and always keep preparation are 0.52 and 0.56 accordingly which indicated the medium level of preparedness. In case of effective warning, 45.7 percent of the respondents mentioned as moderate of level preparedness and the WAI value in this regard is 0.54 i.e. the level of preparedness was moderate. Safe evacuation route is considered as low level of preparedness. Regular fire drill is taken as very high, high and moderate level of preparedness by 22.9 percent, 22.8 percent and 42.9 percent of the respondents respectively. The WAI result of fire drill was 0.60 i.e. the level of preparedness is moderate. In addition, 10 percent and 22.8 percent of the respondents mentioned awareness of the factory authority as very high and high level of measures accordingly and the WAI value was 0.64 that indicated high level of preparedness for fire control in the factories. The workers mentioned the awareness level of them as low and the WAI value was 0.29 only i.e. the degree of significance was low (Fig. 3).

Table 10. Workers' Steps for Effective Fire Hazard Control.

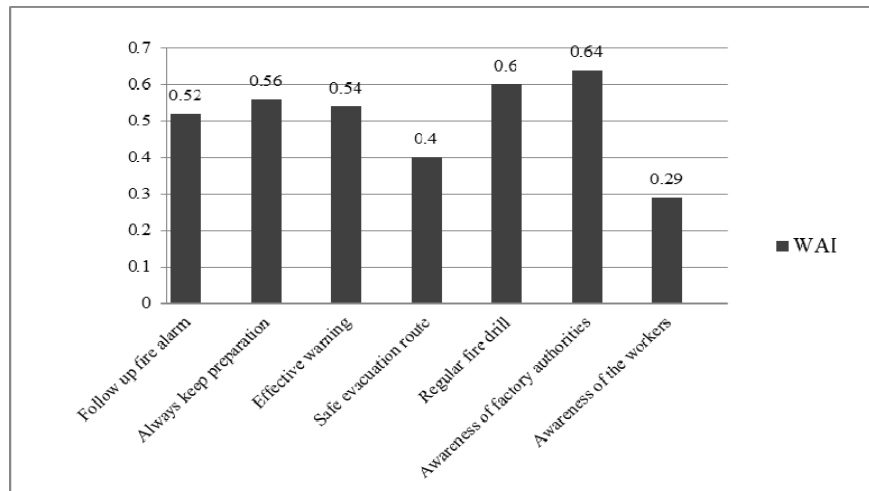
Preparedness	Degree					WAI N=70	Remark
	VH	H	M	L	VL		
Follow up fire alarm	13 (18.6)	32 (45.7)	25 (35.7)	0 (0.0)	0 (0.0)	0.52	M
Always keep preparation	12 (17.1)	20 (28.6)	16 (22.9)	18 (25.7)	4 (5.7)	0.56	M
Effective warning	10 (14.3)	15 (21.4)	32 (45.7)	10 (14.3)	3 (4.3)	0.54	M
Safe evacuation route	5 (7.1)	10 (14.3)	17 (24.3)	23 (32.9)	15 (21.4)	0.40	L
Regular fire drill	16 (22.9)	21 (30.0)	10 (14.3)	12 (17.1)	11 (15.7)	0.60	M
Awareness of factory authorities	7 (10.0)	16 (22.8)	30 (42.9)	15 (21.4)	2 (2.9)	0.64	H
Awareness of the workers	1 (1.4)	4 (5.7)	25 (35.7)	22 (31.4)	7 (10.0)	0.29	L

Source: Field Survey, 2014.

Note: VH=very high, H=high, M=moderate, L=low, VL=very low.

Note: The figure within the bracket indicates the percentage.

Note: WAI value VH=0.81-1.0, H=0.61-0.8, M=0.41-0.6, L=0.21-0.4, VL=0.0-0.2.



Source: Field Survey, 2014

Fig. 3. Degree of satisfaction of the workers associated with fire control.

