PhD Thesis

Ethics of Forensic Medicine in Disasters

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Declaration

I hereby certify that this material, which I now submit for assessment on the programme of study leading to the award of PhD is entirely my own work, and that I have exercised reasonable care to ensure that the work is original, and does not to the best of my knowledge breach any law of copyright, and has not been taken from the work of others save and to the extent that such work has been cited and acknowledged within the text of my work.

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Date: 23 June 2020 Dr Vina Ravi Vaswani

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CRED – Centre for Research on Epidemiology of Disasters

DVI – Disaster Victim Identification

EM-DAT – Emergency Events Database

ICRC – International Committee of the Red Cross

IFRC – International Federation of Red Cross and Red Crescent Societies

PAHO – Pan American Health Organization

UDBHR – Universal Declaration of Bioethics and Human Rights

UDHR – Universal Declaration of Human Rights

UNISDR – United Nations International Strategy for Disaster Reduction

UNDRR (formerly UNISDR) – United Nations Office for Disaster Risk Reduction

UNESCO – United Nations Educational, Scientific and Cultural Organization

WHO – World Health Organization

Abstract

Title: The ethics of forensic medicine in disasters,

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Disasters cause destruction and death accompanied by human suffering They exceed the local capacity to cope and usually bring untold human misery and loss. This thesis focuses on the ethics of forensic medicine in disasters. It has the following research objectives:

1. To explore ethical issues faced by forensic doctors in disaster settings as identified in the literature.
2. To identify ethical issues faced by forensic doctors in India during disasters.
3. To carry out ethical analysis of two important issues, from those identified through the literature review and the in-depth interviews.
4. To develop a set of recommendations based on this analysis.

To identify the ethical issues, a comprehensive review of the academic literature of the last 20 years was done. In addition, twenty forensic doctors exposed to working in disasters were interviewed. Data from these interviews were coded and analyzed using a grounded theory approach. For the ethical analysis the Universal Declaration of Bioethics and Human Rights was used.

The ethical analysis showed that indiscriminate photography and circulation of confidential information are a breach of privacy of the dead and their families. Resource limitation is a major obstacle in timely identification of the dead and in their respectful treatment. Serious efforts need to be made to identify the dead in disasters as proper identification helps families grieve and gives closure. Research on unidentified bodies should only be allowed in exceptional situations, for example, if the research benefits future disaster victims (e.g. research on identification methods), or if the research has overriding public health benefits, (e.g. during an epidemic). Oversight mechanisms should be put in place to facilitate respectful treatment of the dead when carrying out research. The study highlights a pressing need for establishing guidelines and providing training to forensic personnel, thereby aiding efficient identification.

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Chapter 1: Introduction

"It was like when you make a move in chess and just as you take your finger off the piece, you see the mistake you've made, and there's this panic because you don't know yet the scale of disaster you've left yourself open to."

Kazuo Ishiguro

The Centre for Research on Epidemiology of Disasters (CRED) defines a disaster as "a situation or event which overwhelms local capacity, necessitating a request to a national or international level for external assistance; an unforeseen and often sudden event that causes great damage, destruction and human suffering" (Below, Wirtz and Guha-Sapir, 2009 p.3). More specifically, CRED stipulates that for an event to count as a disaster at least one of the following should hold (Below, Wirtz and Guha-Sapir, 2009):

1. 10 or more people reported dead.
2. 100 or more reported to be affected.
3. Declaration of a state of emergency.
4. Call for international assistance.

This study uses the same criteria. CRED keeps a database of disasters that occur around the world. Each disaster brings its own set of challenges, and no amount of preparation can provide complete immunity against it. The sudden death of a large number of people during disasters requires forensic doctors to identify the bodies so that they can be returned to their families. Typically, forensic action during disasters is carried out under considerable time and pressure constraints. In developing countries like India, resource limitations and lack of infrastructure can sometimes result in mismanagement and misidentification of dead bodies causing a perception of disrespect to the dead and their families. This is the first study in India to address the ethical issues in forensic practice during disasters.

1.1. Research objectives

This study was undertaken with the following research objectives:

1. Exploration of ethical issues faced by forensic doctors in disaster settings as identified in the literature.
2. Identification of ethical issues faced by forensic doctors in India during disasters.
3. Ethical analysis of two important issues, from those identified through the literature review and the in-depth interviews.
4. Development of a set of recommendations based on this analysis.

1.2. Methodology

Research objective 1. I reviewed the literature to identify the ethical issues relating to forensic medicine in disasters. I performed extensive searches in Science Direct, PubMed, and EMBASE with search strings combining search terms in the following three sets of words:

1. Forensic Medicine, Forensic Pathology
2. Ethics, Bioethics, Morality, Morals
3. Disaster, Catastrophe, Calamity, Cataclysm

I only included articles written in English published between 2000 and December 2019 that showed a serious engagement with ethical issues regarding forensic medicine in disasters (for a more detailed account of the methodology of the literature review, see Chapter 3).

Research objective 2. Due to a paucity of literature on ethical issues faced by forensic doctors in India during disasters, I conducted semi-structured, in-depth, one-on-one interviews with 20 forensic doctors in India on the ethical issues they faced while providing forensic services during disasters. Using the interview transcripts as raw data, I applied a grounded theory analysis to identify ethical issues that arise during the course of forensic doctors' duties in disasters (for a more detailed account of the methodology of the interview study literature review, see Chapter 4 and 5).

Research objective 3. Based on the results of the in-depth interviews, I focused on the ethical issue most commonly faced by forensic doctors in India, "Identification of the dead". Since all bodies might not be identified after a disaster, it is important to understand when it is ethically acceptable for forensic doctors to give up on the identification. Furthermore, it is important to know how to deal with such bodies in an ethically acceptable way. Thus I framed the research question "Under what circumstances is it ethical to give up identification of the dead in disaster settings?", and carried out an ethical analysis of this question using the articles of UNESCO's The Universal Declaration on Bioethics and Human Rights (2005) (UDBHR) (for a more detailed analysis of these points, see Chapter 6).
Similarly, based on the results of the literature review, I identified the ethical issue most discussed in the literature, "Research on dead bodies". The unidentified dead after a disaster have no one to refuse consent on their behalf. Thus using such bodies in research might cause harm to them or their relatives, if the body were to

be identified at a later date. Thus I framed the research question “When is it ethical to carry out research on unidentified dead or their body parts obtained in disaster settings?” and analyzed it using the articles of the UDBHR (for a more detailed analysis of these points, see Chapter 7).

I applied UNESCO’s The Universal Declaration on Bioethics and Human Rights (2005) (UDBHR) to analyze the two ethical issues. I employed the following four-step structure for carrying out the ethical analysis: I stated the ethical problem, gathered the relevant facts, considered and applied the appropriate principles, and finally drew conclusions.

I chose the UDBHR as an instrument for the following reasons:

1. It has been agreed upon unanimously by 191 countries, and hence is the only bioethics instrument with global reach (Rheeder, 2014). The global reach of the UDBHR is important as disasters often involve victims from different nationalities. Therefore, it is important to analyze ethical issues in disasters with a tool that is accepted across many countries.
2. It is based on a human-rights framework that is acceptable across different cultures and religions.
3. The UDBHR recognizes that all member states have different resource limitations and developmental challenges and focuses on common principles and shared values. Thus, the instrument can be used by developed and developing countries alike (Krishnan, 2019).

Research Objective 4. Based on the above analysis of ethical issues relevant to the Indian and the academic contexts, I developed a set of recommendations to be followed to prevent the unethical treatment of unidentified dead during disasters. These recommendations are based on the contextualized norms derived from the ethical analyses presented in Chapters 6 and 7. In addition, I considered the best practices as described in the existing literature, and used the suggestions of the participants of this study--who are forensic doctors in India--to develop these recommendations, thereby making them specific to the Indian context. Thus, the recommendations arose from the framework provided by the contextualized norms, supplemented by the best practices described in the literature, and the suggestions of experienced Indian forensic doctors. These recommendations can be followed to prevent the unethical treatment of dead bodies during disasters in India.

1.3. Relevance

This study is relevant for the following reasons.

1.3.1. Disasters result in a large number of dead bodies that need to be handled with respect.

During disasters, forensic professionals have to identify a large number of bodies so that they can be returned to their families. Managing the dead bodies ethically during this time becomes critically important in reducing the grief felt by families and in enhancing the humanitarian aspect of forensic action during disasters. Since the industrial revolution, our capability to cause human-induced disasters has increased considerably (Gordijn and ten Have, 2015). In addition to human-induced disasters, natural disasters have also resulted in significant loss of life (Centre for Research on the Epidemiology of Disasters (CRED) and United Nations Office for Risk Reduction (UNISDR), 2016; United Nations Office for Disaster Risk Reduction, 2019). In 2019, natural disasters alone affected at least 95 million people and resulted in the deaths of at least 11,755 people (Centre for Research on the Epidemiology of Disasters, 2020).

Keeping in mind the large number of deaths due to disasters, it is necessary to conduct an ethical analysis of how to minimize disrespectful treatment of the dead. Exploring ethical issues in the management of disasters will help forensic doctors to approach this emotionally fraught human situation with more sensibility and understanding.

1.3.2. Developing countries suffer higher death tolls during disasters than developed countries, making ethical treatment of the dead in a developing country like India more important.

Death tolls after natural disasters are higher in developing countries than developed countries due to a lack of early warning systems and insufficient civil protection mechanisms (United Nations Office for Disaster Risk Reduction, 2019). India fared better in maintaining lower death tolls from natural disasters between 1996 - 2015, than the neighboring South-Asian countries (Centre for Research on the Epidemiology of Disasters (CRED) and United Nations Office for Risk Reduction (UNISDR), 2016; United Nations Office for Disaster Risk Reduction, 2019). However, there is still a dearth of recommendations and standard operating procedures in the country to ensure efficient, effective identification of dead bodies and their respectful treatment during disasters. The first step to the development

of such recommendations is to identify the ethical issues in the management of the dead during disasters.

1.3.3. It is important to prevent the misuse of the large number of unclaimed or unidentified dead bodies during disasters.

One important role of the forensic doctor in a disaster is to assist in identifying the dead so that they can be handed over to the next of kin to complete the last rites, thereby giving opportunities for families to grieve, heal and move on. However, even five years after the 9/11 disaster, more than half of the 2,749 deceased remained unidentified (Knoppers, Saginur and Cash, 2006). This fact illustrates the difficulty faced by forensic professionals when identifying a large number of dead bodies in the aftermath of a disaster. The situation is further exacerbated in developing countries like India where DNA identification techniques are not employed and visual identification is the norm (Nandineni *et al.*, 2010). In resource-limited settings the high cost of DNA testing precludes its use to identify bodies during disasters. As a result, a large number of bodies remain unidentified and unclaimed in the wake of a disaster. Hence an analysis of the ethical considerations in preserving these bodies and using the remains for research becomes extremely important. This study examines the ethical issues in relation to conducting research on the unidentified dead and advocates limitation and regulation of the types of research that should be allowed to prevent abuse or misuse of dead bodies.

1.4. Outline of the study

In Chapter 2, I lay out the existing structure of forensic medicine in India. I describe a selection of disasters and explain the roles that forensic doctors play in such events. I explain how forensic medicine is practiced locally and compare this with forensic practice during disasters in developed countries. This will give readers some context regarding forensic practice in India and help them understand the results of my literature review and the findings of my interviews.
In Chapter 3, I describe the process by which I searched the academic literature in order to identify the ethical issues associated with forensic medicine in disasters. I summarize and discuss the relevant studies, and present an overview of the ethical issues arising in disasters.
In Chapter 4, I introduce the reader to the philosophical underpinnings of my study, elucidate the difference between quantitative and qualitative research, and lay out the study design. Following this, I justify the grounded theory approach

and stress the ethical elements of the study. I then lay out the study design for the interviews and describe how I constructed an interview schedule and carried out my interviews with forensic doctors in India.

In Chapter 5, I describe the sampling strategy employed in this study. In addition, I describe the data collection, the process for the interview, and the data analysis. I explain the grouping of codes and describe the emerging theory, developed from the interview transcripts. I discuss how the patterns from codes led to categories and attempt to identify a core category, thereby developing a theory that is grounded in the data.

In Chapter 6, I carry out an ethical analysis of the ethical issue most commonly faced by forensic doctors in India during disasters “identification of the dead”. This ethical issue emerged from the analysis of the in-depth interviews of Indian forensic doctors. To analyze the issue, I use UNESCO’s UDBHR as a tool. I examine articles of the UDBHR for applicability to the dead and their relatives. I then use the applicable articles to answer the research question “Under what circumstances is it ethical to give up identification of the dead in disaster settings?”.

In Chapter 7, I carry out an ethical analysis of the ethical issue that emerged from the analysis of the literature as the most commonly cited by forensic doctors around the world “research on the dead”, in the context of the unidentified dead during disasters. Using the same approach as in Chapter 6, I examine the appropriate articles of the UDBHR to answer the research question “When is it ethical to carry out research on unidentified dead or their body parts obtained in disaster settings?”.

In Chapter 8, I summarize the main results from the study, discuss the limitations of this study, and end with a note on future research.

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Chapter 2: Forensic Medicine and disasters

In this chapter, I introduce the subject of forensic medicine, with a brief history of how the field evolved. Because a major part of this study focuses on identifying ethical issues in forensic action in India during disasters, I describe current forensic practice in India and list the duties of a forensic doctor during disaster settings.

1.1. History of forensic medicine

Forensic medicine is situated at the confluence of two fields - medicine and law. The term “forensic” is derived from the Latin word “forensis”, which has its origins in the word “forum” meaning a gathering or meeting place or open court where disputes were deliberated upon and solved (Weizman, 2014). In the later part of the 16th century, legal medicine (later known as forensic medicine) made inroads into courtrooms bringing justice through scientific evidence and was seen to be popular in educational circles. France and Germany made early starts in developing the medicolegal subject as a distinct discipline, and by the 17th and 18th centuries, chairs in State medicine (in Germany) and Medical Jurisprudence (in England) were established (Payne-James, 2005; Wecht, 2005). Germany established its first medicolegal clinic in 1830 (Wecht, 2005). Forensic medicine emerged as a consolidated discipline within the medical profession in the 19th century when it became necessary to have specialized medicolegal experts, up-to-date with a growing body of forensic knowledge to analyze and present medical evidence to the courts (Matejic and Otasevic, 2010). Since these legal matters dealt with dispensing of justice, forensic doctors were tasked with interpreting medical facts to aid in advancing justice. This called for a high degree of professional ethics and accountability (Dolinak, Matshes and Lew, 2005).

Legal medicine, the application of medical knowledge in the administration of justice and in common parlance, is considered synonymous with forensic medicine at a general level (Byard *et al.*, 2005). Today, forensic medicine has given rise to various specialized fields within the medical sciences, each prefixed with ‘forensic’, and each making contributions to concepts and methodologies that are scientifically valid and admissible in courts of law as evidence.

