

Management of The Dead and Missing People in the Easter Bombings in Colombo, Sri Lanka

Jayanie Weeratna, Ajith Tennakoon

Institute of Forensic Medicine and Toxicology, Colombo 10, Sri Lanka.

Received

28th December 2020

Received in revised form

13th February 2021

Accepted

17th February 2021

Corresponding author:

Ajith Tennakoon,

Institute of Forensic Medicine and
Toxicology,

111, Francis Road

Colombo 10,

Sri Lanka

Email: ajith.tennakoon60@gmail.com

ABSTRACT

Identification of the victims is considered as one of the most important initial steps in the management of a mass disaster. Comparison of ante-mortem and post-mortem fingerprints (ridgeology), dental data and DNA profiles have been recognized as primary identification methods for Disaster Victim Identification (DVI). However, facial recognition and personal belongings are the widely used tools of identification in large disasters. A series of bombings hit Sri Lanka on the morning of 21st of April 2019. In the city of Colombo around 131 people died. Most of the identifications were achieved through visual recognition, with a minor percentage by odontology, genetics and fingerprints. The procedure adopted in the response to the disaster is described in this paper highlighting the importance of advanced preparedness, inter-institutional cooperation, the empathetic approach in caring for the grieving families and the procedure to adopt in visual recognition in DVI.

KEYWORDS: Identification, bomb attack, DVI, unidentified remains, body parts, Sri Lanka.

INTRODUCTION

Man-made disasters resulting in mass fatalities is always a crime which needs proper death investigation. A proper death investigation is important for the administration of justice, as well as for the health and safety of the community [1,2].

Management of the dead in a man-made disaster includes identification of the dead and collection of forensic evidence for crime investigation which needs to be done while maintaining the due respect and dignity of the deceased. Recovering the remains from the scene, temporary storing of the remains, ante-mortem data collection, post-mortem examination, reconciliation of the information, identification, collection of post-mortem crime evidence, proper handing over of the human remains, and final disposition of unidentifiable human remains are all part of the proper management of the dead [3].

Despite all efforts, in most mass fatality incidents a percentage of victims and human remains remain as “unidentified” particularly when the disaster

results in severe fragmentation of the remains [4]. To minimize this percentage, an appropriate process to deal with missing persons and to identify the remains should be set in place.

CASE PRESENTATION

On 21st of April 2019 which was the Easter Sunday, three churches in Sri Lanka and three luxury hotels in the commercial capital Colombo were targeted in a series of coordinated terrorist suicide bombings wherein one hotel two bombs were exploded. Later in the day, another suicide bomb went off in a guest house in a suburb of Colombo and in a private house owned by one of the suspected suicide bombers who had already exploded himself in a hotel totalling nine explosions within one day (Figure 1). The total number of fatalities of this incident was 276 as of 21st December 2019.

The fatalities that resulted due to the explosion within the city limits of Colombo were managed at the Institute of Forensic Medicine and Toxicology (IFMT) which is the premier Medico-Legal Centre in the



country. This paper discusses the management procedure adopted at the IFMT.

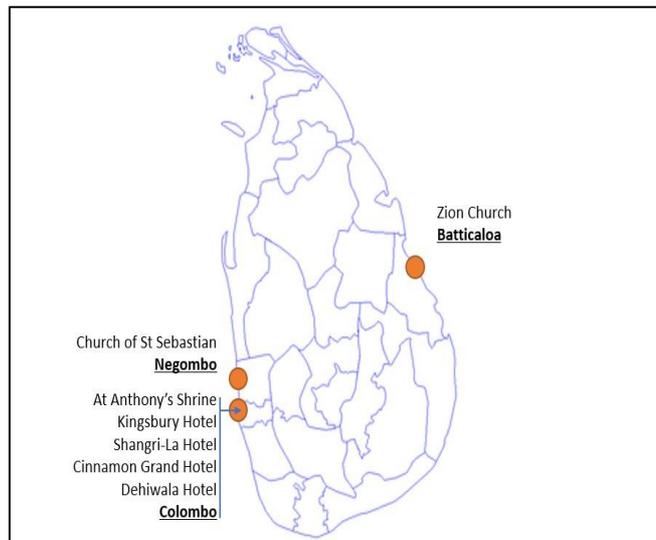


Figure 1 Cities attacked on 21st April 2009 in Sri Lanka.

