

Forensic Anthropologist role in Disaster Management

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Abstract:

In forensic anthropology, it is the most important to identify the victims who died in the mass disaster incident in which forensic anthropologists play a significant role for human's personal identification. In this incidents, persons were dead by human made disaster includes bomb blast, through which, body parts of person were fragmented into small pieces which are not recognizable. After occur this incident, victims were identified by developing the expert's services in many disciplines which consist of anthropologist, radiologist, fingerprint, pathologists, DNA experts, etc. The disaster victim identification (DVI) process are used in many countries for the identification of mass disaster which consists four phases such as antemortem, postmortem, scene and reconciliation. The process of DVI is not a new discovery in which identification was conducted and beyond the identification, documenting and recording are also conducted. In this paper, we will discuss about the role of forensic anthropologist at the disaster scene and how to identify the victim.

Keywords: *Disaster Victim Identification, Bomb Blast, Forensic Anthropologist*

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Introduction

The meaning of disaster is “the serious distraction of the human community by using economic and environmental material”. It may be natural or human-made due to which multiple fatalities was come out. The important mark is to identify the victim in occurred incident, not only for identify decease but for his/her surviving family and friends (Boer, Blau, Delabarde, et.al, 1). In forensic anthropology, the skeleton and dental’s scientific methods are used to reconstruct events for the identification of human remains which are partially decomposed, skeletonized, burnt, fragmented etc. The three biological traits such as fingerprints, DNA, bones and teeth, are used for positive identification of human remains. Many human life are taken within minutes in mass disaster such as train crash, earthquakes, bomb blast, tsunami, airplane crush and volcanic eruption etc (Indriati, 149).

In Disaster Victim Identification (DVI), forensic anthropologists play a significant role in which they are analyze and recovery of human remains including, skeletonized, decomposed, burned or fragmentary (<https://www.interpol.int>). Forensic anthropologists are apply their knowledge in their work and understand the variation of the forms of skeletal remains. The main focus of forensic anthropologists is applied on crime scene, to develop biological profile and compile applicable documentation. On the basis of their knowledge, the death outcomes are provided by agencies of law enforcement with their answers and conclusions (Stanojevich, 1).

On the basis of their knowledge, forensic anthropologists help in the DVI operations. They are expertise in many fields which are as follows:

- Anatomy of skeletal including differentiating between human or non-human
- Commingles and compromised human remains are managed by collection process
- The analysis of skeletal trauma
- Taphonomy means differentiate between antemortem, peri-mortem and postmortem
- The identification of anatomic features (<https://www.interpol.int>)

The methods, techniques and principles of anthropological are employed in five primary capacities, which are as follows:

- 1) DVI operation occurred during the preplanning phase
- 2) The human remains are searched, recovered and preserved from the incident of mass fatality
- 3) At the station of triage
- 4) At the station of anthropology in which collecting the postmortem data from morgue
- 5) Reconciliation (<https://www.nist.gov>)

Process of DVI

The resolution of INTERPOL is only the recognized legislation of international on disaster victim identification (DVI). This INTERPOL has some functions which came under international law. Various member of some countries had adopted the procedure of INTERPOL for identifying the victims who died in mass disaster. The Guide of Disaster Victim Identification of INTERPOL provided the recent DVI process which is adopting some principle due to which treated the victims with respect and dignity. The description of five phases were cover under INTERPOL which are as follows (Khoo, Aziz and Mahmood, 1).

The Disaster Scene

The crime scene is located, mapped, documented and recovered for the human remains by expertise forensic anthropologists. At the disaster site, forensic anthropologists are searched the located evidence, it includes:

- Preliminary evaluation is identified at the disaster sites including number and condition of victims, degree of corporeal compromise etc.
- Taphonomy (differentiating between human from non-human or non-biological material), it’s also called triage.

- The human remains' location are mapped and recorded accurately in which including materials (personal items, airplane wreckage etc.)
- Strategies are settled for associated evidence and recovery of human remains.
- At the disaster site, human remains are prevented (<https://www.nist.gov>).

Mortuary

From the site of disaster, the human remains are collected and transported to the mortuary (temporary or permanent) for the purpose of analysis, identification and death certification (**Mundroff, 2011**). After the transportation of victim body, usually postmortem examination is conducted in mortuary.

- Body bag is received after taken the fingerprint, sign tracking form which obtain whole information about body.
- Body bag number is wrote down which is matched with the form of pink postmortem DVI.
- After receiving the body, remove their clothes, wash and rinse hands and maintaining the records through photography (includes bag number).
- Anthropologist identifies age, sex, ancestry and stature
- In case of victims has possible pacemaker, then chest x-ray should be taken.
- Pathologist should be conducted autopsy and record evidence of injury, scars, disease, tattoo and physical abnormality.
- Teeth examination.
- Sample should be taken for future DNA test.
- If body parts are fragmented, records whole detail including, what body parts are missing.