2.2. Branches of forensic medicine

As forensic medicine developed, the role of the forensic doctor in finding scientific evidence to prove or disprove medical facts in a legal setting took centre stage. Thus, the various aspects of forensic medicine were studied in detail, leading to a

development of different branches such as clinical forensic medicine, forensic pathology, forensic anthropology and forensic toxicology.

Clinical forensic medicine involves examining living persons in legal settings, recording their injuries and engaging with the police and judiciary (Payne-James, 2005). Thus examining sexual assault victims and collecting evidence, estimating age in civil disputes, and establishing paternity in paternity suits come under the purview of clinical forensic medicine (Khandekar *et al.*, 2010).

Forensic Medicine, Forensic Pathology and Legal Medicine are used interchangeably throughout the world and deal with investigation of unnatural deaths (Payne-James, 2005). Some countries like the United States have adopted the term 'forensic pathologist' to designate a medical professional trained to investigate unnatural deaths. In the United Kingdom, Germany and India, the subject still goes by the name Forensic Medicine. In unnatural death scenarios, i.e. suspicious deaths and unattended deaths, forensic medicine involves external examination followed by a thorough internal autopsy to establish the cause of death, and the time since death. In the case of an unidentified body, detailed examination also covers the external marks, tattoos, injuries, scars and moles, use of prosthesis that can be matched with the description by the relatives to establish identity. All the findings along with the forensic doctor's opinion must be presented to court as evidence so that justice is aided.

When only a bony skeleton or remains of a skeleton are found, methods of forensic anthropology and DNA analysis are used to establish identity (Ubelaker, Shamlou and Kunkle, 2019). Thus forensic anthropology skills become much needed during exhumation of mass graves for investigation into war crimes (Skinner, 1987). Today, this expertise is also used to identify bodies during disasters.

Forensic toxicology deals with cases of poisoning, where the victims' (alive or dead) blood, urine and viscera are collected and preserved for toxicological analysis.

Forensic action has gained prominence during disasters because the bodies of the victims need to be identified. In some situations, identification might have to be carried out based only on a few bones (skeletal remains) or body parts, usually in advanced stages of decomposition. Hence, this new role requires working with multidisciplinary teams and developing a newer set of skills (Schuliar and Knudsen, 2012).

2.3. Roles of a forensic doctor in India

Before understanding the role of a forensic doctor during disasters and identifying the ethical issues that arise during such forensic action, it is necessary to briefly review the different aspects of forensic work in general. This will inform the reader of the priorities of forensic doctors, and how these priorities change when dealing with the dead in disasters (explained in Section 2.4).

The work of a forensic doctor in a medical college or university includes:

1. Teaching forensic medicine to undergraduates and post graduates.
2. Carrying out medicolegal autopsies and exhumations.
3. Examining cases of injury, assault (physical, sexual), estimating age and issuing medicolegal certificates.
4. Presenting evidence and expert opinions in the court of law.

2.3.1. Teaching

Forensic Medicine is taught in the second year of the undergraduate medical course. After the graduation, students interested in specializing in forensic medicine undergo a three-year postgraduate course culminating in a Doctor of Medicine (MD) degree in Forensic Medicine. During the undergraduate course, the main focus is to familiarize the students with the procedures involved in medicolegal autopsies and clinical forensic cases. In addition, they are introduced to topics such as forensic toxicology, ethics, medical jurisprudence, traumatology and asphyxial deaths. Some students, on successful completion of their course, opt to work as government medical officers, carrying out autopsies and medicolegal examinations. However, undergraduate training is inadequate to prepare them for this task, and there is a stark difference in the level of skill between them and postgraduates specialized in forensic medicine.

Postgraduates specializing in forensic medicine are trained to perform autopsies under supervision, attend sessions of court in order to understand the functioning of forensic doctors in the legal system, and examine clinical forensic cases. They are further trained to carry out toxicology tests, advanced ethical deliberations and to carry out research.

2.3.2. Medicolegal autopsies and exhumations

In India, mortuaries are attached either to medical colleges (with their associated hospitals) or government hospitals and health centres. Forensic doctors working at a particular mortuary are called in to perform autopsies when unnatural deaths occur in the associated hospital. In addition, mortuaries are sometimes associated

with police stations, and are required to conduct autopsies when an unnatural death occurs within the jurisdiction of the associated police station.

The main objectives of medicolegal autopsies are to determine the cause of death, time since death, identity of the deceased (if required) and to catalog the findings to present as evidence in court. Although visiting the crime scene or scene of unnatural death gives better insight into the circumstances of death and is commonly done in other countries, it is not usually done in India.

Exhumation is carried out by a panel of forensic doctors under the order of the magistrate. It is usually initiated by complaints regarding the suspicious circumstances surrounding a person's death, if the initial autopsy is believed to be unsatisfactory, or when the identity of a previously buried body is in question.

2.3.3. Examining cases of injury, sexual assault, and issuing medicolegal certificates

Police officers also consult forensic doctors in cases of sexual assault, domestic violence and physical abuse. The forensic doctors are called in to conduct clinical forensic examinations, where they examine the victims and evaluate the nature and extent of the injuries. In addition, forensic doctors are sometimes asked to examine weapons and assert whether the victim's injuries could have been caused by that weapon. At the end of the examination, forensic doctors issue certificates describing their findings and stating the results of their examinations. These certificates contribute to the chain of evidence, and are presented in court, where they are crucial in the dispensation of justice.

2.3.4. Presenting evidence and expert opinions in a court of law

In addition to conducting autopsies or clinical forensic examinations, and issuing certificates stating their results, forensic doctors are sometimes asked to present evidence and describe their findings to the court, or to give their expert opinion regarding a case. This requires forensic doctors to be able to explain the technical aspects of their work with exactness, while making it understandable to people in court, who are not specialized in forensic medicine. Furthermore, they are required to be familiar with the law so as to aid in the legal interpretation of the facts that they are presenting evidence about.

In addition to the routine roles described here, forensic doctors are also called in during disasters to examine dead bodies and assist in their identification. Forensic action during disasters differs significantly from routine forensic work (Thomsen,

2017), and while such events are infrequent, forensic action during disasters has lasting impact on a large number of people.

This study deals with identifying and exploring the ethical issues faced by forensic doctors during disasters in India. To understand the context of this study, it is important to know how forensic doctors assist in the aftermath of a disaster. Hence, in the next section, I will briefly describe the role of forensic doctors in disaster situations in India.

2.4. Role of forensic doctors during disasters in India

While the previous section explained the routine aspects of a forensic doctor's work, in this section, I describe forensic action during disasters and bring out how the priorities of forensic doctors are different. This section provides the necessary context to understand the functioning of forensic doctors during disasters, making it possible for the reader to appreciate the ethical issues that arise in these situations.

During disasters, the dead need to be identified and returned to their families. In India, the police and volunteers help in the collection and transportation of the dead bodies and their personal effects from the disaster site to mortuaries. It is not within the mandate of the forensic doctor to visit the site of the disaster. Once the bodies arrive at mortuaries, forensic doctors and the police, with the help of the family members, try to identify the bodies, relying on visual recognition and personal effects found on the bodies. Forensic doctors carry out external examinations and note any tattoos, identification marks, and scars that further aid in establishing the identity of the bodies. If required, autopsies are performed on dead bodies to establish the cause of death. For instance, in an air crash, only the bodies of the pilot and co-pilot are likely to be autopsied to confirm their cause of death. This is done to determine whether the pilots caused the crash, either due to an untimely death for medical reasons or by being intoxicated, etc. Hence establishing identity, collecting evidence to establish the cause of death, performing autopsy when required, and returning the bodies to the bereaved are priorities for the forensic doctors during disasters.

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Chapter 3: Ethics of forensic medicine in disasters – A literature review

3.1. Introduction

To explore the ethical issues faced by forensic doctors in forensic settings (research objective 1, Chapter 1, Section 1.1), this chapter reviews the existing literature in the field. This chapter is structured to begin with an explanation of the method used for the literature search. Next, the results of the review are presented and critically discussed. The results reveal that while "research on the dead" is one of the most discussed ethical issues in the academic context (in the existing literature) related to forensic practice during disasters, there is a lack of literature from the Indian context on these ethical issues. The conclusion highlights the need to explore ethical issues from the Indian perspective relevant to forensic practice during disasters, and sets the stage for the in-depth interview approach undertaken in Chapter 4 to identify these issues.

3.2. Methodology

I followed three steps to identify the literature for the survey. Step one was conducting searches in the selected databases and keywords, step two was identifying eligible sources based on abstract reading, and step three was snowballing.

Step I: I performed a literature search in three standard search engine databases: ScienceDirect, PubMed and EMBASE. While PubMed and EMBASE were chosen for their specificity at retrieving published articles relating to medicine, ScienceDirect was used for its access to published material across a much broader range of subjects including the life sciences, physical sciences and social sciences (Wilkins, Gillies and Davies, 2005; Bajpai *et al.*, 2011; Harnegie, 2013). I used three sets of keywords made up of the terms 'forensic medicine', 'ethic', 'disaster' and their synonyms. I used the following synonyms for the three sets of keywords:

1. 'Forensic medicine' and 'forensic pathology' in the first group.
2. 'Ethics' and 'morals' in the second group. Here I used stems like 'ethic' and 'moral', since search engines would turn up the other related words as well.
3. 'Disaster', 'calamity', 'cataclysm' and 'catastrophe' in the third group

I keyed in 16 different combinations of the keyword synonyms labelled as K1 - K16 (Table 3.1). The search engines were accessed from 21 through 26 January 2015

and then again from 22 July to 9 August 2017 and then again from 5 March to 12 March 2020. In step 1, I went through the database of Science Direct, Pubmed and EMBASE, one by one, keying in the above combinations K1 to K16.

I only included journal articles published between January 2000 and December 2019. Only papers in the English language were considered. At least one synonym from each group of the three keywords was required to be anywhere in the paper. A total of 336 articles were found. Despite applying English language as a filter, two articles in German language were present in the results: [Barolin (2001) and Plattner (2005)]. These were removed bringing the total to 334 (Table 3.1).

Table 3.1: Database searches before de-duplication

No	Forensic synonym	Ethics synonym	Disaster synonym	Science Direct	PubMed	EMBASE	Total
K1	Forensic Medicine	Ethic	Disaster	54	21	16	91
K2	Forensic Medicine	Ethic	Calamity	2	2	1	5
K3	Forensic Medicine	Ethic	Cataclysm	0	0	0	0
K4	Forensic Medicine	Ethic	Catastrophe	14	2	0	16
K5	Forensic Medicine	Moral	Disaster	41	6	1	48
K6	Forensic Medicine	Moral	Calamity	2	2	0	4
K7	Forensic Medicine	Moral	Cataclysm	2	0	0	2
K8	Forensic Medicine	Moral	Catastrophe	8	0	2	10
K9	Forensic Pathology	Ethic	Disaster	133	2	6	141
K10	Forensic Pathology	Ethic	Calamity	2	0	0	2

K11	Forensic Pathology	Ethic	Cataclysm	0	0	0	0
K12	Forensic Pathology	Ethic	Catastrophe	1	1	0	2
K13	Forensic Pathology	Moral	Disaster	8	0	0	8
K14	Forensic Pathology	Moral	Calamity	1	0	0	1
K15	Forensic Pathology	Moral	Cataclysm	0	0	0	0
K16	Forensic Pathology	Moral	Catastrophe	4	0	0	4
	Total			**272**	**36**	**26**	**334**

ScienceDirect: A total 272 articles were found using Science Direct. 22 articles[1] appeared more than once. This possibly happened since I had applied various combinations of keywords and some overlap occurred. These repeats ranged in frequency from 2 to 6, and are detailed in the footnote to #1 above (in the footnote, the number next to the author's name indicates this frequency). These duplicates totalled to 48 and were removed. This brought the total articles from ScienceDirect down to 224 (Table 3.2).

PubMed: A total of 36 articles were found in PubMed. Seven articles were repeats within PubMed[2]. Five articles were common with the Science Direct search results[3]. Thus, we could identify 24 eligible articles in PubMed (Table 3.2).

EMBASE: A total of 26 articles turned up in EMBASE. Six articles were repeats within the EMBASE results[4]. Twelve articles repeated results from the

[1]*Black (2003) 2; Ford (2006) 2; Aghayev (2010) 2; Akhlagi (2010) 2; Lynch (2011) 3; Everette (2012) 3; Hou (2012) 2; Jones (2012) 2; Mostafa (2012) 2; Kelty (2013) 3; Akhlagi (2014) 2; Schotsmans (2014) 2; Stehrenberger (2014) 6; Sweet (2014) 2; Wong (2014) 2; Herve (2015); Zhang (2015); Ibrahim (2016) 2; Tambawala (2016) 2; Akhlagi (2016); Pajnic (2016); Upshaw Downs (2018) 3*

[2]*Ortenwall (2001); Williams (2002); Hansson (2006); Marx (2007); Unnikrishnan (2013); Schuliar (2014); Chung et al (2017)*

[3]*Jobling and Gill (2004); Hansson and Bjorkman (2006); Ruder (2011); Caenazzo et al (2013); Maguire et al (2013)*

[4]*Cordner and Coupland (2003); Chang (2012); Kumath (2012); Ruder (2012); Charlier (2016); Chung et al (2017)*

ScienceDirect and PubMed search engines[5]. Thus, a total of 8 eligible articles were identified from EMBASE (Table 3.2).

Thus a total of 256 articles were collected from the three search engines.

Table 3.2: Database searches after de-duplication

Search engine	**No. of articles**
Science Direct	224
PubMed	24
EMBASE	8
Total	**256**

Step II: Abstracts of these 256 papers were read. In the absence of abstracts, or when further clarification was required, full papers were browsed. The criterion for inclusion was that the article needed to engage in a significant manner with the ethical issues of forensic medicine during disasters. From the 224 articles of ScienceDirect, only 16 articles were identified as eligible according to this inclusion criterion[6]. Of the 24 articles from PubMed, 21 were excluded. So, the number of PubMed results came down to 3 eligible articles[7]. From EMBASE not one of the 8 articles was eligible. Thus, a total of 19 articles (out of 256) fitted the inclusion criterion, i.e. dealt with ethical issues of forensic medicine during disasters in a significant manner.[8] (See Table 3.3).