Manpower

A-team of 10 consultant judicial medical officers (JMO) with two forensic odontologists and a team of dental surgeons and dental surgery assistants, mortuary

technicians, a team of photographers led by a forensic photographer, postgraduate trainees in Forensic Medicine, medical laboratory technicians, first responders (from the Special Task Force of the Sri Lanka Police and Sri Lanka Red Cross Society), and clerical staff of the IFMT were involved in the onsite management. The Fingerprint Bureau of the Criminal Records Division of the Sri Lanka Police assisted in obtaining and analyzing the fingerprints. The psychosocial support group was a new addition to the regular teams at the IFMT. The team comprised of Psychiatrists and psychotherapists. A team of magistrates was available at the IFMT during the entire process to provide necessary legal clearance and clarifications when necessary. From the 2nd day onwards officers of the Registrar General’s Department were available at the IFMT to issue death certificate without delay. The security of the premises and crowd controlling responsibility was handled by the Sri Lanka Police while engaging in the criminal investigation process. The entire process of managing the dead was coordinated and supervised by the Chief Judicial Medical Officer of the IFMT (Figure 2).

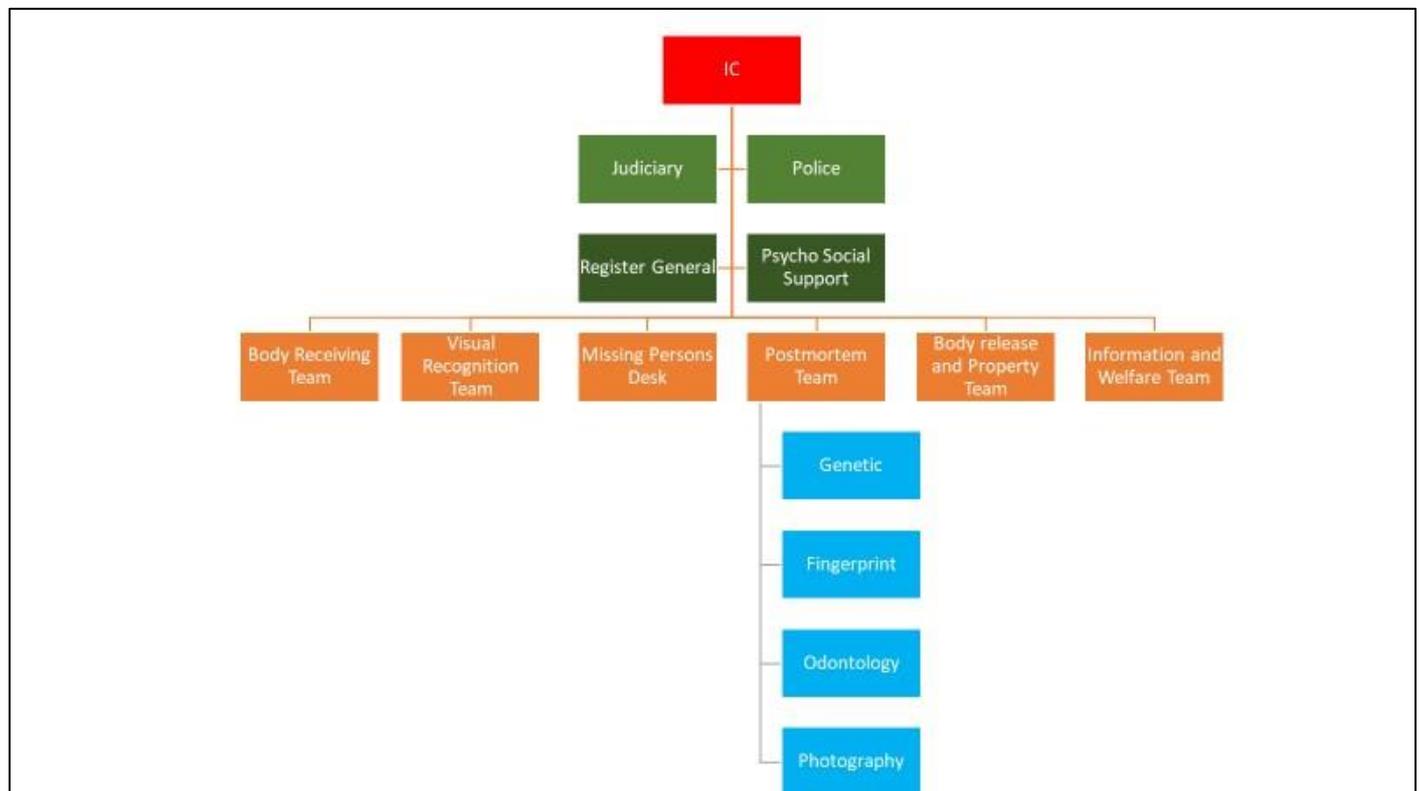


Figure 2 Command structure at IFMT

Recovery of the Remains

The recovery of human remains was done by the police personnel in the presence of JMOs only at one site i.e. St Anthony's Shrine. The victims from the hotels were rushed to the nearby hospitals initially and on confirming the death they were brought to the IFMT. At the scene where the remains were collected by the forensic team, the bodies and body parts were tagged with a unique reference number, photographed and placed in body bags before transporting to the IFMT. Recovery of remains from the different disaster scenes was completed within 24hrs of the disaster. However, small fragments of remains were collected during subsequent visits by the investigating officers and the last set of remains were brought to IFMT after 2 days of the disaster.

Receiving Bodies at the IFMT

At the IFMT receiving point, all the bodies and body parts were renumbered, placed in body bags and registered before they were admitted to the IFMT. Recording the place of recovery was important as bodies were brought from different disaster sites as well as from various hospitals which included the Colombo National Hospital and nearby private hospitals. This helped in collecting the personal belongings which were removed during the initial injury management of these victims.

