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RESEARCH ARTICLE

A MANMADE URBAN DISASTER CAUSED A CHILD DEATH: EXPERIENCE AND LESSONS LEARNT FROM A TRAGIC CASE STUDY IN BANGLADESH

1,2,*Animesh Biswas, ¹Saidur Rahman Mashreky, ¹Abu Sayeed Md Abdullah and ²Koustuv Dalal

¹Centre for Injury Prevention and Research, Bangladesh (CIPRB)

²Centre for Injury Prevention and Safety Promotion, School of Health and Medical Sciences, Örebro University, Sweden

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ABSTRACT

Background: Fall injuries are a major cause of morbidity and mortality. In the Bangladesh capital, Dhaka, there are numerous manholes and ditches in the road, which are a very dangerous hazard for anyone who falls in them. In many cases, these dangers are not protected or covered over.

Objective: To explore the issue of urban falls, how the emergency rescue process is initiated and what the lessons learnt are from the tragic event involving a four year old boy who fell down an unprotected well.

Methods: We are describing a case report for a four year old boy who fell into a pipe measuring 17” in diameter and 300ft in depth, which was on the roadside for a deep well water pump. Content analysis was captured and analyzed from the local and international media sources.

Results: The Bangladesh Fire and Civil Defence Service responded and on the scene within 30 minutes after the disaster occurred. They tried to rescue the child in many ways, but sadly after 23 hours of trying, the child was finally rescued but had already died.

Conclusions: An unusual case of a fall related injury of a child who died due to drowning in this study. The experience and lessons learnt from the tragic event is useful for the development of strategy to treat emergency management in low income settings.

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INTRODUCTION

Injuries are a leading cause of death, which account for 10% of mortality globally (Mock *et al.* 2004). The World Health Organization (WHO) estimated that almost 90% of deaths are occurring due to injuries in low and middle income countries (Hofman *et al.*, 2005). The South East Asian region is the most vulnerable (Alonge and Hyder 2014). It is estimated unintentional injuries result in 279,000 deaths in children under 5 years of age worldwide each year (Jagnoor *et al.*, 2011). The study found that among injuries, childhood falls and their complications are one of the global burdens of disease. Falls constituted the 4th leading cause of death in children (Alonge and Hyder 2014 and Chowdhury *et al.*, 2013). An epidemiological study in Bangladesh showed falls as the 4th leading cause of morbidity after infancy (Chowdhury *et al.*, 2010). Injury due to drowning is the leading killer among children in Bangladesh, especially at the age group one to four years (Rahman *et al.*, 2008).

The Bangladesh health and injury survey conducted in 2003 showed that almost 17,000 children are die due to drowning in each year, and more than 70% of them are between 1–4 years old (Rahman *et al.*, 2005). The risks and hazards of falls and drowning occur everywhere in the Bangladesh (Chowdhury *et al.*, 2013, Rahman *et al.*, 2008, Rahman *et al.*, 2012). Injuries as a result of manmade disasters are also quite common in Bangladesh, especially in fire disasters and fall injuries etc. (Chowdhury *et al.*, 2008 and Mashreky *et al.*, 2010). The country experienced one of the worst manmade disasters due to a building collapse in 2013, which caused thousands of deaths (Biswas *et al.*, 2013). The country is experienced when facing natural disasters, like floods, which cause unintentional injuries in children including falls, cuts and near drowning (Biswas *et al.*, 2010). In this study, we have illustrated a case study of a child who fell into a manmade abundant well and drowned. We also explore the lessons learnt from this tragic event.

MATERIALS AND METHODS

We have reviewed two Bengali and three English language national newspapers after the disaster occurred.

*Corresponding author: Animesh Biswas,

¹Centre for Injury Prevention and Research, Bangladesh (CIPRB).

²Centre for Injury Prevention and Safety Promotion, School of Health and Medical Sciences, Örebro University, Sweden.

We also reviewed a national television live talk show and a video clip from Reuters after the disaster. The content analysis was done to review the case.

Details Case report

What happened?

On 25th December 2014, a four years old boy named Zihad was playing with other children at a playground at the railway colony near an abandoned water pump house by his resident area Sahajanpur, Dhaka. It was around 3pm in the afternoon when suddenly he fell into the 15" diameter well, which was kept open. There was another pipe of 3" diameter within the large diameter well. The child fell in between the two pipes. The depth of the well was about 250-300 feet. One of his playmates ran to an adult to inform them about the incident. Immediately knowing of the event, the person called the Fire Service and Civil Defence to report the incident. Three firefighting units rushed to the spot immediately and were at scene within 30 minutes of the incident.