[5]*Cordner and Coupland (2003); Jobling and Gill (2004); De Valck (2006); Hansson and Bjorkman (2006); Sumathipala et al (2006); Chang (2012); Ruder (2012); Caenazzo et al. (2013); Edwards (2016) 2; Chung et al (2017); Upshaw Downs and Barsley (2018)*

[6]*Thomson (2001); Cordner and Coupland (2003); Jobling and Gill (2004); Hansson and Bjorkman (2006); Sumathipala et al (2006); De Valck (2006); Franchitto et al (2008); Kelman and Dodds (2009); Wilkinson (2012); Caenazzo et al (2013); Parker et al (2013); Calain (2014); Colville-Ebeling et al (2014) and Maguire et al (2014); Goodwin (2017); Upshaw Downs et al (2018)*

[7] *Knoppers et al (2006); Chung et al (2017); Thomsen (2017)*

[8]Explanation: The search engines picked up many articles where the keywords were used in a different context or situation: ethical clearance obtained from institutional ethics committees, anthropological measurements or forensic observations which the authors recommended as applicable in disaster, affiliation to ethics or disaster departments, disaster used in the context of bad outcomes (such as 'the space shuttle mission ended in a disaster') or keywords appeared as part of the journal name in the reference list (for example journals named 'Ethics' or 'Disaster Medicine')

Table 3.3: List of articles that fitted the inclusion criteria

Search engine	**No. of articles**	**Excluded articles**	**Articles with serious significant discussions of ethical issues in forensic medicine during disasters**	**Included articles**
Science Direct	224	208	Thomson (2001); Cordner and Coupland (2003); Jobling and Gill (2004); Sumathipala et al (2006); Hansson and Bjorkman (2006); De Valck (2006); Franchitto et al (2008); Kelman and Dodds (2009); Wilkinson (2012); Parker et al (2013); Caenazzo et al (2013); Calain (2014); Colville-Ebeling and et al (2014); Maguire et al (2014); Goodwin (2017); Upshaw Downs et al (2018)	16
PubMed	24	21	Knoppers et al (2006); Chung et al (2017); Thomsen (2017)	3
Embase	8	8	--	0
Total	256	237	**Total**	19

Step III: I conducted snowballing through the references in all these 19 articles. I found six more articles with significant discussion of the ethics of forensic medicine in disasters and included them in this review [Wicclair, (2002); Coupland and Cordner, (2003); Kelman, (2005); De La Grandmaison *et al.*, (2006); Tomasini, (2008)]. This brought the final total of all articles to 25.

3.3. Results

I reviewed the literature from January 2000 to December 2019. 25 articles discussed ethical issues of forensic medicine in disasters. Figure 1 shows a year-wise breakup of the articles.

The year 2006 showed an increase in the number of articles, following the tsunami in December 2004. In the years 2000, 2007, 2010, 2011, 2015, 2016 and 2019 there were no articles with serious discussion on ethical issues in disasters. Overall

there is a dearth of scholarly publications addressing the issue of ethics of forensic medicine in disasters.

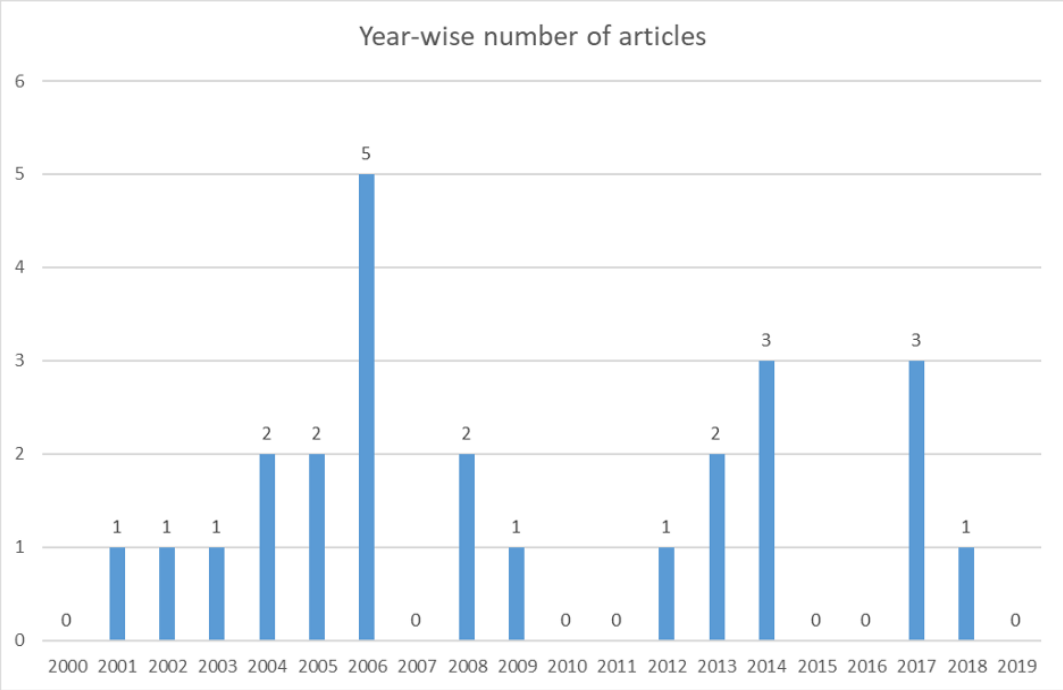

Figure 3.1: Year-wise breakup of articles

Among the 25 articles, 16 were written by authors from a medical background – forensic medicine, forensic pathology, forensic genetics, forensic odontology and forensic services (including ICRC and humanitarian aid), 6 were written by authors from philosophy or bioethics backgrounds, 1 from a legal background and 2 articles from an environmental studies background. Of the 25 articles only two were from authors from developing countries, describing disasters from their perspectives (Bhan (2005) - India, Sumathipala, Siribaddana and Perera (2006) - Sri Lanka).

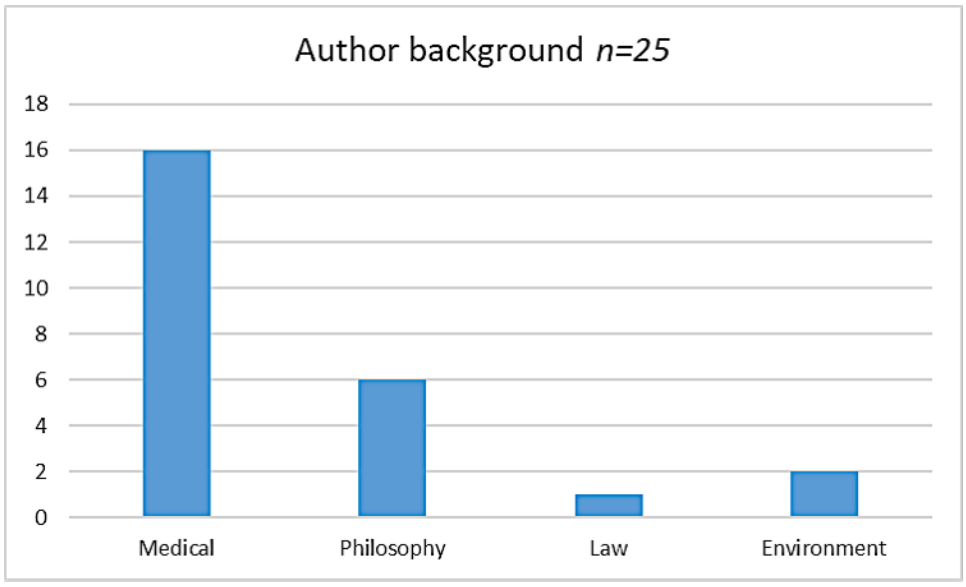

Figure 3.2: Breakup of the disciplines from where these articles originated

In addition to the above mentioned papers, other relevant studies [(Wicclair, (2008); Walker *et al.* (2014); Van Assche *et al.* (2015)] are also included in the literature review, making a total of 28 articles. While these papers did not discuss disaster situations (and thus did not appear in the search results of any search engine), they are relevant as they extensively discuss ethical issues surrounding research on the dead or their body parts. This is not to say that these are the only relevant papers that discuss the ethical issues surrounding research on the dead and their body parts. These papers are chosen because they discuss the ethical implications of research on dead and are used in formulating the recommendations presented in this study.

The papers were analyzed and the ethical issues each paper focused on were identified. Similar issues were grouped to form a category, 10 of which emerged after studying the relevant papers. Table 3.4 shows how many papers dealt with each category, and orders the categories from most discussed “research on the dead” to least discussed “disaster tourism”. When multiple categories were discussed by an equal number of papers, the ordering was based on how much a category was discussed by the papers that dealt with it. Thus, while the categories of “Privacy, confidentiality, medical and genetic data & incidental findings” and “Informed consent” were discussed by 7 papers each (see Table 3.4), the former category was discussed in greater detail than the latter.

Table 3.4: Ethical issues that emerged from the analysis of the literature

No	Categories	Authors	Total
1	Research on the dead	Wicclair (2008); Walker et al (2014); Caenazzo et al (2013); Parker et al (2013); Tomasini (2008); Knoppers et al (2006); Coupland and Cordner (2005); Thompson (2001)	8
2	Privacy, confidentiality, medical and genetic data & incidental findings	Walker et al (2014); Maguire et al (2014); Parker et al (2013), Hansson and Bjorkman (2006); Knoppers et al (2006); De Valck (2006); Jobling and Gill (2004)	7
3	Informed consent	Van Assche et al (2015); Calain (2014); Wilkinson (2012); Franchitto et al (2007); Knoppers et al (2006); Bhan (2004); Wicclair (2002)	7
4	Rights, interests and dignity of the dead	Thomsen (2017); Parker et al (2013;) Caenazzo et al (2012); Tomasini (2008); Knoppers et al (2006); Thompson (2001)	6
5	Guidelines and best practices	Goodwin (2017); Colville-Ebeling et al (2014); Wicclair (2008); Coupland and Cordner (2003), Cordner and Coupland (2003);	5
6	Professionalism	Upshaw Dawns et al (2018); Chung et al. (2017); de la Grandmaison et al (2006);	3
7	Ethics of media and publication	Calain (2014); Franchitto et al (2007); Bhan (2004)	3
8	Respect for cultural diversity	Sumathipala et al (2006); Coupland and Cordner (2003)	2

9	Research on disaster operations during disasters	Kelman (2005)	1
10	Disaster tourism	Kelman and Dodds (2009)	1

3.3.1. Research on the dead

In disaster situations, the goals of the forensic death investigation are to establish the identity of the deceased persons, the cause of death, the time since death and the cause of the disaster (Mason *et al.*, 2016). Identification is established by noting the individual's data like race, age, sex, fingerprints, tattoos, scars, dental records, DNA and other such personal identifying features. In many developing countries, identification is achieved through visual identification or examination of teeth.

In severely decomposed or fragmented bodies identifying deceased persons using the above methods are not applicable. DNA analysis is then the most reliable method of identification in these situations (Knoppers, Saginur and Cash, 2006; Caenazzo, Tozzo and Rodriguez, 2013; Parker, London and Aronson, 2013). DNA of the deceased is matched with DNA on her personal belongings like combs, brushes, and razors. This is called primary matching or direct matching (Knoppers, Saginur and Cash, 2006). Sometimes, when direct matching is not possible, DNA of the deceased is matched with DNA of the parents or siblings, which is called kinship matching. Here the probability of the deceased belonging to the same family is calculated. In both types of analyses, whether direct or kinship matching, the samples are supplied by the relatives resulting in a collection of a large number of samples that land up in storage laboratories (Parker, London and Aronson, 2013).

In secondary research stored samples collected during the disaster for the process of identification are used for further research at a later date. Samples of tissues, blood or DNA for analysis have potential for secondary research. DNA was used for the first time for identification in a disaster context after the 9/11 attack on the World Trade Center (Knoppers, Saginur and Cash, 2006). DNA analysis does not always establish identification in all the cases. Five years after the 9/11 attacks, more than half of the victims still remain unidentified. The samples have been kept in storage in the hope of future refinement in DNA analytical techniques (Knoppers, Saginur and Cash, 2006).

In my review of literature, I found that the use of stored samples, or the data and information associated with them, for further research, was the most commonly discussed ethical issue during disasters (Knoppers, Saginur and Cash, 2006; Caenazzo, Tozzo and Rodriguez, 2013).

3.3.1.1. Can tissues collected during disasters be used for secondary research without consent from relatives?

Knoppers, Saginur and Cash (2006) who critically analysed policy documents, legislation, and international instruments for research ethics propose secondary use of samples in select situations, providing for due dignity, autonomy and rights of the deceased. They suggest two broad areas of research on DNA tissue samples, where specific consent from the relatives is not necessary. One area of research is on methods to refine identification techniques (Knoppers, Saginur and Cash, 2006; Caenazzo, Tozzo and Rodriguez, 2013). Even in the case of victims who have been positively identified and the body handed over to the relatives, the stored tissues may be used without specific consent, albeit, only for the purpose of refinement and development of newer identification techniques, after anonymizing the data and obtaining ethical clearance. The second area of research proposed by the authors, where specific consent from relatives is not necessary, is when that research is aimed at studying the accident that resulted in the research subject's death, and the effect of such accidents on the human body. Knoppers, Saginur and Cash (2006) refer to this as research on the class of accident that caused the victim's death. As a hypothetical example: if death were due to inhalation of toxic fumes, then research on the effect of toxic fumes on the DNA of the stored samples would be classified as acceptable. The effects of the toxic fumes could be as far-ranging as malignancies, cardiac illnesses, toxicity-related studies and epidemiological study on diverse populations. This second area of research is justifiable as it addresses improvement of public health services and safety. Thus, these authors conclude that in all other cases, wherever data is identifiable, the consent of the relatives should be sought for any research (Knoppers, Saginur and Cash, 2006; Caenazzo, Tozzo and Rodriguez, 2013).

3.3.1.2. Is the disfiguring of dead bodies during research acceptable?

In 1978, the Department of Transportation, State of California, used recently dead people to study the efficacy of airbags in car accidents, with consent. It was to study injury prevention on cadavers (Thompson, 2001). Once this matter came out

in the media, there was considerable objection from the public, causing the research to be stopped. The study was obviously going to have a positive impact on the health and lives of all automobile users, yet the study had to be prematurely terminated, despite having taken consent from the relatives. The use of force or violence on the dead is capable of inciting strong negative emotions. Thompson (2001) opines that a dead body has a resemblance to a living person and any act that indignifies the dead could be looked upon as indignifying the living. Even with the consent of next of kin as in this case, Thompson (2001) reasons that stoppage of the study on the safety and efficiency of airbags using dead bodies exemplifies this argument. He advocates education of the public in the use of cadavers, tissues and organs after death and their potential for research.

Wicclair (2008) argues that any research that does not treat the body with respect, or which results in the family of the deceased perceiving disrespect should be avoided. This not only protects the living relatives from anguish, but also comforts society by assuring people that their bodies will not be treated disrespectfully after their death. Walker *et al.*, (2014) stress the importance of identifying subtle differences between studies with seemingly similar goals, as these subtle difference could greatly affect the ethical issues that arise in these studies.

3.3.2. Privacy, confidentiality, medical and genetic data, and incidental findings

In the normal course, when a person shares information with a doctor, there is an obligation to uphold confidentiality. The information shared needs to be protected from third parties. This duty of confidentiality provides the foundation for the basis of a trusting professional relationship between doctor and patient. In the context of a disaster situation, the forensic medicine expert has to protect the privacy and confidentiality of the body during the process of identification.