However, workers emphasized on various measures which should be taken by the factory authority to control fire in the garment factories. Around 54 percent workers mentioned that strict enforcement of the rules and regulations was considered as very high. Moreover, 22.9 percent and 12.9 percent of the respondents reported that enforcement of rules and regulations as high and moderate respectively (Table 11). The WAI result is

0.83 which showed that the importance of enforcement of rules and regulations was very high. In the case of fire drill, 44.3 percent of the workers mentioned regular fire drill as very high. The WAI result indicated the regular fire drill measures as high also. The willingness of the factory authorities is considered as high also and the WAI value was 0.67.

Table 11. Measures of Factory Authorities to Control Fire.

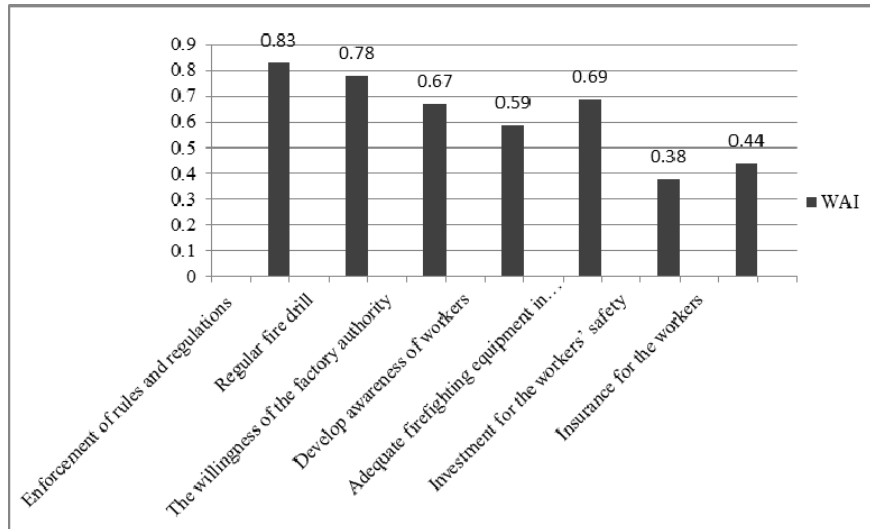
Measures	Degree					WAI N=70	Remark
	VH	H	M	L	VL		
Enforcement of rules and regulations	38 (54.3)	16 (22.9)	9 (12.9)	5 (7.1)	2 (2.9)	0.83	VH
Regular fire drill	31 (44.3)	20 (28.5)	5 (7.1)	12 (17.1)	2 (2.9)	0.78	H
The willingness of the factory authority	18 (25.7)	20 (28.6)	13 (18.6)	7 (10.0)	12 (17.1)	0.67	H
Develop awareness of workers	12 (17.1)	18 (25.7)	10 (17.3)	15 (21.4)	15 (21.4)	0.59	M
Adequate firefighting equipment in place	24 (34.3)	12 (17.1)	12 (17.1)	18 (25.7)	4 (5.7)	0.69	H
Investment for the workers' safety	8 (11.4)	0 (0.0)	7 (10.0)	17 (24.3)	38 (54.3)	0.38	L
Insurance for the workers	7 (10.0)	3 (4.3)	13 (18.6)	22 (31.4)	25 (35.7)	0.44	M

Source: Field Survey, 2014.

Note: VH=very high, H=high, M=moderate, L=low, VL=very low.

Note: The figure within the bracket indicates the percentage.

Note: WAI value VH=0.81-1.0, H=0.61-0.8, M=0.41-0.6, L=0.21-0.4, VL=0.0-0.2.



Source: Field Survey, 2014.

Fig. 4. Workers' opinions regarding fire control measures in the factories.

In case of awareness level of the workers, the WAI result was 0.59 which indicates as medium level measures. Furthermore, 34.3 percent of the workers reported the importance of adequate firefighting equipment and the WAI value was 0.69 which represented as high. Many of the workers (54.3 percent) focused less on the investment for the workers' safety and the WAI value was 0.38 which indicated as low level measures.