On completion of the registration process, the bodies were re-photographed after the initial cleaning of the face giving due consideration to the personal effects which could assist to establish the identity of the victims. Afterwards, the bodies were placed in the cold storage facility at the IFMT to prevent further disfiguration. As the storage facility at the IFMT was limited to 50 bodies, an extra refrigerated container was hired and placed outside the premises (Figure 3).



Figure 3 Additional cold storage facility at the IFMT

Identification and Release of Remains

According to the Sri Lankan regulations, an autopsy cannot be performed on a dead body until the identity has been established. Visual recognition by the next of kin is considered as valid identification in this process. Therefore, the initial photographs that were taken at the time of admission of the bodies to the IFMT were used to establish the provisional identification of the victims. The photographs were displayed on a digital screen and the next of kin were requested to identify their loved ones. As photographs were viewed by many, all possible measures were taken to display only the undamaged faces of the victims. When the faces were damaged, the clothing and the personal belongings were used as identifiers. Once identification has been established on facial features or personal belongings, the bodies were shown to the family members to reconfirm the identity. A special body viewing area was arranged for this purpose and only the family members could participate. The bodies were cleaned, and damaged areas were covered before they were shown to the family members. The identification process commenced around 3.00 pm on the same day of the disaster and the last visual identification was done on 30/04/2019. All the bodies that could have been identified on visual recognition were identified within 10 days. The delay was due to the late arrival of relatives.

The visual recognition was done in the presence of a magistrate and a police officer. The family members were accompanied by a team member from the psychosocial support group who provided necessary counselling during this difficult period.

Following visual recognition, an autopsy including external and internal examination was conducted. The external examination included an examination of clothing, personal belongings, and a detailed description of external injuries. The dissection of the internal examination was done to confirm the cause of death and to collect shrapnel & biological samples for investigative purposes [5]. The IFMT mortuary is equipped with 5 autopsy tables. Once the autopsy was completed the remains were handed over to the families. Additional psycho-social support was provided to the families during handing over process. The families were able to obtain the death certificates as soon as the autopsy was completed.