3.3.2.1. Right to privacy of the research subject vs. justice to the community

Hansson and Björkman, (2006) have addressed the issue of whether the right of the research subject prevails over matters of justice, using the example of the use of bio-bank information in aiding police in Sweden to apprehend a murderer. The crux of the discussion is whether use of bio-bank data for a forensic investigation would erode the public trust. The authors cite the incidence of knife-attack in a supermarket. The DNA of the attacker was found at the crime scene. Police

requested the blood bank to provide the suspect's sample for the purpose of comparison of its DNA with that of the sample obtained at the crime scene. The blood bank provided the sample which confirmed the identity of the offender. This resulted in a large number of people withdrawing samples from the blood bank. Soon the blood bank law was changed to restrict its use only for research and for criminal investigation as a forensic registry. The authors go on to compare this case with that of release of tissues and data from a blood bank after the tsunami disaster, where the blood bank released the samples for identification. They indicate that after the tsunami disaster, the blood bank policy was changed again to include sharing of data following exceptional accidents but not for forensic investigations.

De Valck (2006) analyzes the ethical dilemmas faced by dentists when they are asked to reveal dental records of their patients, thereby breaching doctor-patient confidentiality, in the hopes that these records could lead to identifying the dead in disasters. For example, dental data were requested for identifying the victims following the tsunami in 2004 by the organizations dealing with the DVI process. The dentists who were asked to release this information about their clients were unsure whether they could share this data with others or whether protecting the privacy of their client and confidentiality of the data should take precedence. (De Valck, (2006) agrees that the dental data should be released by the doctors, but emphasizes the need for the organizations involved with DVI to protect this transferred data by strengthening legal frameworks and SOPs.

According to Knoppers, Saginur and Cash (2006), stored samples belonging to the victims should be treated as those belonging to the vulnerable. Use of data of vulnerable persons for research carries a higher degree of responsibility on ethics committees to safeguard their interests. Hence research on stored samples should be cleared by Institutional Review Boards or Ethics Committees.

3.3.2.2. DNA database - balance between potential use and abuse

Many developed countries and a few developing countries make use of national DNA databases for crime investigations. The DNA databases are used in the detection and prevention of crimes. A criminal, whose profile is in the database, risks detection in any further criminal activity. Samples are taken (with or without consent) from every person arrested for a crime even without formal charging (suspects). When they are let go, the DNA is not deleted. When a person's information is in the database, his chances of being caught for subsequent crimes

are greater. In the UK even a mere suspect in a crime is sampled for DNA and his DNA persists in the police database, even if the person is subsequently not formally charged. Storing data from every suspect may point to the involvement of a particular group of people as criminals, as in some countries particular groups are targeted as suspects. This may result in the stereotyping of a community (Jobling and Gill, 2004). Maguire *et al.*, (2014) propose the balancing between rights of the individual and interest of the state. Whenever there is a tragedy, a disaster or a high-profile crime, the national DNA databases are requested to provide DNA reports of the suspected missing, which is compared with the dead body. After the Bali bombings in 2002 the Commonwealth Parliament amended the existing provisions of Part 1D of the *Crimes Act* to permit information held on a DNA database system to be disclosed by Australian law enforcement agencies for a 'permitted purpose' (Australian Law Reform Commission, 2010). While it is useful for commonwealth countries to get cooperation from the Australian government, the same collaboration is lacking in many countries, posing a delay in accessing national DNA databases.

3.3.2.3. Incidental findings

When primary matching is not possible, kinship matching is done with siblings (full brothers and sisters). While carrying out the DNA kinship analysis of disaster victims in the process of identification, experts sometimes come across unexpected findings that create ethical dilemmas. An incidental finding is a discovery about a gene that was not the original purpose for the testing. To illustrate, a personality disorder or misattributed paternity or parentage may be revealed on DNA analysis. At times the DNA of the deceased when compared to the sibling may reveal that they have only one parent in common. The ethical dilemma that confronts the forensic expert is whether this finding should be revealed (Parker, London and Aronson, 2013; Walker *et al.*, 2014).

3.3.3. Consent

Consent is based on the idea that human beings can make free and informed choices (Gupta, 2013). Any medical intervention or investigation requires consent from the patient or participant so that she knows the nature of the intervention or investigation and before consenting for the same. In the context of medical research, informed consent works only if the patient understands the problems, knows the advantages and disadvantages of the experimental procedure or

technique being studied, and actively chooses to undergo (or refuses) this treatment without being coerced in any way. Informed consent, within a research context, is aimed at minimizing the harm caused to the person as a result of the research (Wicclair, 2002). While a competent person can give consent for research participation, what should be done in case of a deceased person, whose tissues and samples are stored for identification but can also be used for secondary research? This applies in disasters as well, where a large number of tissues are stored, for unspecified lengths of time.

3.3.3.1. Consent for research

Wicclair (2002) describes two ways in which the consent of the family can protect the dead. First, it can protect the body from being used in research contrary to the values of the deceased. Second, it can protect the body from disrespectful treatment. Wicclair (2002) discusses various scenarios from definite consent, to presumption of consent, to absence of consent. He argues that research on the dead can only be permitted if the individual had consented to the use of her dead body in research while living. In the absence of such pre-mortem consent, the family can minimize potential harm to the dead by permitting only the type of research compatible with the values of the deceased. He adds that the family of the deceased should always be consulted regarding the use of their dead kin in research, though should not be able to veto any decision made by the individual during life. In the absence of pre-mortem consent, the family of the deceased have the power to decide whether or not the body of their relative can be used in research (Wicclair, 2002).

Wilkinson (2012) envisages four types of cases with respect to consent:

1. A person has consented through a public act of consent or dissent either by signing in a register or opting in or out.
2. A person has expressed a preference for the use of her body in a particular way but has not formally consented or dissented.
3. A person has not expressed a wish for her body to be used or not to be used, nor has she formally consented, but their attitudes can be inferred from beliefs and desires. For instance, if someone was known to mistrust science, it could be inferred that they would not want their body used in research after their death.
4. A person about whom no inference can be drawn as to her wish (Wilkinson, 2012).

Wilkinson (2012) takes a position that in the first scenario, using the dead for research does not infringe upon their rights. In the second scenario, her wishes should be respected and consent provided by the surrogate. Although it is agreed upon that the human body is inviolable the only tool that differentiates research from invasion of the body is consent. This is called the direct consent requirement. Wilkinson (2012) contests this view. While he agrees that the consent of the deceased during life is necessary for using her body in research, her lack of consent should not preclude her from being part of some research study, if she had expressed such a desire when alive. Thus, using her body in research would not be an infringement of her rights.

In the third scenario, the deceased might not have expressed a formal desire to be used in research, but from her words and actions, it might be inferred that she wanted to be included in some research study. Wilkinson (2012) argues that this is sufficient justification to defend the use of her body in research, and that such use does not infringe upon her rights.

However, if the antemortem consent from the deceased has not been obtained, if they have not expressed any desire to be used in research, or if their desires and inclinations cannot be inferred from their actions and words, then Wilkinson (2012) agrees that in such situations, it is better to not presume consent. Thus, in the fourth scenario, the deceased should not be used in research.

While Wilkinson (2012) argues that inferring the wishes and desires of the dead, thereby justifying their use in research does not violate their rights, he does not discuss the various aspects of the process of inference (who makes the inference, how they do it and how reliable such inference is).

In contrast to Wilkinson (2012), Van Assche *et al.*, (2015) argue that if an individual has not consented explicitly regarding the use of her body in postmortem research, then the researcher is justified in presuming her consent, unless she has explicitly stated to not be involved in some research. Their argument is based on the idea that everyone takes advantage of the benefits of biomedical research, and thus everyone has a duty to donate some of their body parts for research after their death.

Regarding consent on the issue of future use of samples obtained from terror/disaster victims for research, considering the sheer volumes, the chaos prevailing at the disaster site, and the grief of the relatives, Knoppers, Saginur and Cash (2006) argue that seeking consent is not feasible and should be avoided.

3.3.3.2. Consent for publication

Patients expect their privacy to be upheld when they come to hospitals. Their informed consent is taken for treatment, use of scientific or medical data and photographs, and (scientific) publication of their data and photographs.

Health care providers should be aware that photographs may be used for commercial activity by photographers during disasters, resulting in a breach of privacy and confidentiality of the victims or the deceased (Franchitto *et al.*, 2008). Caution must therefore be exercised by health care providers when providing journalists access to victims of the disasters. Informed consent for publication of photographs during disasters must be taken from the victim or surrogate family members (Bhan, 2005; Calain, 2013). The principle of respect for vulnerability is to some extent being upheld in research through the process of informed consent, the same is lacking with reference to photography in a disaster situation.

3.3.4. Rights, interests and dignity of the dead

Do the dead have any rights and interests? Human rights acts adopted in different countries are created to uphold rights of persons, including those who are not in a position to speak up for their rights. Thompson (2001) questions whether this protection would include the dead, as they are also not capable of protecting their own interests. The author argues that a person who has recently died is still recognizable as a human being and hence needs to be respected (Thompson, 2001). Caenazzo, Tozzo and Rodriguez (2013) also argues that during mass disasters the deceased should be treated as vulnerable and their rights should be protected. Furthermore, Knoppers, Saginur and Cash (2006) also opines that the interests of individuals must be upheld even after their death while Thompson (2001) suggests that the rights of a recently dead person should be transferred to the next of kin. Parker, London and Aronson (2013) qualify that interests of the dead subjects can be upheld by involving their families in the research process by informing them of the risks, potential harm and advantages of the research.

Thompson (2001) queries whether the principles of autonomy, beneficence, non-maleficence and justice, which are upheld during research on living patients, can also be used in relation to research on dead patients. Thompson (2001) also argues that failure to follow ethical principles in research may make even the noblest research abusive. The author proposes that once the research is over, the remains of the dead should be returned to the mortuaries or museums from which they were borrowed, or should be reburied if they were exhumed. He further argues

that the same principles are applicable and should be used in association with archived and ancient remains.

The need to protect the dignity of the dead plays a huge role in determining forensic action during disasters. Hence, there is a difference between forensic human rights work, which deals with documentation of human rights abuses, and humanitarian forensic action that comes into play during disasters (Thomsen, 2017). Humanitarian forensic action mainly tries to relieve suffering in times of disasters by extending care to the family of the deceased, informing the relatives, identifying the victims of the disasters and returning the dead bodies to the family. Hence in these situations, establishing culpability is not the main aim but rather managing the dead bodies respectfully (Thomsen, 2017).

3.3.4.1. Can the dead be harmed by their use in research?

Since the deceased cannot experience pain and suffering interventions on the dead body, such as taking samples for research, may on superficial consideration not amount to harm. Although the dead may not feel pain, the relatives expect their deceased to be treated with respect and be free from external intervention on the body, especially when they are recently dead (Wicclair, 2002).

Tomasini (2008) argues that the dead cannot be harmed, because to be harmed, one needs to exist. Only when alive, can a person be harmed. Death deprives one of any sensation. Nothing can affect the dead, as there is nothing to alter. He advances his argument by saying although no harm can be done to the dead, the same cannot be said of the relatives. To explain 'harm' he uses a phenomenological viewpoint. Although the observable change happens only to the person who is dead (from a state of being alive, she is now in a state of being dead), the relatives of the dead also undergo a change – from being relatives of a person who is alive, they become relatives of a person who has died (Tomasini, 2008). He adds that many relatives experience compounded grief when they find that their dead kin are not treated with dignity. Some feel that taking tissues and blood for research, without explicit consent, also amounts to harming the dead. Since the next of the kin have a responsibility of giving the last rites and fulfilling the wish of the deceased, if the relatives are not able to do so, it may result in their protracted grief and thereby cause them harm (Tomasini, 2008).

3.3.5. Guidelines and best practices

Every country has a different approach to forensic investigations (Cordner and Coupland, 2003). When forensic doctors work together towards a common objective, as in victim identification following mass disasters, the lack of guidelines and standard operating procedures results in tensions among professionals (Coupland and Cordner, 2003). The International Committee of the Red Cross (ICRC) initiatives – "The Missing" and "Disaster Victim Identification" (DVI) have resulted in the laying down of standard procedures for investigating the missing in disasters (International Committee of the Red Cross, 2003; Australian Law Reform Commission, 2010).

Goodwin (2017) stresses the importance of proper identification to give the families closure and endorses the following of guidelines so as to effectively identify the bodies in disasters.

In other medical fields, experimental or pragmatic knowledge will have to undergo the rigour of scientific proof by thorough clinical trials or cause-and-effect relationships, before it enters into the realm of evidence-based medical practice. The same is not true of autopsy practice, where controls are hard to define, and randomization is difficult. A forensic doctor relies more heavily on observation. So a person not exposed to a particular type of case, may overlook the presence of a finding during the autopsy, or not make efforts to uncover it. In addition, there is a wide variation in recording the presence of a postmortem finding between and within countries. Overall there is little effort in carrying out systematic research to validate the current practice, premise and techniques used in forensic medicine (Colville-Ebeling *et al.*, 2014).

Wicclair (2008) stresses that ethical guidelines should be constructed so as to respect the deceased and their family. If a dead body is used in research, the degree of invasiveness should be kept to a minimum and the research duration should be kept minimal. In addition, confidential information of the dead should be protected.

Forensic professionals need to work in unison in international settings according to best practice, making themselves accountable for examination and identification of victims (Coupland and Cordner, 2003).

3.3.6. Professionalism

The American Board of Medical Specialities describes medical professionalism as:

> A belief system in which group members ("professionals") declare to each other and the public the shared competency standards and ethical values they promise to uphold in their work and what the public and individual patients can and should expect from medical professionals (American Board of Family Medicine, 2020).

Mackenzie (2017) suggests that a code of medical ethics is a commitment to the patient and public at large that the medical professional will commit to cultivate, nurture and constantly update skills to serve not only their patients, but also society in general. Professionalism also encourages virtuous behaviour and results in better treatment of the deceased and their relatives (Upshaw Downs and Barsley, 2018).

De La Grandmaison *et al.* (2006) suggest that a forensic expert is required to be neutral and not attached to any political party or supporting a country in war. They are of the opinion that a forensic doctor with a strong prejudice or inclination to a particular party (political or otherwise) may not be able to bring neutrality to her work.

In most branches in health care, the patient is in the centre of the health care activity. Forensic medicine mostly deals with medico-legal cases; the first loyalty of forensic doctors is to the court of law.

An important part of forensic action during disasters is teamwork. Especially in disasters involving people of different nationalities, forensic doctors might have to work with forensic experts from other countries and organizations. In such situations, it is essential for forensic doctors to work professionally, in order to efficiently identify the dead. Chung *et al.* (2017) describe the disaster following the sinking of the ship Oryon 501 in the Bering Sea in 2016, resulting in 27 deaths and 27 missing persons. The bodies were transported to Busan (S. Korea) for Disaster Victim Identification (DVI). A DVI team consisting of South Koreans, Indonesians and Filipinos took part in the identification and repatriation of the bodies. The country where the disaster happens is responsible for respectful treatment of the dead bodies, proper identification and repatriation of the bodies (Chung *et al.*, 2017). Thus, efficient and professional work by the forensic doctors involved resulted in the optimal outcome.