Therefore, the insurance for the workers was reported as very high by 10 percent workers, and the WAI value was 0.44 which was considered as the medium level measures. Group insurance scheme covers to claim up from 100,000 Tk. and 125,000 Tk. for death and permanent total disablement respectively (MoLE 2013). In this study, 54.3 percent workers reported that they are included in the insurance schemes, whereas 32.9 percent workers mentioned that they are not under the insurance schemes. On the other hand, 12.9 percent mentioned that they did not know about the persisting insurance schemes of the factory authority (Table 12). In fact, the compliant factories prefer to adapt insurance schemes for the workers while the non-compliant factories always try to avoid the issue.

Table 12. Whether the Workers Have Life Insurance.

Life insurance	Frequency	Percentage
Yes	38	54.2
No	23	32.9
Don't know	9	12.9
Total	70	100.0

Source: Field Survey, 2014.

The Ultimate Victims of Fire: Approximately 77 percent of the workers illustrated that the worst sufferers of factory fire were the workers and the staffs (Table 13). Among them, 18.57 percent mentioned that factory owners will be affected. The owners usually invest a huge amount of money for the establishment of the factory and take loan from the financial institutions. Hence, if any accident happened to the factory, the owners become loan defaulters. If they want to restore the factory and business, they have to take more loans from the financial institutions. Financial institutions often become the indirect victims of factory fires also.

Table 13. The Worst Sufferer of Fire Hazard.

Worst sufferer	Frequency	Percentage
Workers and staffs	54	77.14
Factory owners	13	18.57
Financial institutions	3	4.29
Total	70	100.0

Source: Field Survey, 2014.

The fire accidents in the RMG sector have various direct impacts on workers. The majority of the respondents mentioned income loss of the workers due to fire, and 11.4 percent, 28.6 percent and 22.9 percent of the respondents reported their income loss was very high, high and moderate level respectively. In case of income, the WAI result was 0.59 that proved the income loss of the respondents was moderate. In case of death of workers, 56.8 percent of the workers mentioned very high and 31.4 percent reported as high. The WAI result of death of the workers is 0.90 which indicated the significant impacts on the workers. In case of injuries of the workers 41.4 percent and 47.1 percent reported as very high and high successively and the WAI result was 0.85 which indicated very high impact on the workers also (Table 14).

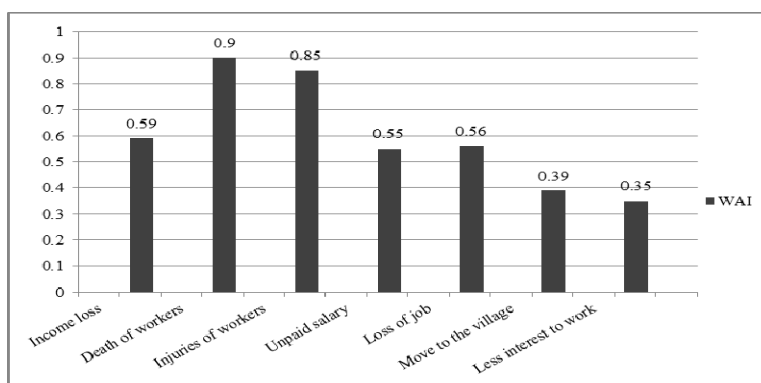
Table 14. Fire Impacts on the Workers.

Fire impacts on workers	Degree					WAI N=70	Remark
	VH	H	M	L	VL		
Income loss	8 (11.4)	20 (28.6)	16 (22.9)	13 (18.6)	13 (18.6)	0.59	M
Death of workers	41 (58.6)	22 (31.4)	7 (10.0)	0 (0.0)	0 (0.0)	0.90	VH
Injuries of workers	29 (41.4)	33 (47.1)	6 (8.6)	2 (2.9)	0 (0.0)	0.85	VH
Unpaid salary	12 (17.1)	10 (14.3)	9 (12.9)	27 (38.6)	12 (17.1)	0.55	M
Loss of job	14 (20.0)	11 (15.7)	10 (14.3)	18 (25.7)	17 (24.3)	0.56	M
Move to the village	0 (0.0)	3 (4.3)	15 (21.4)	29 (41.4)	23 (32.9)	0.39	L
Less interest to work	2 (2.9)	1 (1.4)	14 (20.0)	14 (20.0)	39 (55.7)	0.35	L

Source: Field Survey, 2014.