The identity of the non-national victims was established using one of the primary identifiers i.e. fingerprints, DNA analysis or dental data before the post-mortem examination. Fingerprints from all the bodies that were thought to be of non-nationals were obtained overnight by the fingerprint experts of the Fingerprint Bureau. Blood on FTA (Flinders Technology Association) cards and muscle were the preferred choice of samples for DNA fingerprinting. All ante-mortem records were provided by the relevant embassies through the INTERPOL office in Colombo. Most of the ante-mortem dental records provided had sufficient information to make a positive identification. In 2 cases, investigators had to contact the treating dentist to obtain further information. The identity of the bodies of non-nationals that were released on visual recognition in the early stages of the identification process had to be reconfirmed using one of the primary identifiers subsequently, to be able to repatriate to the home country.

The remains of the non-national victims were subjected to a full post-mortem examination on the 2nd and 3rd days of the Disaster Victim Identification (DVI) operation. These post-mortem examinations were done by a team. Each team was comprised of a consultant JMO, a postgraduate trainee, a photographer and 2 mortuary technicians. INTERPOL pink forms as well as the locally used medico-legal forms were completed during post-mortem examination. Most of the embassies required the INTERPOL pink forms with the death certificate to facilitate the repatriation of the remains. Completion of the locally used forms was necessary for the judicial proceedings.

After completing the autopsies of the identified bodies, the examination of fragmented remains commenced. This process started one week after the disaster. A blanket order was issued by the magistrate to conduct the examination of the fragmented remains as they were not possible to identify individually. The fragmented remains were radiographed, photographed and described in detail using sketches before samples were taken for DNA fingerprinting. The teeth, muscle, nail and bone that were taken during the examination were analyzed at the genetic laboratory of the Government Analyst's Department to establish the identity through DNA fingerprinting.