3.3.7. Ethics of public display of photographs

Reporting disasters has a high readership value. In the scramble to be the first, reporters are prone to transgress the privacy of disaster victims. In this context, health care professionals have even greater responsibility to protect the victim's

privacy from media intrusion. Photographs are taken, insensitive to the vulnerability rendered on victims and their relatives in these situations. Photographs and videos captured in a disaster situation may have exploitation potential and may bring harm to the victims. Hence, in order to assure the victims of their privacy and the confidentiality of the data linked to them, consent must be taken from the victim directly or from relatives (Bhan, 2005; Franchitto *et al.*, 2008).

While doctors cannot publish photographs without adequate consent from the patient, the same does not apply to photojournalists. Sometimes the entire body is portrayed in a state of undress amidst unhygienic surroundings, which might stigmatize a community or culture. Such portrayal by journalists may result in media stereotypes, misrepresenting the entire community (Calain, 2013). Even if consent is taken, it may not have been, in a true sense, informed consent, if the purpose for which the photograph is being taken was not clear - viz. whether it will be utilized for news or for a humanitarian cause for mobilizing help (Calain, 2013).

Identification is the method of establishing the identity of a person. Photographs capture individual facial features and make a person identifiable (Franchitto *et al.*, 2008). Photographing victims of disasters establishes identity, and connects the missing to their families, but it also takes away privacy (Bhan, 2005; Franchitto *et al.*, 2008; Calain, 2013). A photograph has a potential to identify, to exploit for profit making, or to bring harm. Hence photographs (in hospital research and disaster settings) are guarded by legal provisions. Calain (2013) suggests that photographs should convey a meaning, like an aid worker serving an ill person. He implies that a photograph depicting a suffering person from a distant land acts on the viewer in two paradoxical ways: first, it brings the viewer and the viewed psychologically closer and second, the subjective feeling of distance is heightened if the viewer and viewed come from widely different cultures or societies. Both tend to make the photograph socially acceptable resulting in benevolent response from the donor.

In disasters, when the injured, the relatives and media are swarming all over the hospital, it is difficult to get the journalists out or stop them from taking pictures. A code of ethics confers on doctors a duty to protect the privacy of the patient, but this cannot be operationalized easily in disasters, considering the highly volatile situation. Some consensus needs to be reached as to how doctors should promote privacy, how the humanitarian aid workers can take photographs to raise donations and how photojournalists can photograph the victims without harming their dignity. The tragedy of the disaster is sharp enough without the addition of images of the dead and moribund in different states of injury (Calain, 2013). The photographer

has the potential to add to the grief of the relatives, intruding into their private space and in-dignifying the injured and the dead. In the final analysis, the media has to balance the publication for its readership against the privacy of the affected and at times their community (Bhan, 2005; Calain, 2013).

3.3.8. Respect for cultural diversity

Disasters bring more suffering and damage in developing and underdeveloped countries, due to lack of preparedness and planning. The rehabilitation process depends largely on aid received and on local policies. The dead need to be identified and given dignified last rites so that family and community can heal. Many times, the unidentified are given mass burials. This protracts the grief in the family and community (Sumathipala, Siribaddana and Perera, 2006). In disasters, the large number of bodies makes giving decent burials difficult. Hence mass graves cannot be totally avoided. In such cases, permanent identification tags should be made mandatory. In addition, the bodies should be laid out in culturally acceptable positions and overlaying should be avoided. These simple acts can significantly mitigate the trauma of the families of the victims. When families come to claim the bodies, seeing bodies piled up and tugging at them to get their relative's body, and in this process disturbing the arrangement of many other bodies, causes grief to the relatives (Sumathipala, Siribaddana and Perera, 2006).

"The Missing" is an ICRC initiative, which has laid down standards for international law to the effect that even in situation of mass killings in armed conflict, the dead must be respected. Forensic doctors must be aware of the international law while dealing with disasters and war crimes (International Committee of the Red Cross, 2003).

Forensic doctors from different countries form a team to assist in the DVI process. Therefore, they should also be familiar with local customs, and must bring to their task a sensitivity to understand cultural variations in death, handling of dead bodies and different methods of disposal and respect the same (Coupland and Cordner, 2003).

Thompson (2001) proposes that respect for beliefs of indigenous people is very important; their dead should be treated as living. Some indigenous peoples revere their dead and they believe that tissues taken for research but not analysed, or knowledge gained by research but not passed back to the community, amounts to abuse of their ancestors. They also perceive that after the research is over, the remains deserve to be given last rites according to their customs. Understanding

their approach to last rites within the context of their cultures is an important process of dignifying their dead (Thompson, 2001).

3.3.9. Research on disaster operations during disasters

Kelman (2005) tackles the issue of operational ethics research in technical rescue. “Technical Rescue” is a term that he uses to define situations where victims of disasters need to be rescued, or their bodies recovered from challenging circumstances. White water disaster rescue management, for example, evolved more out of mistakes that claimed lives of rescuers. So doing operational research in the area of techniques used in the rescue process is essential. Kelman (2005) identifies three ethical questions when such operational research is carried out.

1. Does carrying out disaster research during disaster situations hinder the management of disasters?
2. Does carrying out research or publishing about the processes (that may have resulted in loss of lives) during disasters hamper the disaster risk management activities?
3. Should a researcher take moral responsibility for negative outcomes that result from following her recommendations?

Kelman (2005) is of the opinion that research on rescue operations during disasters could interfere with rescue activities. When a member of the disaster rescue team knows she is being observed in the research process, she might behave differently. Moreover, if the rescuer is asked to respond to questions, it may distract her attention from the task at hand. If a member of the disaster management team herself is also a researcher, it might shift the attention of the embedded researcher from rescue to research protocol. The author concludes that disaster research methods should be peer reviewed, subjected to scientific rigour and involve all stakeholders, before operationalizing (Kelman, 2005).

3.3.10. Disaster tourism

Kelman and Dodds (2009) observe that whenever disaster strikes many people travel to the area to see disaster-stricken places and people out of sheer curiosity. This is called disaster tourism. The warnings of an impending disaster are designed to keep tourists away from disaster sites. Unfortunately, they often result in the opposite effect. Kelman and Dodds (2009) narrate that on Mount St. Helena, in 1980, the warnings of volcanic eruption to tourists to keep away, attracted more tourists to the site. On 18 May 1980 warnings to evacuate due to increased

volcanic activity were not paid heed to, resulting in the deaths of twenty tourists out of fifty-seven individuals who perished.

Does disaster tourism to the calamity zone reduce the victims to commodities of interest? Kelman and Dodds (2009) explore the different schools of thought. One maintains that disaster tourism helps in rehabilitation by bringing in money, others feel that tourists may burden the rescuers and hamper the process of disaster management. Unless a structured investigative or rehabilitative process strategically manages the tourists, curiosity-driven tourism may increase the burden on the affected community. At the disaster sites, professionals who have to grapple with managing victims, in addition have to bear the burden of the presence of tourists. Disaster tourism also might add to the burden on available resources. The authorities responsible for allowing public access need to balance the risk of allowing disaster tourism against the fact that economies might get back on their feet faster because of the money that disaster tourism brings in. Kelman and Dodds (2009) emphasize the need to have a code for tourists during disasters, which includes cautions to them on being a burden to others and respecting the cultural norms. They also caution the donors about donating items which are basic needs of and culturally acceptable to the affected communities. They cite the example of footwear like fancy stilettos being sent to disaster victims when the victims did not have access to food and water (Kelman and Dodds, 2009).

In this section (Section 3.3), I have presented the existing literature regarding the ethical issues that arise during forensic action in disaster settings. As stated in research objective 1 (Chapter 1, Section 1.2) I have used the literature review to identify the most discussed ethical issue in the academic context (the literature) – “research on the dead”.

3.4. Discussion

The previous section reveals that most of the existing literature on ethical issues arising during forensic action during disasters is from developed countries. Only two papers were written by researchers from developing countries, and focused on developing countries (Bhan, 2005; Sumathipala, Siribaddana and Perera, 2006). Thus the ethical issues identified through this literature review are those primarily faced by developed countries, and all of these issues might not be applicable to developing countries like India. Since one of the objectives of this study is to understand the ethical issues that arise in the course of forensic action

during disasters in India (Chapter 1, Section 1.2), in this section, I discuss these ethical issues from the perspective of a developing country like India.

3.4.1. Research on the dead

In the review of the literature, I found research on the dead to be the most discussed ethical issue during disasters. This included ethical issues pertaining not just to research on the dead body, but also on medical data, genetic data and DNA analysis (including stored samples) obtained from the dead and their families for the process of identification. The main two ethical questions relating to research on the dead were whether research should be allowed on samples obtained for the purpose of identification; and whether the disfiguration of dead bodies in the course of research on them is acceptable. What emerges from the results of the review, is that while some countries have set guidelines that direct research on samples obtained from the dead (Knoppers, Saginur and Cash, 2006), there is a need for every country to evolve its own set of guidelines.

In India in 2016, a study called 'Reanima' was announced and the researcher advertised in local newspapers asking for brain-dead bodies to be handed over for a study on the use of stem cells (Mudur, 2016). The aim of the project was to reverse brain-death in these bodies (medical opinion holds brain-death to be irreversible). As India did not have set guidelines on whether research can be done on the dead until 2017 (Mathur, 2017) this study was stopped by public outcry and not by an ethical review committee (Srinivasan and Johari, 2016). Hence, in the absence of guidelines on research on the dead, the possibility of misuse of unclaimed dead bodies after disaster cannot be ruled out. While India does have guidelines as of 2017 (Mathur, 2017), these guidelines need to be refined so as to elucidate types of research that are permissible on the dead and oversight mechanisms that need to be in place for such research considering the vulnerability and possible harm to the relatives of the dead.

Caenazzo, Tozzo and Rodriguez (2013) argue that secondary research on stored samples collected during disasters should be restricted to the purpose of improving identification mechanisms and procedures. Several authors have opined that if the tissues or data obtained in the process of disaster victim identification are suitably anonymized, further ethically acceptable research can be done on the samples (Knoppers, Saginur and Cash, 2006; Caenazzo, Tozzo and Rodriguez, 2013). Although this is true in many cases, advanced genetic information may give enough clues that may result in identifying the person through the tissues, even

when anonymized (Schmidt and Callier, 2012). Hence permitting genetic research on anonymized samples needs further exploration and deliberation.

In many cultures, there is a value placed on the intactness of the dead body and hence, historically, post-mortem examinations of dead persons were objected to by several religions (Boglioli and Mark, 1990). While with time, autopsy procedures have gained acceptance, disfiguring or harming the integrity of a dead body evokes strong negative responses in most communities. Furthermore, research that harms sentiments of a community by disfiguring dead bodies may be viewed as abusive (Thompson, 2001). These considerations are especially relevant in a diverse country like India where different religions and cultures have different practices for dealing with the dead.

3.4.2. Privacy, confidentiality, medical and genetic data & incidental findings

While every individual has a right to privacy, there has been little discussion on whether the right to privacy should extend to the dead. Various challenges arise in issues relating to privacy after death in disasters. Privacy of many can be breached by hacking. Information about the deceased, family and health related information make headlines in the media However, little thought is given to the breach of privacy and confidentiality entailed in the use of the data. The concept of privacy is even more threatened now than in the past, given the complexity of today's digital era where information of the deceased can be accessed, misrepresented and used to slander.

Particularly in the case of genetic research on the dead, the concept of privacy becomes paramount as it impacts the privacy and confidentiality of living relatives. When faced with the dilemma of revealing genetic research results pertaining to kinship or other hereditary characteristics to the relatives of dead research subject, the forensic professional is torn between telling the truth and beneficence. If the truth is revealed, it may result in the family being ostracized or discriminated against. If one balances the value of research versus potential harm to living relatives, the latter usually wins. Parker, London and Aronson (2013) report that when family members are told that they will not be informed about incidental findings, they are more likely to agree to kinship analysis. At a time when a family is grieving over the death of a near one, revealing incidental findings that impact the relationship to the deceased might only make things worse.

In times of disasters, when there is a greater probability of incidental findings being publicized and sensationalized, the potential damage to the relatives is even greater. Hence, many authors argue that even in death, privacy and confidentiality of the research subject should be upheld and incidental findings from research on genetic or other medical data should not be revealed (Caenazzo, Tozzo and Rodriguez, 2013; Parker, London and Aronson, 2013).

3.4.3. Consent

One of the ways misuse or abuse of the body can be prevented, is to obtain pre-mortem consent, or consent from a relative when pre-mortem consent is missing (Wicclair, 2002). The latter may enable a reconstruction of the wishes of the deceased in the absence of expressed consent (Wilkinson, 2012). From the review of literature, on the basis of consent I found two main categories where research on the dead is acceptable: (1) when identification of the subject from the medical data is possible, antemortem consent or consent from the relatives is a must; (2) in cases where consent has not been obtained, the subject has to be anonymized (Wicclair, 2002; Knoppers, Saginur and Cash, 2006; Wilkinson, 2012).

Allowing anonymized samples to be used in research, without consent, would fail to protect the human rights of the deceased subjects even if their identity has been de-linked from their tissues and data. This is because human tissue has been commodified and there is a capital value on biological tissue. Forgoing the procedure for ante-mortem consent may tempt researchers to not value the dead but to make a commercial venture of the body or tissues (Datta, Wellings and Kessel, 2013). It would also give researchers added incentive to de-link the personal data so that consent would not be required in de-linked samples.

When obtaining consent for the publication of medical data, Bhan (2005) and Franchitto *et al.* (2008) stress that the relatives of the deceased should be informed regarding the type of publication, its readership and use, and care should be taken to prevent any undignified portrayal of the deceased. However, this process of obtaining consent depends on the context: in disaster situations, when relatives are grieving, consent should not be obtained at the cost of inflicting further emotional harm (Knoppers, Saginur and Cash, 2006).

In India, consent needs to be further explored in the context of both antemortem consent and consent from the relatives for posthumous use of a body. A person may consent to the use of her body for research after her death in a particular way, but that does not guarantee that her family would accept her wish in the case of

conflict with their own religious sentiments. Hence even though pre-mortem consent is a must for use of body for research in disasters, even with that consent, we may have to wait for the family to make a call.

3.4.4. Rights, interests and dignity of the dead

The issues of rights, interests and dignity of the dead cannot be generalized and must be examined based on religious and cultural contexts. Every situation would need to be analyzed on its own merits and demerits. Rights, interests and dignity of people extend even after death, albeit limited to the extent of fulfilling their culturally appropriate last rites, wishes and preventing harm by way of actions that go against their known values (Caenazzo, Tozzo and Rodriguez, 2013).