How the rescue process initiated

The rescue team initially tried to rescue the child by putting a rope into the well with a sack tied to it, so that the child could hold onto the rope to be rescued. Several abortive attempts were made to pull out the child. After that, a crane was bought into place at around 11pm at night to pull out the inner 3" diameter pipe from the well. A volunteer attempted to climb down the well shaft at midnight but for safety reasons the fire service did not allow him into the well.

At 1am, a special camera was inserted into the well to see whether there was a child still inside. The video camera didn't show the child, rather lots of debris inside, which made the rescuers confused whether the child fell into the well or not. "We are yet to find the boy. But we are still trying and we will lower in the camera again" - Fire Service Director General Brig Gen Ali Ahmed Khan told reporters at 3am at the site. Later on, another camera from a non-government expert was also inserted into the well but was unable to catch any images of child.

Finally, after losing all hope of rescuing the child and with the added confusion raised by the rescuers, a decision was about to be made whether to close down of the operation without rescuing the child. At that time, a group of civil volunteers made efforts to build a tool which had a hook at the end of three steel plates named Cather. Finally the Cather was sent into the well, and the cage at last was able to pull out the dead body of the child 23 hours after the operation began.

Emergency management system

The fire service and civil Defence was the key player in the emergency management system. They started to introduce different procedures to rescue the child. However, it was a completely new experience for them, which made the task extremely difficult. The fire brigade was supported by the police and other law enforcement agencies and local people including volunteers.

A medical team was also there to provide immediate care if the child was rescued alive. The government higher officials including a minister, the director general of fire brigade etc. came to the spot to accelerate the rescue process.

The fate of the case

Four year old Zihad died after 23 hours of effort to save his life. The post mortem was performed at the Dhaka Medical College Hospital forensic department and the report mentioned that the child died within 1.5 hours of the incident taking place. He had all the symptoms of drowning, and also had a head injury; however, drowning was the main cause of death for the child. The report also stated that the depth of the well was around 250 feet.

Engagement of different agencies, media, civil community and crowds

As soon as the fire brigade team arrived on the scene, both electronic and printed media came to the spot and updated the news frequently. Some of the electronic media telecasted live pictures the rescue event. The journalists tried to discover updates and the progress of the rescue from the fire brigade staff, police, other law enforcement agencies, higher official from the government and bystanders. The media were placed as close to the rescue area as they could get to ensure the best images and video footage could be captured.

Thousands of people came to see what was going on and what the progress was. Some of them also showed their interest to get involved in the rescue process. Some of the volunteers were able to provide technical support in the generation of local technology to help rescue the child. Moreover, one of the volunteers who had experience of rescue techniques in disasters wanted to go inside the well. However, due to the huge crowd around the location, it was really difficult for the civil volunteers to get involved.

Experiences and lesson learnt

We found mixed experiences in this case. Tremendous efforts were made by the fire brigade staff and the involvement of volunteers was effective to develop a locally made rescue instrument to pull out the child. Electronic and printed media also worked intensively to collect the latest updates to share with the public. The law enforcement agencies like the police worked extensively to manage the situation and keep control. The government tried its best from the very beginning till end of the rescue, including a minister and higher officials responsible with the system visited the site and provided input. However, the study found that there was a certain deficit of effective coordination among the rescuers. There were large crowds at the scene making it difficult for the rescuers to concentrate. The media also tried to go as close as possible to capture the latest exclusive images and videos, and they tried to get interviews from the rescuers and civil people. A newspaper report stated that there was unavailability of modern rescue equipment and technologies which made the fire brigade rescue extremely difficult to manage. A central briefing cell was required; the people were getting information

from different news agencies which very much confused what was really going on. We have also found that the electronic channels telecasted the event live which made thousands of people traumatize seeing the video on air. Finally, the study also found that the country has thousands of such risks like this, which may cause injuries to children at any time.