Note: VH=very high, H=high, M=moderate, L=low, VL=very low Note: The figure within the bracket indicates the percentage.

Note: WAI value VH=0.81-1.0, H=0.61-0.8, M=0.41-0.6, L=0.21-0.4, VL=0.0-0.2.



Source: Field Survey, 2014.

Fig. 5. Degree of satisfaction about fire impacts on workers.

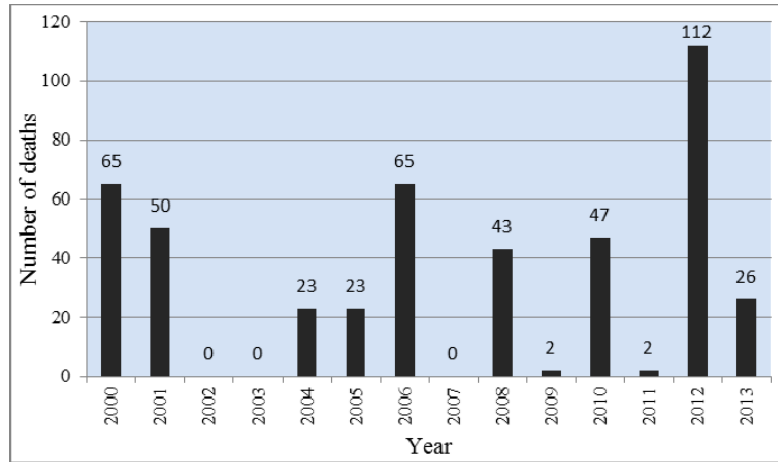
Furthermore, the WAI results of unpaid salary and loss of job indicated as 0.55 and 0.56 accordingly; these are medium level impacts on the workers. In addition, the WAI values regarding the move to the village and less interest to work were 0.39 and 0.35 respectively which indicated as low level impact on workers (Fig. 5). According to Bangladesh Fire Service and Civil Defense (BFSCD), around 1833 fire accidents occurred in the RMG industries between 2000 and 2013 in entire Bangladesh. The highest numbers of accidents occurred in 2007 and the numbers were 326 (Table 15). The total damages occurred due to the fire from 2000 to 2013 is around Tk. 540 crores (1 crore= Tk. 10 million) while the BFSCD authority saved about Tk. 18,264 crores worth property from fire over the period of time.

Table 15. Casualties and Damages in RMG sector of Bangladesh from 2000 to 2013.

Year	Number of accidents	Damages (in Tk.)*	Property saved (in Tk.)*	Number of injured	Number of deaths
2000	99	13,27,26,200	18,66,34,310	145	65
2001	67	15,16,35,000	18,40,01,898	176	50
2002	78	7,66,02,209	35,33,45,607	-	-
2003	102	4,81,99,017	21,89,66,167	-	-
2004	108	19,63,89,270	24,44,70,260	50	23
2005	76	88,51,09,150	118,09,62,396	130	23
2006	73	42,86,12,108	341,59,01,112	536	65
2007	326	4,16,33,389	58,36,94,181	-	-
2008	89	46,66,65,000	186,83,25,000	209	43
2009	293	99,11,40,867	377,99,60,890	150	02
2010	222	74,53,89,418	337,06,68,741	153	47
2011	175	16,69,85,732	121,08,37,202	64	02
2012	97	98,00,38,670	166,65,19,640	459	112
2013	28	9,0000000**	-	312	26
Total	1833	5401126030	182642870404	2384	458

Source: BFSCD, 2014 and compiled by author. * 1 US\$ = Tk. 80. ** by single accident.