In further continuation of the above rights, Parker, London and Aronson (2013) stress that in the event of disaster, the process of identification and returning the remains addresses justice to the bereaved by providing for proper closure for the relatives, and social benefits like pension and insurance which is their due.

Infringement of these rights could be tantamount to harming the dead. The term 'harming the dead' is not restricted to harm to the body or persona of the dead, but also extends to the relatives. The dead live on in the memory of their loved ones and any harm to the body of the deceased can cause harm to the relatives.

In the present era of commercialization, are blood products, stem cells, organs and even dead bodies considered as property? If the dead body is not eligible to be considered as property, no one could own it. Yet there are embalmed bodies in museums and medical schools for display or for dissection. According to Mason *et al.* (2016) if the dead body has certain skills applied on it such as preservation technique like embalming or plastination applied on it, it can be viewed as a property of the museum or institution to be displayed as an exhibit. When its use is over, it should be interred in a dignified way.

In a resource-limited country like India, the cost-benefit ratio of doing research on the dead needs to be considered from the perspective of justice. While significant discussion focuses on consent for the use of specimens in order to respect the deceased, not much is discussed on what should be done after the research is over, when tissues are of no more use. How should the tissues be handled to uphold the dignity of the person? Thompson (2001) suggests that even though tissues are retained for research, it is to be remembered that researchers are caretakers and not owners of the tissues. Thus the tissues should be returned to where they came from (mortuaries, museums, etc.) or be given a dignified disposal.

3.4.5. Guidelines and best practices

There is a difference in approach to forensic practice at local and international levels (Cordner and Coupland, 2003). In a non-disaster setting besides identification, the objective of forensic autopsy is also to find the cause of death besides many other objectives. In disaster settings, especially in war torn areas, the focus is solely identification.

Attempts should be made to bridge the gap between local and global practice, so that professions that cater to diverse populations can cultivate the skills required to deal with them. This calls for efforts by organizations like the International Committee of the Red Cross (ICRC) to liaise with national forensic bodies to impart uniform training for disaster management. Using standardized templates to collect autopsy findings can help in standardizing autopsy practice and facilitate the move towards global forensic services. In addition, this may lead to upscaling of professional skills, internalizing uniform standards, and adopting globally accepted checklists.

In India, autopsies are performed not only by forensic pathologists but also by medical officers, designated by the government without specialized training in forensic medicine or pathology. Hence the standard of autopsy is varied. Moreover, disasters might involve victims from varied cultures and societies. Lack of specific knowledge regarding handling of bodies and lack of appreciation of diverse cultures are some of the reasons that create tension within the disaster management team and with the relatives. This deficiency may be due to lack of knowledge by the forensic investigator regarding the international laws and awareness of cultural differences. Procedures for identification, exhumation, and return of bodies to families for last rites differ from country to country. Similarly, the lack of knowledge of guidelines regarding data protection, genetic information from relatives, deceased body parts and local cultural customs regarding the dead, also contribute to the varied practice (Coupland and Cordner, 2003).

Colville-Ebeling *et al.* (2014) highlight the wide variation in autopsy practice and suggested checklists and uniform autopsy protocols. In India there is a wide variation in autopsy practice and every institution designs its own autopsy format resulting in standards not being maintained. Standard Autopsy protocol across institutions and countries can be useful in disasters to uniformly capture the data. In that way wherever the disaster occurs, we can hope for uniformity and standards in practice.

A lack of standardized operating procedures during disasters can result in forensic action becoming ineffective and might result in misidentification of dead bodies. For instance, after the Mangalore air crash disaster (2010), bodies were identified either through personal artefacts or through visual recognition by the relatives (D'Souza, Vaswani and Badiadka, 2013). Of the 158 who lost their lives, 136 bodies were returned to the families without the DNA analysis. 22 bodies that remained unidentified had 32 claimants. At this point the assistance of DNA analysis was sought. 11 bodies were identified by DNA analysis while 11 remained unidentified and were not biologically related to the claimants (Nandineni *et al.*, 2010). This strongly suggests that 11 bodies were misidentified and handed over. If one had followed the guidelines for DNA analysis in disasters, this misidentification could probably have been averted.

3.4.6. Professionalism

Forensic medicine in India has seen a change in the past decade with the focus shifting from individual investigation to working in teams. While ten years ago, forensic professionals worked alone, today, during disasters, they are expected to work at the disaster site in teams and help with identification and returning of a large number of bodies. This change from individual player to team player; from a few bodies to multitude of bodies is not without accompanying challenges. Furthermore, forensic techniques involved in the identification of disaster victims call for increased skill and adherence to international standards on the part of the forensic professional (Upshaw Downs and Barsley, 2018).

The autopsy, which a forensic person performed in her mortuary with available equipment, now requires her to do so in a way that is globally acceptable in case of disasters. Disasters have imposed an imperative of professionalism. In order to stay current, to develop necessary skills and to benchmark performance against international standards forensic professionals need to be trained accordingly. Virtues of patience and compassion need to be inculcated by forensic personnel to enable sensitive handling of disaster victims and their relatives (Upshaw Downs and Barsley, 2018).

3.4.7. Ethics of public display of photographs

In a culturally sensitive environment, consent of the community may be sought before printing photographs in the media, giving due regard to the sensitivity and delicate nature of the likelihood of photographs misrepresenting the community.

Bhan (2005), Franchitto *et al.* (2008), Calain (2013) all agree that the consent of the community should be taken in sensitive times like during disasters, but can this be operationalized? For instance, some cultures still take picturizing the dead body without clothes as in bomb blast like situation affront to their culture and sensitivity. Publishing such a photograph could harm the community.

Photographs of disaster victims published for the purpose of identification may be taken keeping the local sensibilities in mind. In some cultures, exposing feet is a taboo; in some it is the upper torso. In such cases, indiscriminate circulation of photographs may distress the relatives, as the grief over losing a loved one is compounded by the undignified portrayal of the same (Bhan, 2005). There should be a concerted effort by professional bodies in healthcare, humanitarian aid and media, to work to establish a common code for privacy, and confidentiality, so that when they meet to manage disasters, they do not have to step on each other's toes, but understand the processes common to all. This problem cannot be solved by professional bodies in isolation but by dialogue, discourse and collaboration.

3.4.8. Respect for cultural diversity

Can there be a generalized forensic practice, generalizable to all populations or should the forensic process and procedures respect cultural diversity? How does cultural diversity play out in forensic procedures during disasters?

Giving the deceased last rites differs from culture to culture. In disasters, when bodies are not identified, they are given temporary burial till such time that they are identified. After identification the bodies are handed over to the relatives for last rites. In some cultures, cremation is an accepted form of last rite. Immersion of the ashes in a holy river marks the end of grieving. Hence the professional responsibility of the forensic doctor is in understanding the cultural variations in treating dead bodies, because the customs and religious rites serve as cushions to facilitate the bereavement. Coupland and Cordner (2003) and Sumathipala, Siribaddana and Perera (2006) stress that the diversity of families have to be respected and efforts be made to handle the dead in a culturally appropriate manner.

In developing countries, during mass disasters involving citizens of multiple nations, relatives of victims from developing countries perceive some discrimination, as only the more affluent countries have their deceased identified and repatriated. However, victims from developing countries, including from the local population, are denied identification. Hence victims from the local population

and other developing countries, face the ignominy of mass burials, and their relatives are not even sure if their missing relative is one among the many (Sumathipala, Siribaddana and Perera, 2006).

If one accepts the universal principle that “all humans are equal” in life, the same ought to continue even after death. The differential approach to DNA analysis of victims from mass graves in Sri Lanka in the aftermath of the tsunami, brings to the forefront the ethical issues of justice, equality and human dignity, and the dichotomy that exists between developed and developing nations.

3.4.9. Research on disaster operations during disasters

Disasters are not level playing grounds and the research carried out in this setting is not controlled, especially with respect to outcomes. The results of managing disaster in a particular way may not be possible to replicate in another due to varied and complex environmental situations. A disaster due to the collapse of a building would pose different challenges than one due to floods, which would be quite different to a disaster caused by suicide bomb explosions. Nevertheless, research in operationalizing disasters needs to be done, for there are general and specific lessons to be learnt. Kelman (2005) explains that the crux of doing this type of research is maintaining ethicality and scientific rigour. This can be achieved by applying the most rigorous scientific standards to the research protocol before it is given ethical clearance. Scientific rigour and peer reviewing have to be stringent if paper published advocates a methodology to be used in disasters.

3.4.10. Disaster tourism

There are both positive and negative sides of disaster tourism. Sometimes disaster tourism brings about a boom in the local economy, but often, the tourists themselves pose an additional threat to rescue operators and add burden on the limited resources (Kelman and Dodds, 2009).

Haines analyzes how thousands of people milling around the crashed plane blocked access to the injured and the dead (Haines, 2012). Traffic jams by tourist cars on the airport approach road, meant experts could not reach the disaster site and scientific examination of the disaster was not possible.

When there is a huge mob outside a mortuary, the chances of unrest at the site are increased. Disaster tourism should be actively discouraged – since it could reduce the victims and their relatives to objects, and senseless “selfies” would

further encourage disaster voyeurism in addition to putting the visitors and rescuers to added risk.

3.5. Conclusion

Based on my review and interpretation of the existing literature regarding ethical issues faced by forensic professionals during disasters, I identify and discuss ten issues in the previous sections (Sections 3.3 and 3.4). The results and subsequent discussions derive mostly from articles where ethical issues have been addressed, studied and refined, in developed countries. Of the 28 articles relevant to the field of ethics during disasters, only two articles were from developing countries (India Sri Lanka respectively). Neither of these studies addressed the ethical treatment of dead bodies by forensic doctors. Thus, the literature review revealed a serious dearth of studies from developing countries that deliberate on the ethics of forensic practice in these countries during disasters. In fact, the question: 'What are the ethical issues faced by forensic doctors during disaster situations in India?' has not been addressed or discussed until now.

Thus, my study proposes to address this absence by carrying out research on this question. I believe this question is important as ethical issues are highly context-specific, and ethical issues surrounding the dead are largely a result of the social, economic, religious and cultural factors that are different in different communities. In my experience of dealing with disasters in India as a forensic professional, ethical issues faced in the Indian context are different from ethical concerns in developed countries. This is due to cultural differences in how first responders and even bystanders react to disasters, the level of training of forensic professionals, and because of limitations in access to technological resources amongst others. Hence, the ethical issues faced by Indian forensic doctors during disasters, taking into consideration these context-specific constraints, need to be explored.

My study proposes to do this by interviewing in-depth forensic professionals with experience of dealing with disasters in India. On the basis of findings that emerge from my study I will synthesize a body of recommendations backed by ethical analysis (Chapter 6 and 7) that might pave the way for better guidelines in the ethics of forensic practice during disasters in India. The next chapter will describe in detail the background, justification and design of the empirical study.

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Chapter 4: Methodology for qualitative research

4.1. Introduction

My review of the literature found a dearth of empirical articles describing the ethical issues faced by forensic doctors in India in the context of disasters. I wanted to know whether the ethical issues brought out through the literature review are the same as those experienced by forensic doctors in India. Thus, I framed my research question as "What are the ethical issues experienced by forensic doctors in India when dealing with the dead during disasters?" This chapter details the methodology I have used to answer this research question.

The main aim of the following sections (4.2 - 4.5) is to describe the various assumptions I have made while designing my study. My methodology, with its underlying assumptions allowed me to construct from interviews, the perspectives of Indian forensic professionals on ethical issues faced by them during disasters. I begin with a short introduction on the nature of knowledge and its philosophical underpinnings, as this provides the framework to compare qualitative and quantitative methodologies of research. Further, I argue, based on this comparison, why I have chosen the grounded theory approach for analyzing the perspectives of Indian forensic professionals.

4.2. Nature of knowledge and philosophical underpinnings

Various philosophers have described the nature of knowledge and the ways of acquiring or creating it differently. According to some philosophers, knowledge needs to be experienced through sensory inputs. This form of knowledge is *a posteriori* knowledge (Stone, 2008). Other philosophers like Nietzsche and Rorty have questioned this view and maintain that what is believed to be knowledge can be perceived in multiple ways and hence is a matter of perspectives (Ramberg, 2009; Anderson, 2017).

Hence, knowledge garnered through research, is frequently built on assumptions. These assumptions may or may not be true, but one may believe them to be so. An example of a knowledge assumption made during research, is when researchers believe that a drug that acts in a particular manner on one participant, will act on every other participant in exactly the same way. This assumption is necessary; otherwise the study cannot be carried out. Researchers often take such assumptions for granted, though they may never truly know whether such justifications are borne out or not (Harman and Sherman, 2004). However, these

assumptions, choices and their philosophical underpinnings are essential to the design of any research study.

Creswell (2003) has designed a three-question model to apply before deciding on the design of the research. First, what knowledge claims are being assumed by the investigator and what is the theoretical background to these (ontological assumptions)? Second, what are the strategies adopted to inquire into the research question (methodology)? And finally, what processes of data collection will be used and how will the data be analyzed (method) (Creswell, 2003)?

As this study creates knowledge, and the framework and analysis in this study are greatly influenced by its ontological, epistemological and methodological assumptions, I will first attempt to describe the relevant theories that will provide the reader with the context to understand the knowledge claims that I have made (Sections 4.3). Following the description of the knowledge claims made in this study, I will describe my choice of methodology (section 4.4) and method (section 4.5) in answer to Cresswell's three-question model.

4.3. Types of assumptions or knowledge claims

Very often we "claim" to know, without truly knowing whether we know or not. Such assumptions influence the research and its outcomes. To acknowledge the influence of such knowledge claims and guard against any biases that may come with them, it is essential to understand which knowledge claims the research methodology is based on.

Philosophers have categorized assumptions or knowledge claims into three main categories: ontological assumptions, epistemological assumptions and axiological assumptions (Crotty, 1998; Creswell and Poth, 2018). Ontological assumptions deal with the researcher's position on the nature of reality; a researcher must describe her perceptions and make clear his assumptions on the nature of reality (Crotty, 1998). Epistemological assumptions deal with the creation, acquisition and communication of knowledge (Guba and Lincoln, 1994). Axiological assumptions deal with the value of the research and how it is expressed (Scotland, 2012). Hence, these assumptions can be summarized as the answers to the questions: "What exists? How do I know? What is valuable?" (Durant-Law, 2005).

4.3.1. Ontological assumptions

Three ontological assumptions commonly used in research are: realism, materialism and idealism (Snape and Spencer, 2003).

1. **Realism:** The concept of realism deals with the idea of reality as independent from the human mind. In other words, there is a distinction between how the world is and how people perceive it (Snape and Spencer, 2003). Direct realism is what is seen and interpreted as seen (Brown, 1992). But many times, our senses can be deceived. What we perceive may not be accurate and hence may not reflect the real world. On the other hand, critical realism posits that while certain aspects of an object may be more accurately perceived by the senses, we cannot assume that what we perceive accurately represents the object (Brown, 1992).
2. **Materialism:** The second kind of ontological assumption is materialism which views reality as solely deriving from material bodies, substances, processes and their interactions. All research in the natural sciences is founded in materialism whereas it is most difficult to sustain ontological assumption in social science research (Stack, 1998).
3. **Idealism:** This third ontological stance holds that reality can only be perceived through the human mind and intellect. In other words, reality is an artifact of the human mind (Sprigge, 1998).