Antemortem

The information about victims are gathered from family members, friend, doctor, and dentist. In this thing, also gathered includes specific characters, watch, jewelry, vital signs, clothes. The data of antemortem are recorded into yellow forms. In the INTERPOL standard, yellow forms and pink forms are used in case of antemortem and postmortem respectively. In yellow forms, whole details are gathered in it like, which type of clothes did his/her wear; which type of watch did his/her wear? Etc (**Indriati, 150, 151**).

Reconciliation

In final reconciliation, anthropologist play a significant role to identify human remains (<https://www.nist.gov>). The victim identification is conducted by the process of comparison (between the data of antemortem and postmortem). The Reconciliation Centre's function is matching the antemortem with postmortem data to identifying decease. Some identifiers are available such as ridgeology (fingerprints), DNA, dental and some identifiers contact with the obligatory standards (**Khoo, Aziz, Mahmood, 2**). During reconciliation, anthropologists are assist using quality control and quality assurance to verifying human remains (**Mundrooff, 2011**).

- In this phase, debate is occur when data is mismatch.
- Identification of primary method including fingerprint, teeth, DNA
- Identification of secondary method including medic, document, property, photography
- Evidence and proof are provided by all parties that was matched or identified; dated and signed (**Indriati, 151, 152**).

Release Debrief

Last phase have opportunity to give review on each phase that this phase is effectiveness or not and managing incidents for future purpose. Every forensic anthropologists are represented by scene of crime and mortuary processes (<https://www.interpol.int>). The forensic

anthropologists are play an important to the identification of dead bodies in the disaster events. For forensic anthropology examination, it has not designated form in INTERPOL which may be caused by highly or unique postgraduate training of anthropology (**Indriati, 152**).

Review of Literature

Hossain (2013), stated that natural disaster is mainly occur in Bangladesh which is susceptible area in the world. In Bangladesh, many human beings and their resources are destroy every year in different forms of natural disasters. It is impossible to inhibit the disaster from pre-planned, natural causes, human collective and management participation. The Bangladesh's government adopted the community, programs and plans for the prevention of disaster cycle. To the management of disaster, government integrate the opinion of people and confirm the policy in every stages. In this paper, social workers play an important role to improve the community and extended networks.

Kulatunga, (2010), in this paper, discuss about the disaster that was increased day by day in worldwide which creating the risk for human beings. Due to these disasters, damage and losses to economy, human beings and society. The risk factor which is created by disaster, not only depends on hazard but also on individuals and communities which is governed by culture. This paper explain about the relationship between disaster victim reduction (DRR) and culture. The culture is a factor that is important for an individual as well as society. Culture provides information about that how the people survive in this world, it is successes on the basis of trust.

Prajapati, Sarode, Sarode et.al, discuss about the economic and reliable scientific method that is covered under the subject forensic odontology. It is used for the purpose of victim identification who died into mass disaster which is occurred in worldwide. Forensic odontologist grasped the success which is dependent on recorded antemortem. In this paper, basically discuss the types of mass disaster including natural, accidental, and criminal, in which natural mass disaster is one of the most common method. In natural mass disaster, includes tsunamis, earthquakes, and bushfires.

Gaglietti and Silva (2017) studied the cases of mass destruction form 2005 to 2015 which were published in literature. In these cases, the primary human identification methods were used to solve them. Approximately 16 selected papers and 13 listed disaster literature review were analyzed. After their study, they concluded that these applied primary identification methods are capable and effective as they can perform a harmless and agreeable identification of the victims involved in mass disasters. And these methods can be used in the combination or separately.

Mundorff (2011), concluded that forensic anthropologist participate in many discipline of DVI in which they worked on unidentified, fragmented bodies. The understanding regarding the bone biology, bone remodeling, bone density and taphonomy can help the anthropologists about the DNA sampling strategies. Anthropologists play a significant role at disaster site during excavations or initial site assessment. In the mortuary, anthropologists constructing biological profiles through the analysis of skeletonized remnants. This paper discuss the ultimate goal of DVI projects in which all fields of forensic science are utilized for ensuring to run the most precise projects through which most of the identifications are secured and also make a trust on families that they are helping them.

Conclusion: Biological anthropology is one of the most important part of the forensic anthropology, its deal with the identification of decomposed and fragmented human remains. The serious incidents and disasters are loosed and destroy many things and persons which is not caused by human interfere. Mass disaster is a biggest challenge for forensic disciplines and police. In this paper, we have to discuss about the five phases including, disaster scene, mortuary, antemortem, reconciliation and debrief. Due to which, concluded that forensic anthropologists play an important role. They compared antemortem with postmortem, recorded detail description about victim which was gathered from his/her families, friends, doctor etc. It is a big task for forensic anthropologists to identifying the victim from mass disaster because it is complex and stressful. It is not important that they will be used own skill and knowledge to solve case. But they should be prove valuable advantages in DVI operations.

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