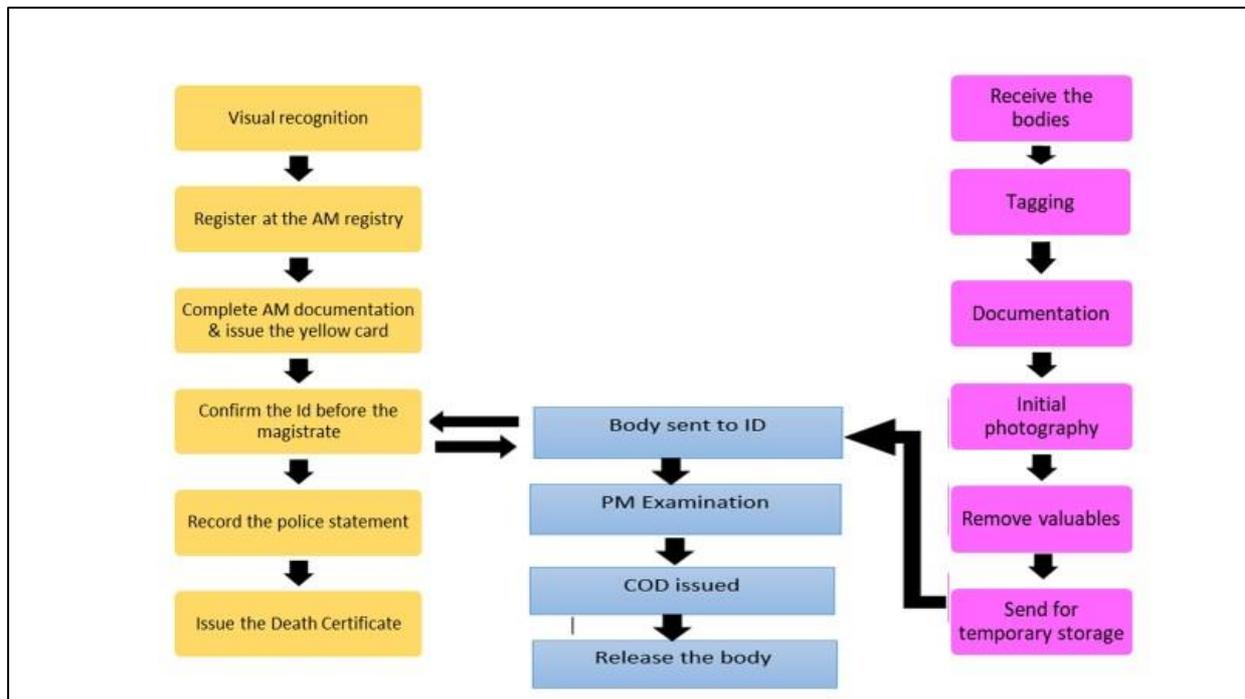


Figure 4 The DVI workflow

Missing Persons

The number of persons who were reported as "missing" was considerably low. Nevertheless, an information collection desk was opened to collect information on the missing persons on day 02 of the DVI operation. First degree relatives of the missing persons were referred to the Government Analyst's Department to provide samples for DNA profiling to match with DNA profiles obtained from the samples of the unidentified body parts.

Security, Welfare and Data Management

District Health Information System (DHIS2) platform was used to record and manage the data collected during the entire operation. Providing temporary shelter huts with seating facilities for relatives and public, refreshments for relatives and volunteers working in the mortuary were looked after by the government, non-governmental agents and support groups. Security of the IFMT was at the highest level and was provided by the area Police.

Outcome

Of the 42 non-national victims, 20 required identification through primary modes which resulted in

the identification of 6 by DNA analysis, 9 by odontology and 5 by fingerprints. Body parts of the 5 suspected suicide bombers and the 3 children who died with their mother (wife of a suspected suicide bomber) who exploded herself at the time the police entered the residence were also identified by DNA profiling. Following the DNA analysis of the body parts 7 local victims were identified (Figure 5 and Table 1).

Body parts brought separately presented a high complexity regarding identification. The final goal of the identification process was to identify all deceased individuals. Therefore, DNA profiles of the fragmented remains were compared against the profiles of the 1st-degree relatives of the missing persons. Initially, there were 10 missing persons of which four were found alive and the other six were later identified by matching the DNA profiles with those of the body parts.

All personal belongings collected from the bodies were also handed over to the families after confirming the relationship between the deceased and the receiving person. This was done in the presence of the investigating police officer at the time of handing over the remains. Three months were taken to complete the identification process.