In addition to the traditional stances, “subtle reality” claims that as reality is subjective, the observations made during research will vary based on the research methodology adopted and types of participants involved (Hammersley, 1992; Duncan and Nicol, 2004). There is an acceptance that though the social world exists independently, it is nevertheless accessible to the interpretation of the responder or researcher, through their respective experiences (Snape and Spencer, 2003). Although reality exists, it is left to the interpretation of the researcher and the participant, defined within a common fraternity with shared experiences.

In this study, I have adopted subtle reality as an ontological assumption. That is to say, the interviewer and the interviewees come from a common background and share disaster experiences, thus better understanding experience from those who have experienced forensic work in disasters.

4.3.2. Epistemological assumptions

Epistemology elaborates the nature of knowledge and its relation to truth, belief and justification. Objectivity and truthfulness are two criteria for evaluating knowledge and a researcher needs to acquire knowledge by verifiable means (Soini and Kronqvist, 2011). In philosophy, several epistemological assumptions

have been formulated. As my study is an example of empirical research, I will describe briefly the development and types of empiricism relevant to my study:

4.3.2.1. Empiricism

The word “empirical” means originating in or based on observation or experience. Empiricism is the belief that experience is the only way to measure reality or discover the truth (Alston, 1998). Hence, empiricism advocates observing phenomena in the social world to gain knowledge.

Since the enlightenment period, empiricism has come to mean the process of learning about the world through scientific means using concepts, methodologies and techniques. David Hume emphasised that the world becomes known to us through our experiences, which are perceived through our senses (Hume, 1740). Evidence based on direct observation, and gathered in a neutral way, are the tenets of empiricism.

Related to the empirical school of philosophy, are the epistemological stances of positivism, post-positivism and constructivism that take differing approaches to how they create knowledge from experiences.

1. **Classical Positivism:** The term positivism was coined by Auguste Comte (Bourdeau, 2018) who asserted that the social world, just like the natural world, can be studied in terms of fixed laws, an epistemological view called positivism (Vannini, 2008). Classical positivism formed a strong basis for generating knowledge of physical and social worlds by the use of empirical data (Martineau, 1853).
2. **Logical Positivism:** Here, a clear-cut difference is made between science and metaphysics using the verifiability principle (Ayer, 1936). This principle postulates that if a phenomenon can be analyzed or empirically verified, that statement or phenomenon is considered to be meaningful. Logical positivism rejects human subjectivity in the process of creation of knowledge.
3. **Post-positivism:** While positivism is a popular epistemological assumption made in the natural sciences, and while it has been widely used in the social sciences, it ignores all sources of knowledge not based in observation (Fox, 2008). Post-positivism rejects the positivist view that human emotion, interpretation and subjective experience are not valid sources of knowledge. Hence, post-positivism is a broad category of several epistemological stances that reject positivist claims (Fox, 2008).

4. **Constructivism:** One view of philosophers of science is that the nature of scientific knowledge is determined not by the external world, but rather constructed by researchers (Downes, 1998). While a major criticism of this view, called constructivism, is that constructivists *create* reality, it is more accurate to state that this reality is a result primarily of the researcher and is determined by the external world only to a lesser degree (Downes, 1998). In addition to being an epistemological assumption, constructivism has also been extended to the validation of moral principles in meta ethics. Normative constructivism holds that acceptable moral principles are those that rational agents construct by rationally deliberating upon hypothetical choices (Bagnoli, 2017).

4.3.2.2. Positivism versus constructivism

Positivism gained popularity in the early 20th century when it was referred to as "logical positivism' or "logical empiricism" and had a great impact on social science research (Snape and Spencer, 2003; Hammersley, 2013). Positivists argue that the researcher learns about reality by hypothesis testing, experiments or correlations (Rossman and Rallis, 2017). Contrary to the single reality that is believed to exist by positivists, some social scientists hold that there are multiple realities in the social world. However, in the constructivist approach, knowledge is created through the social interaction between the researcher, other human beings and the world (Crotty, 1998). Here truth is perceived to be individualistic. Positivism contends that knowledge is created in a logical, scientific manner, whereas constructivism holds that knowledge is "constructed" based on observable experiences. Constructivism has at its core interaction between human intelligence and experiences of the social world. The research findings that emerge essentially from the data or theme by inductive approach are without the barriers of structured methodologies and the researcher constructs the world on the interpretation of the participant (Thomas, 2006).

In this study, I have adopted an epistemological stance of constructivism. That is to say, knowledge about reality that arises from this study is constructed from the subjective perceptions of and interactions between the researcher and the participants.

4.3.3. Methodological choices

Methodological choices define the rationale that the researcher adopts while inquiring into the research question. Most studies adopt one of three types of reasoning that form the methodological assumption made.

1. **Deductive reasoning:** In this type of reasoning, the premises conclusively support the conclusions arrived at in the study. Deductive method starts with a theory or hypothesis, and using the system of logic proves its conclusions fully (Copi, Cohen and McMahon, 2014). In other words, the conclusions of a deductive study logically flow from the theory or hypothesis. Deductive reasoning is at the core of theoretical research approaches. Theoretical research based on existing hypotheses or theories is formulated to explain, predict, describe a phenomenon or even to challenge existing knowledge.
2. **Inductive reasoning:** In this second type of reasoning the premises provide only *some* degree of support for their conclusions. This is in contrast to deductive arguments – whose premises conclusively support their conclusion. Inductive reasoning does not provide one with certainties, but works in terms of probabilities (Copi, Cohen and McMahon, 2014).
3. **Abductive reasoning:** This third category of logical reasoning, like inductive reasoning, draws conclusions not totally supported by the premises. It generates a hypothesis or an educated guess based on observations (Walton, 2015).

Like induction, abduction does not give certainty, but is helpful in situations where there is no evidence from the past to go about making a decision (Copi, Cohen and McMahon, 2014; Walton, 2015). Doctors and detectives frequently use this kind of reasoning. Since educated guesses require the use of information or evidence at hand, data are needed to dig up more data.

Both inductive and abductive reasoning are ampliative, meaning they go beyond what is contained in the premise (Douven, 2017). The difference between the two is that, in inductive reasoning, there is appeal to observed frequencies or instances whereas in abductive reasoning along with appeal to observed frequencies there may also be explanatory data considerations (Copi, Cohen and McMahon, 2014; Walton, 2015).

This study is aimed at developing a grounded theory based on the in-depth interviews of forensic doctors, with no other data considerations. I start working with specific details and then generalize this to a larger context. Thus, I use an

inductive approach, building my theory only from the data collected through the interviews.

Using the method of constant comparison and going back to the interviewee, the data that emerged were captured from the experiences. Methodology in the present qualitative study is inductive and emerging, uses grounded theory attributed by broad-based data collection and analysis.

4.4. Knowledge assumptions made in this study

The present study involves understanding perspectives of forensic doctors, through their subjective experiences of facing ethical issues in disasters. In carrying out this study, I use constructivism in the interpretive framework with the assumptions and choices summarized in table 4.1.

Table 4.1: Assumptions and choices made in the study

(Adapted from table 2.3, Cresswell, 2007)

Ontological belief- Nature of reality	**Epistemological belief- How reality is known**	**Axiological belief- Values In research**	**Methodological Beliefs- Approach to inquiry**
Reality exists but depends on the interpretation of the researcher and the participant, defined within a common fraternity with shared experiences.	Constructivism: knowledge about reality is constructed from the subjective perceptions and interactions between the researcher and participants.	Individual values are respected and acknowledged.	Inductive, emerging, uses grounded theory with broad-based data collection and analysis.

4.5. Types of research methods

The research method determines how the data are collected and analyzed in the course of the study. The two main types of methods are quantitative research and qualitative research.

4.5.1. Quantitative research

Quantitative research is built on quantitative, measurable parameters and inferences based on strong statistical analyses. It is reproducible, and hence widely looked upon as scientific. The strengths of such research approaches are:

1. Hypothesis testing is based on statistical models.
2. Researcher bias is minimized by randomization and dependence on quantitative measures.
3. Sampling frames are chosen, and sample sizes are calculated to generalize study findings to the population.
4. Strong causal linkages can be established.

In quantitative methods, the hypothesis is tested, using inanimate instruments or structured, inflexible questionnaires. Some of the analytical objectives in quantitative research are to quantify variable(s) and/or ascertain causal relationships and/or describe characteristics in a population.

4.5.2. Qualitative research

Qualitative research includes all research methods that seek to analyze and understand non-numerical, non-quantifiable concepts and entities (Denzin and Lincoln, 2005; Hammersley, 2013). In qualitative research, some of the analytical objectives are to describe relationships, individual experiences and group customs (Creswell and Poth, 2018). In the qualitative method, phenomena are studied, using inanimate or sometimes animate instruments. The instrument may be flexible and may evolve through a process of repetition. At times the researcher herself can be the instrument.

4.5.3. Quantitative versus qualitative research

There is an implied dichotomy between quantitative and qualitative methods. While quantitative is considered objective, scientific and value-free, qualitative is considered subjective, empathetic and value-laden (Bryman and Burgess, 1994). Qualitative study is simultaneously a science and an art. Some authors stress the rigorous technique of collecting and validating the data while some describe the creative dimensions of the field work that is made more visible by researchers' insight (Denzin and Lincoln, 2005; Creswell and Poth, 2018). Rossman and Rallis (2017) advocate striking a fine balance between the two and prefer the term 'learner' to 'researcher'.

Research approach: Quantitative and qualitative research approaches differ in their general framework, analytical objectives, instruments, data capture and flexibility of the study design. One of the key differences between quantitative and qualitative methods is flexibility. The inflexibility of quantitative methods allows comparison across participants. The qualitative approach on the other hand is flexible. The flexibility of the qualitative method allows interaction between researcher and participant, thereby seeking clarifications and connecting gaps by the process of constant comparison (Mack *et al.*, 2005).

Research environment: Quantitative research methods are conducted in controlled environs, which have the drawback of moving the research away from the social world. Qualitative studies are carried out in less controlled environments and thus are closer to the real world, with all its different attributes (Snape and Spencer, 2003; Hammersley, 2013).

Study design: In quantitative research methods, questionnaires, if needed, are designed and approved before the study begins. They are closed-ended, and have specific attributes. In qualitative research methods questionnaires, usually open-ended, semi-structured or unstructured. Some qualitative studies such as ethnographic studies may not even have questionnaires.

The study design in quantitative research is well structured, with clear inclusion criteria, and is dependent on statistical assumptions. In quantitative studies, data are represented numerically. In qualitative studies, data are represented by field notes, texts, poetry or videotapes, since a disproportionate focus on numerical data could possibly suppress the distinctive attributes of the subject. To illustrate, a quantitative research study that assesses the efficiency of an antihypertensive drug only based on numerical values, could overlook participants' quality of life, which might have a bearing on the alleviation of the condition.

In a qualitative study, design elements are flexible and iterative based on the participant's response, affecting how the tool can evolve as the research progresses. This is one of the reasons why responses in qualitative research can be very rich and diverse (Mack *et al.*, 2005). Qualitative research focuses on understanding emergent theories and concepts. It is neither a mere technique nor a set of stages, but a constantly evolving process of linking together problems, theories and methods. It calls for an alignment of research design, research strategy, and technique with various aspects of collection and analysis of data (Bryman and Burgess, 1994).

4.5.4. Qualitative research design in this study

In disasters, forensic doctors handle complex situations such as establishing identities of bodies in a short span of time, with limited resources, in unfamiliar environments, while dealing with agitated relatives. Having been a forensic faculty member for nearly 20 years and being a part of a voluntary team for forensic services in disasters, I represent a typical forensic doctor who can understand and relate to the ethical issues in this context. The perceptions of forensic doctors can only be acquired through conversation where they describe their experiences. To enhance the authenticity of data collection in this study, qualitative in-depth, semi structured interviews are planned with no reliance on prepared questionnaires. The researcher herself will be the tool asking questions, modifying the questions and thereby evolving better methods to probe and gain insight into the ethical issues as experienced by forensic doctors.

Creswell and Poth (2018) have described five methods for qualitative empirical research - phenomenology, grounded theory, narrative, ethnography and case study. Some sources and techniques for gathering empirical data within a qualitative study design are observation, interview, focus group discussion, analysis of archival records, auto ethnography, conversation and cultural analyses (Denzin and Lincoln, 2005). My study employs a qualitative empirical research approach within grounded theory study design. The following section will describe the grounded theory approach in qualitative research.

4.6. Grounded theory

Until the 1960s, qualitative research was confined to preliminary, exploratory work before quantitative work was started. The development of grounded theory provided a new, more robust methodology for social science researchers to do qualitative research (Glaser and Strauss, 1967). A grounded theory approach is where the theory is grounded firmly in the data derived from inquiry into the social world (Creswell and Poth, 2018). The narrative is constructed from spoken words, stories or visual representations which then highlight the perceptions of research participants.

Of the five qualitative methods described by (Creswell, 2003), grounded theory is the most suitable for generating new theories or where there is no theory. Grounded theory involves the process of creating theories and hypotheses from data gathered through observation and research of the social world. Grounded

theory provides a flexible framework within which the knowledge that is created from the research can evolve along with the research methodology (Glaser, 1978).

4.6.1. Grounded Theory process: Data collection, coding, analysing, emerging theory and theoretical sampling.

In grounded theory, data analysis is a process of deconstruction and reconstruction (Glaser and Strauss, 1965). The researcher moves back and forth between the two processes while engaging in the work of data analysis and theory identification. Grounded theory method consists of guidelines that are organized and flexible for collecting and analyzing qualitative data. Data analysis begins with the defining of 'codes' that represent key ideas embedded within the narratives of the participants (Benaquisto, 2008b). These codes are then compared, linked, integrated or differentiated to arrive at a smaller number of overarching principles called 'categories' (O'Neill Green, 2008). Grounded theory highlights the strategies of qualitative research through systematic qualitative analysis and demonstrates that it is possible to construct theoretical explanations of social processes.

Charmaz (2006) described the following key elements of grounded theory:

1. Data collection and data analysis occur simultaneously
2. Codes and categories are derived from the data and not from pre-existing theories and hypothesis
3. A theory emerges and advances in each step of data collection and analysis
4. Memo-writing reinforces categories and properties and their inter-relationships
5. Sampling is directed towards theory construction and is not representative of the population
6. The researcher conducts a literature review after developing independent analysis

The core components of grounded theory are the continuum of data collection and analysis, the constant comparative method and the processes of theoretical sampling and saturation (Glaser and Strauss, 1967). Theoretical sensitivity is a rich concept that takes into consideration the researcher's capability to be well versed with nuances of expression and words of participants and reconstructing the meaning from the data generated with the participant (Glaser, 1978; Strauss and Corbin, 1998).