DISCUSSION

After 23 hours of tremendous effort by the rescuers from fire brigade and civil volunteers, the child was rescued but had sadly died. The conventional process of rescue was unable to rescue the body of the child, so finally a locally invented device “catcher” was used instead to rescue the victim. This type of fall injury is not common in Bangladesh. A case of such mechanism of injury has not been found before. The country has a high rate of injury due to falls in children, but in those cases, mechanism of the fall resulted in different injury types (Chowdhury *et al.*, 2013, Chowdhury *et al.*, 2010). Bangladesh has already experienced a number of man-made disasters, where the injuries occurred in the majority of cases was due to building collapses or fire disasters (Mashreky *et al.*, 2010, Biswas *et al.*, 2013). In 2013, the country experienced its largest manmade disaster due to a garment building collapse, causing thousands of deaths and many more injuries (Biswas *et al.* 1930). The leading cause of death in under five year old children in Bangladesh is drowning (Rahman *et al.*, 2012 and Callaghan *et al.*, 2010).

However, in this case, the mechanism of injury was a fall and the cause of death was due to drowning. Inside the well there was water, which caused suffocation, followed by death (Daily Observer 2014b). A newspaper report revealed that the main rescuers were the fire fighters and they tried their best, using whatever technologies they had available. Since this disaster was the first of its type, it was a challenge and the team was not well equipped with modern rescue instruments. Furthermore, the spot was not isolated from the local crowds, civil people and other agencies, which made it extremely difficult to concentrate on the rescue. Experience from developed countries shows that if a disaster occurs you must immediately evacuate and restrict the area to isolate the rescue operation, and give scope to work intensively (Alagappan *et al.*, 1998, Adnet and Lapostolle 2004 and Ali *et al.*, 2006). In this case, we have found that people were accessing the area of the event. The civil volunteers who wanted to take part in the rescue process couldn't reach the place easily due to the huge gathering (Daily Observer 2014a). It was also observed that during the disaster there was a certain deficit of effective coordination among the different agencies and a central command unit with a mix of different experts was not in place. Moreover, a central transmission cell to provide updates to the news outlets and progress reports to the media and other agencies were absent. As a result, both electronic media and printed media worked in their own way and different types of information were reported, which confused people (Daily Star 2014). It was observed in many countries around the world that a central emergency management system is put in place during a disaster and a central media briefing unit opens to announce information about the disaster. Moreover, a telephone hotline opens 24 hours to respond (Tanigawa and Tanaka 2006).

It has also identified that the media telecasted live from the disaster scene, which made many people traumatize to see the tragic event, some of the media also showed the dead body of the child being pulled out from the well - there were no clothes on the body and the child was wearing only a half pant. The scene made many people psychologically ill. Post traumatic disorder was found to be a major cause of depression in different studies (Winston *et al.*, 2011). This study identified that the country requires an effective planning, coordination, preparation and central emergency management system to prevent such a disaster occurring. Furthermore, the devastating event also found that the country has many risks of fall injuries in the urban setting, as well as rural areas. A different study shows that downing's occurred in children within 20 meters from the household (Rahman *et al.*, 2008, Rahman *et al.*, 2012, Rahman *et al.*, 2006). One more study in France described a near drowning after a fall from bridge into the river which made cardiac arrest (Heming *et al.*, 2012). Another study mentioned a case study of a child who survived after fall injury from 10th storied building and rescued alive (Yang *et al.*, 2013). While in our study, although a fall injury occurred, the child died due to drowning in the 250 feet depth well. It also observed that the injury event occurred around 3pm. Different studies revealed that drowning and injuries occurred in children mostly in the day time when the mother or guardian is busy with household activities between morning until 3pm (Rahman *et al.*, 2008, Rahman *et al.*, 2012). As identified in different studies, a male child is more prone to injuries, including drowning (Alonge and Hyder 2014, Rahman *et al.* 2008), in our study this is also shown with Zihad, a four year old boy.

Conclusion

The study explored an unusual case of a fall related injury of a child who died due to drowning. The fire bridge put in an extreme effort to rescue the child following a 23 hour operation. The study found that children in Bangladesh have a high risk of injuries due to hazards all around them. The experience and lessons learnt from the tragic event is an indication for the development of effective planning process, including the establishment of a national emergency management and coordination system in low income settings like Bangladesh. The policy makers, researchers, development partners and different stakeholders can use the findings to raise awareness among people about injury risks and hazards, child safety and the development of safe communities.

Conflict of Interest

The authors have no competing interests to declare.

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