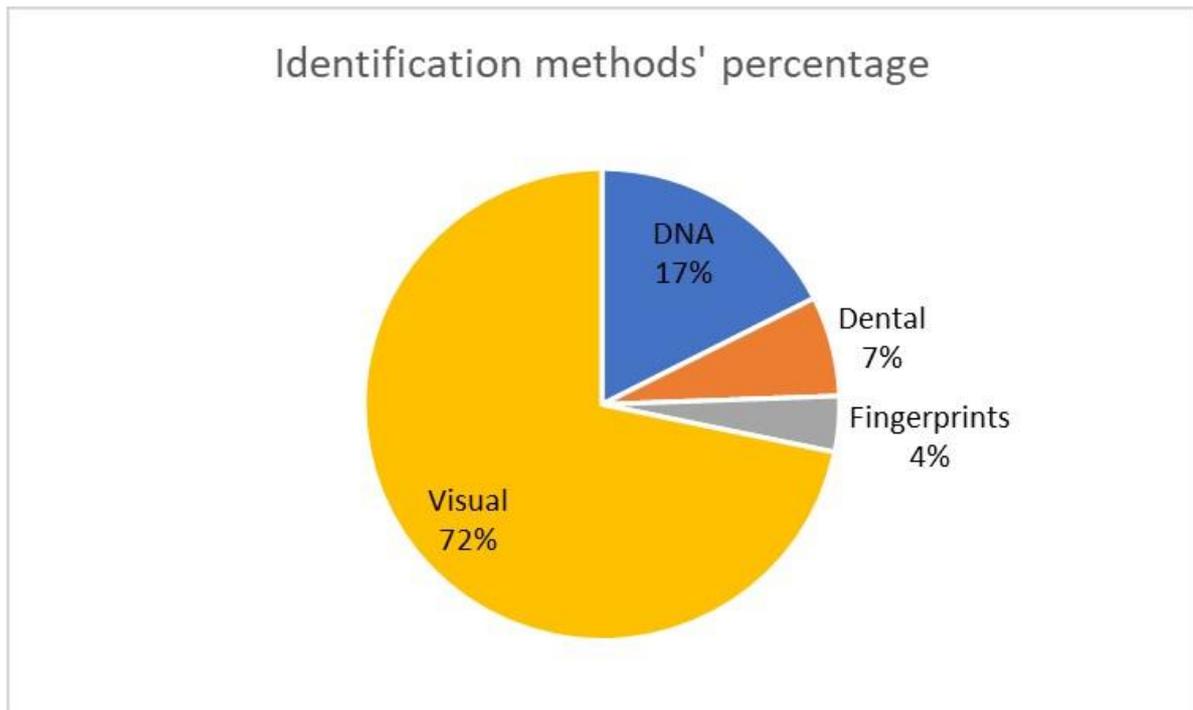


Figure 5 Percentage of victims identified by different methods

Table 1 Distribution of methods of identification of national and non-national victims in Easter Sunday Bombings in Sri Lanka

Method of Identification	National	Non-nationals	Total
Visual	73	22 (Indian, Portugal, China, Turkey, USA, Bangladesh, Saudi Arabia,)	95
DNA	16	6 (Denmark Swiss, China)	22
Fingerprints		5 (China, UK, Spain)	5
Dental		9 (UK, USA, Netherland, Swiss)	9
Total	89	42	131



Figure 6 Debriefing session

Debriefing

A debriefing session (Figure 6) was conducted after 3 weeks of completion of the main process which involved medical as well as non-medical members who worked during the DVI operation. This was followed by a psychological support session for all the staff members at the IFMT.

DISCUSSION

In the aftermath of any disaster, identification of the victims is an important and urgent task that needs to be carried out by the authorities [6]. Multi-cultural and multi-religious beliefs and traditions in Sri Lanka require releasing human remains to the family as quickly as possible for the last rituals to be performed, even in crimes.

Identification of the victims is considered as one of the most important initial steps in the management of a mass disaster. Comparison of ante-mortem and post-mortem fingerprints (ridgeology), dental data and DNA profiles have been recognized as primary identification methods for DVI. Nevertheless, facial features and personal belongings are the widely used tools of identification in DVI even though it is being widely reported that such methods could lead to incorrect identification [7].

Per the United Nations Office on Drugs and Crime (UNODC) Forensic autopsy Manual for forensic pathologists [8], visual identification could be performed in the cases when

- a) the remains are of recent deaths with fresh facial appearances and not showing signs of decomposition or significant injury
- b) the next of kin who has come forward to identify the remains are psychologically competent
- c) the process was supervised by the forensic pathologist, trained technicians, psychologists and the members of the judiciary

In large scale disasters, visual recognition is a valid method if the above conditions are satisfied, as it was also followed successfully in the identification of the victims of the 2011 Japanese tsunami [9].

Showing photographs of the deceased to the next of kin was a useful screening method. Nevertheless, care need to be taken to expose the relatives to the minimum number of photographs of deceased persons. i.e. a family looking for a female deceased person should not be shown the photographs of male deceased persons. Due to the lack of trained staff and pandemonium nature of the situation this was not practiced during the process described above.

Identification of the remains of the suspects who are responsible for a man-made disaster is not always easy. In most cases the names of the suspects are revealed much later in the investigations. Nevertheless, in this incident the names of the suspected suicide bombers were available for the investigators soon after the attack. Therefore, obtaining samples from first degree relatives for DNA analysis were not difficult.