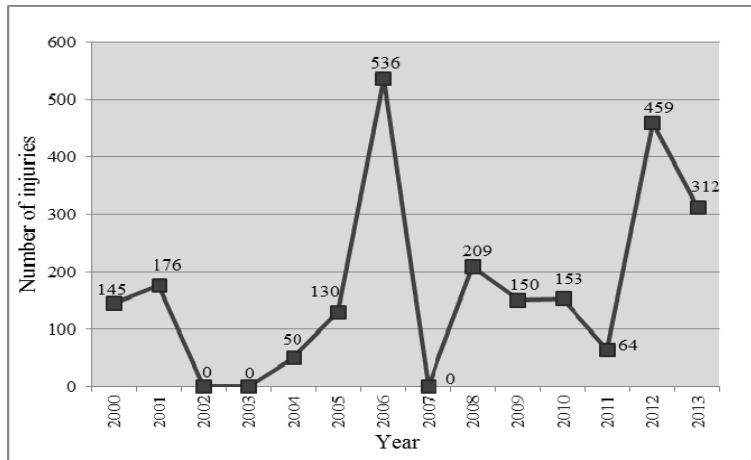
According to the BFSCD authority, nearly 150 workers died due to fire accidents in garment factories between 1990 and 2000. The death toll was much higher and may exceed 250 (Gain 2009). The numbers of injured and dead workers were 2384 (Fig. 6) and 458 (Fig. 7) successively from 2000 to 2013.



Source: BFSCD, 2013 and compiled by author

Fig. 6. Number of deaths due to fire in RMG factories from 2000 to 2013.

The casualties and damages also occurred in the RMG sector in the past when the numbers of factories were less. However, the accidents of this sector are recorded and reported more in the recent years.



Source: BFSCD, 2013 and compiled by author

Fig. 7. Number of injuries due to fire in RMG factories between 2000 and 2013.

The readymade garments industry acts as the backbone of our economy and as a catalyst for the development of our country (Hassan 2014). Bangladesh needs to work forward to be a country of compliant RMG factories specified in the laws without making any delay. Fires in the RMG sector causing colossal damages of lives and properties over the period of time. In the compliant factories, effective measures are taken over to control fire while

in the non-compliant factories the workers repercussions are more regarding the fire safety and other issues, and less measures are taken by the factory management. The majority of the workers have limited knowledge regarding the existing rules and regulations for fire hazard control in the factories. Hence, they should follow the fire alarm properly. In addition, Accord and Alliance, are legally binding among the different international organizations and local stakeholders, are also taking various steps to control fire in the factories. Thus, all the activities should be conducted in a coordinated way to ensure fire, building and electrical safety of the factories as well as for the well being of workers. There are adequate laws and codes on fire prevention and safety measures but the only problem is lack of proper implementation. Moreover, proper monitoring is a big challenge for this large number of factories. There are also rules and regulations in the factory level to control fire and a few are followed by the factory authorities and workers. The main focuses of existing regulations should be ensured on workers' safety and good working environment. The workers must be informed regarding the existing rules and regulations of fire in the factories and should be encouraged to go after. The existing rules and regulations regarding factory fire should be standard and necessary amendments are essential. Regular participation in fire drill and safe evacuation are prerequisite for the workers to escape from the fire. Furthermore, factory workers and management should be more aware to avoid the dreadful fires in the factories. Despite repeated demands from concerned groups, governments and BGMEA of past and present hardly had taken any practical actions to safe-guard the workers from the engulfing hazardous conditions. However, in the recent years the monitoring and inspections have been increased by the factory authorities. BGMEA is also carrying out different activities to mitigate fire in the factories. Therefore, it is the responsibility of all of us to maximize the safety of this industry which has given our economy a strong balance, ensured jobs for millions of people, especially for women, lifted them from the deep hole of chronic poverty and ensured them a dignified life.

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