During non-emergency times, a communication strategy must have been put in place to disseminate the information to the public especially the community leaders regarding the work of the forensic experts and the importance of conducting medico-legal examinations in a man-made disaster. Such measures could have helped to diminish the pressure that was exerted from the community, in events as the ones described here and in routine cases.

Visiting the scene of crime at the earliest possible and commencement of the management of the dead from the scene is an important strategy to follow. However, such is not possible in large scale disasters as well as multiple disasters when happened simultaneously. The safety of the scene need to be established before any search and rescue operation is initiated [10]. In the disaster described here a vehicle was found with a bomb trap, 75 meters away from the church. This was only discovered after all the remains were recovered and removed from the scene. The vehicle was later removed by the Sri Lanka Army bomb disposal squad and detonated.

Back up services, resource persons and necessary utilities and providers should be identified in advance. Availability of external freezing facilities, temporally shelters, continuous supply of refreshments for the relatives and volunteers, presence of onsite psychological support teams, assurance of safety and security at the medico-legal facility, safety of the staff and families are of utmost importance.

CONCLUSION

The goal of the management of the dead in a mass fatality incident is to minimize the number of missing persons in the given incident. During this process the dead should be managed with respect while maintaining their dignity. The relatives should be treated with empathy within the given circumstances and the legal frame work.

Key Messages

1. Management of the dead in a disaster is a multiagency activity. The forensic service alone cannot respond adequately and coordination among the different stakeholders is vital.
2. The procedures need to be followed in establishing the identity of the deceased may vary according to the law of the land. Nevertheless, when managing the remains of non-national victims, it is advisable to follow the INTERPOL guidelines to establish the identity, to minimize difficulties that may arise during repatriation of remains.
3. Preparedness with drill exercises and training is the key to successful management.

Conflicts of Interest

Authors declare none.

Acknowledgements

Authors would like to thank all the team members, members of the judiciary, members of the criminal investigation teams and the volunteers who assisted in the process of management of the remains at the IFMT.

Authors Contribution

- 1st Author: Drafting
- 2nd Author: Conception and design

REFERENCES

1. Lee HC, Pagliaro EM. Forensic evidence and crime scene investigation. *Journal of Forensic Investigation*. 2013;1(2):1-5.
2. Satcher D, Friel S, Bell R. Natural and manmade disasters and mental health. *Jama*. 2007;298(21):2540-2.
3. Gill, James R., et al. "The 9/11 attacks: the medico-legal investigation of the World Trade Center fatalities." *Forensic Pathology Reviews*. Humana Press, 2011. 181-195.
4. Management of Dead Bodies after Disasters: A Field Manual for First Responders. Version 2 available at www.icrc.org > publication [Accessed on 10.02.2021]

5. Cipolloni L, Baldari B, Besi L, Scopetti M, Di Sanzo M, Ursu S, Fineschi V. Management of victims occurred in mass disaster: The experience of center Italy earthquake 2016. *Journal of forensic and legal medicine*. 2019; 62:19-24.
6. Moody GH, Busuttil A. Identification in the Lockerbie air disaster. *The American journal of forensic medicine and pathology*. 1994; 15(1):63-9
7. INTERPOL DVI Guide 2014 Version. Available at: www.interpol.int/Media/.../INTERPOL.../DVI/DVI-Guide-newversion-2 [Accessed on 30.11.2020]
8. Karimipour M, Al-Saqqa S. *Forensic autopsy Manual for forensic pathologists*, Masood Karimipour & Saleem Al-Saqqa, 2015, The United Nations Office on Drugs and Crime (UNODC). The United Nations Office on Drugs and Crime (UNODC); 2015.
9. Iino M, Aoki Y. The use of radiology in the Japanese tsunami DVI process. *Journal of Forensic Radiology and Imaging*. 2016; 4:20-6.
10. A guide for Explosion Bombing Explosion Bombing Scene Investigation. U.S. Department of Justice Office of Justice Programs National Institute of Justice. <https://www.ncjrs.gov/pdffiles1/nij/181869.pdf> [Accessed on 30.11.2020]