The constant comparative method derives from comparative analysis, which allows for creating a theory based on comparing data over a large span and variety of entities (Mills, 2008). The constant comparative method begins by comparing and analyzing codes within each category, resulting in the formation of new categories (Glaser and Strauss, 1967). In the next step codes are compared with categories. Thus, as the process of comparison progresses, the researcher moves from comparing codes within categories to comparing codes with the properties of newly formed categories (Glaser and Strauss, 1967).

The next step in constant comparative method is the delimiting of the theory. Here, the repetition of the previously explained steps of comparison of codes and categories, leads to a reduction in the original sets of categories and their properties. As a result of this, the codes and the process of coding also become reduced and streamlined. Eventually, the researcher reaches a stage in the analysis when further comparisons do not yield a reduction or addition of new categories and even cease to provide for a fine-tuning of these entities. This stage in the delimiting of the theory is called theoretical saturation (Glaser and Strauss, 1967; Sandelowski, 2008). In the final step of the constant comparative method, the researcher puts together the reduced categories and the theory generated after saturation, in order to structure the theory fully and publish it. Figure 4.1. shows the steps from data analysis to the emergent theory.

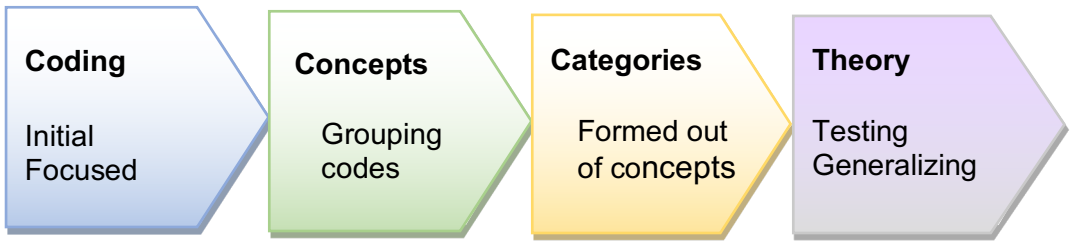

Figure 4.1: Emergent grounded theory - from data to theory

The purpose of comparative analysis is to collect evidence from similar groups to check for specifics that are replicated with comparative evidence internally (within the study) or externally (outside the study). Replication is one of the important methods of validating the facts. In generating a theory, the comparative analysis is not the end in itself, but something from which a conceptual category is derived (Glaser and Strauss, 1967).

Theoretical sampling involves starting with data, constructing tentative ideas from the data, and empirically examining the ideas. Immediate analysis and trying to fill

gaps in analysis through collecting pertinent data are central to grounded theory. Data are collected is coded, compared with earlier codes and with emerging categories. Memos, both abstract and conceptual are written till categories are saturated. Theoretical sampling adds to the robustness of the categories and helps researcher establish relation between categories.

Theoretical sampling is the process of pursuing and collecting pertinent data to describe and refine categories in the emerging theory. Thus, sampling in grounded theory has a different objective than sampling in quantitative studies, and hence the method is different. In grounded theory, the objective of theoretical sampling is to get data to elucidate categories. When categories are full, from the rounded experience of respondents, they make analytical understanding better. Theoretical sampling is concerned with and relates to theoretical and conceptual development and not to generalizability.

On the other hand, in quantitative research, the researcher is required to use data to make statistical pronouncements applicable to a group of people. To make it generalizable to a group of people, the researcher must choose a random sample representative of the population the findings needs to be generalized to. While quantitative researchers test the pre-existing hypothesis, grounded theorists offer an emergent hypothesis which other researchers may test. Theoretical sampling is also different from purposeful sampling, to the extent that the former must enrich the categories one is developing and not adhering to the strict inclusion/exclusion criteria or following a set rule for sampling.

An important aspect of grounded theory is the creation and confirmation of empirical generalizations. Apart from providing a framework that specifies the limitations of the theory, these generalizations give the theory greater predictive ability (Glaser and Strauss, 1967). Yet the practical approach of generalizing involves sampling which is systematic, triangulation, constant comparison method, audit trail and proper documentation (Finfgeld-Connett, 2010).

4.6.2. Development of grounded theory

Grounded theory methods emerged from sociologists Barney Glaser and Anselm Strauss's study on dying in hospitals (Glaser and Strauss, 1965, 1967). The authors studied communication by healthcare workers regarding the death of the patient in cancer wards. They observed how death occurred in different hospital settings in terminally ill patients, looked at how the doctors and patients discussed dying, and how patients handled such news. The data the authors collected were

analyzed and they formulated ideas about its meaning. These ideas were explored during discussions and interviews with the other participants. Thus during this process, Glaser and Strauss developed a strategy for methodological analysis of qualitative studies. In their book *Discovery of Grounded Theory*, Glaser and Strauss (1967) first put forth the method of developing theories from the data collected instead of testing hypotheses from existing theories. The ideas of Glaser and Strauss reflect a philosophical tradition, in which society, self and others are constructed through interaction, relying heavily on language and communications.

Glaser and Strauss (1967) advocate that by a method of constant comparison of the data, the identified categories are reduced, clustered or connected together to develop a theory. They also recommend the researcher to develop categories through sampling of literature. The process of literature search can enrich or develop categories (Coyne and Cowley, 2006). Grounded theory was further explored and built on by Strauss and Corbin in their publication of *Basics of Qualitative Research* in 1998 (Strauss and Corbin, 1998). Glaser criticized this text as he thought in the approach to grounded theory described by Strauss and Corbin, the data were being forced into forming a theory, instead of letting the theory emerge from the data (Stern, 1993).

The Glaserian approach to grounded theory differs from the Straussian approach in that the former starts with an open mind. Neutral questions then help the theory to emerge, resulting in development of a conceptual theory. Straussian approach starts with a general idea. Structured questions then force the theory and a conceptual description develops from this process. While Glaser allows the theory to emerge from the data, Strauss and Corbin look for every contingency to see if it appears in the data (Glaser and Strauss, 1967; Strauss and Corbin, 1998).

Grounded theorists develop fresh explanations to theories rather than seeing the world through existing ideas. They show that qualitative methods can be unbiased and systematic. Glaser, Strauss and Corbin, and Charmaz represent three different schools within the grounded theory approach.

Glaser advocated moving qualitative inquiry from mere descriptive method to explanatory theoretical frameworks. The Glaserian grounded theory takes an objectivist, epistemological stand with the assumption that reality is waiting to be discovered by an unbiased researcher. Glaser advocated an inductive orientation of the grounded theory inquiry because of its innate openness to discovery (Glaser and Strauss, 1967).

Strauss on the other hand advocated deduction and verification methods. In short, the degree of openness was the main difference between the two approaches. While Glaser's grounded theory approach was inductive, Strauss's grounded theory was deductive and verificatory, there was a third line of thinking, where reality was not just discovered, but actively constructed by the researcher and participants and the researcher used his knowledge to interpret the data (Clarke, 2005; Charmaz, 2006)

Charmaz (2006) holds that neither data nor theories are discovered; rather both the researcher and the researched are part of the world being studied and from which the data are collected. Thus, the researcher constructs the grounded theory through past and present association. This is closer to the Straussian grounded theory of relativism. Hence Charmaz's model is an interpretive and constructivist grounded theory, in which the reality is constructed through the shared experience of the researcher and participant (Charmaz, 2006). The researcher's role of examining her own perspectives to the research by reflexivity differs somewhat from the neutral or passive role of the researcher described by Glaser (Glaser and Strauss, 1967; Strauss, 1987).

Grounded theory generated from comparative analysis could be substantive or formal (Glaser and Strauss, 1967). While substantive theories are developed for empirical areas of social enquiry like healthcare, drug recidivism and juvenile delinquency, formal theories are developed for conceptual areas of inquiry, like stigma, discrimination, leadership and such other areas. Nevertheless, both, substantive and formal theories should be grounded in the data. To generate substantive or formal theory, observations from ethnographic study, data by observation or in-depth interview are required for comparative analysis (Glaser and Strauss, 1967; Charmaz, 2006).

While exploring a phenomenon, a deductive approach or inductive approach can be used. Deductive approach explores phenomena, tests the validity of a theory or hypothesis in given conditions, and is explained on the basis of reasoning that goes from general to particular. On the other hand, inductive approach, which is used more in grounded theory, begins with observations and tries to explain patterns based on observations, and where the reasoning goes from the particular situation to the general. In my study, I have used the constructivist grounded theory approach of Charmaz (2006) where both the research and the participants contribute to the data and the researcher constructs the grounded theory by going back and forth through the process of data analysis.

4.6.3. Treatment of theory in grounded theory

In grounded theory, treatment of theory can have objectivist or interpretivist leaning (Glaser and Strauss, 1967; Strauss and Corbin, 1998). In the objectivist grounded theory, the data are treated as real. The process of data production is not taken into consideration. An objectivist grounded theorist believes that data represent objective facts in the knowable world, hence objective grounded theory is located in positivism.

In contrast, many researchers believe that they are actively involved in interpreting of the data (Clarke, 2005; Charmaz, 2006). Interpretivist grounded theory is where the researcher accepts that knowledge can be expressed in different forms, as interpreted by the research participants. There can be various means of knowing and multiple realities. The researcher is not distant from her research and is an essential element in the formation of the theory.

If there is no pre-existing theory, the knowledge constructed through grounded theory is very relevant as it is collected from the social world and holds true in that context (Glaser, 2007). Therefore, the present study uses grounded theory with the assumption that theory from the study will inform, explain and underpin the identification and analysis of ethical issues faced by forensic doctors while working in disasters, using the constructivist version of grounded study (Charmaz, 2006).

4.6.4. Use of literature review in grounded theory approach

The uses of a literature review prior to undertaking grounded theory research are a focus for debate in grounded theory texts. According to Glaser, prior to data collection “there is no need to review any of the literature in the substantive area under study” (Glaser, 1992, p31). He discourages the use of a literature review in a grounded theory approach for the fear of contaminating, overpowering or masking of the researcher’s analysis of codes emerging from the data (Glaser, 1992). This posits data as an entity detached from participant and researcher (Mills, Bonner and Francis, 2006). On the other hand, Morse (2001) was vocal about her opposition to the above suggestion and elaborated that ignoring the works of others could damage the process of building knowledge, resulting in undermining theoretical cohesion between studies. She does not believe that grounded theory should be isolated from the existing theories. Looking at the literature review from Glaser’s perspective, he did not pitch for ignoring the literature but rather, to defer the literature review until categories were formed, to

rule out pre-forming the research before the theory emerged (Glaser, 1978, 1992). Regarding the researcher being informed about the current literature, Strauss and Corbin had a different take. They advise the researcher to be well informed about the literature so that researcher's informed voice also contributes to the evolving of theory, meaningfully contributing to theoretical reconstruction (Strauss and Corbin, 1998). They also recognized the role of the literature to provide examples of such phenomena that can *"*stimulate our thinking about properties or dimensions that we can then use to examine the data in front of us*"* (Strauss and Corbin, 1998, p. 45).

In this study, the review of literature has preceded the work of grounded theory to map the terrain, identify the existing issues and to consider areas from which the probes need to be applied to elicit information in order to develop a deeper knowledge of the terrain.

4.6.5. Strength and Weakness of grounded theory

Strength: (Glaser and Strauss (1967) showed that grounded theory can be used as credible method in its own merit, without playing second fiddle to quantitative research. Even during the process of conducting research, the strategy can be revised, thus ensuring efficient use of time and resources. Recognizing faults in the strategy and rectifying them permit the research process to become stronger and more refined. Data collection (from both the literary sources and the participants) and analysis form a dynamic spiral, with each one feeding the other, so that eventually the categories become complete.

Observing the world from the point of view of an insider (research participant) provides the researcher with more meaningful, diverse and rich data. Flexibility in grounded theory allows for revisions, additions or deletions to the research question or its parts. This allows for taking an initially broad panoramic view and then zooming in to the areas requiring further examination. At the same time, one can perceive kaleidoscopic dioramas and focus on several individual parts (Charmaz, 2006).

Weakness: Grounded theory requires that the researcher develop intuition and skill in seeing the data from different perspectives, without which data will be meaningless. Gaining the trust and confidence of the participants in the process of interviewing or observing, is a challenge. The grounded theorist needs to build rapport with her participants, without which her current study or even subsequent interactions would result in a collection of

unsuitable and insufficient data. When research participants are aware that they are being observed, their behaviour becomes more normative and the grounded theory researcher needs to develop skills of discernment that will help her pick up on subtle cues such as hesitation or discomfort displayed by the participants.

During the process of data collection, the researcher needs to be constantly aware of filling the gaps in the theory and reaching theoretical saturation. Unlike quantitative research with a pre-determined sample size, in grounded theory it is difficult to predict the sample size at the beginning of the study. This results in a difficulty in recognizing the endpoint of data collection, if the researcher is not sufficiently experienced. Lack of experience in conducting in-depth interviews is likely to result in collection of thin data, which in turn may lead to mistaking *"*routine rationales for analytical insights" (Charmaz, 2006, p49).

In summary, the present study constructs the grounded theory setting, with forensic doctors who have shared experiences in disasters, based on a constructivist approach, like that of Charmaz. The constructivist approach is most suitable in this study because it is not simply data that provide insight into the social world, but rather it is the process of constructing reality by interacting with the participants that creates new knowledge (Charmaz, 2006).

4.7. Justification for the study

Currently, qualitative research is being incorporated into evidence-based practice in medicine, thereby alleviating the doubts about the usefulness of qualitative research (Sandelowski, 2004). My research question is "What are the ethical issues faced by forensic doctors dealing with disasters in India?". To answer this question, it is important to understand how forensic doctors view the ethical dimensions of their practice. It is therefore important to interview those forensic doctors who have experienced working in disasters. The disasters could be man-made (terrorist activity, industrial accidents, transportation aviation accidents) or natural (floods, cyclones and tsunamis). Each brings different problems and poses unique challenges. Hence the perception of forensic doctors is of importance in understanding the ethical issues faced by them.

In-depth interview is a useful method to elicit perceptions, experiences and personal histories, especially in situations that are sensitive in nature (Mack *et*

al., 2005). Forensic doctors work in disasters in an atmosphere that is emotionally charged, under pressure of time and limited resources. Thus, a method that would best capture the true experiences regarding ethical issues faced by these doctors was an in-depth interview.

On the flip side, in-depth interviews can be time consuming, and participants tend to drift away from the core theme. Also, the researcher needs to be constantly attentive to capture nuances and non-verbal communications. It is challenging to determine theoretical saturation. However, quantitative studies, while deducing hypotheses from theories, fail to address the gaps where theories are non-existent. Hence, for the purposes of this study, a qualitative approach using constructivist grounded theory was the most appropriate.

The advantage of grounded theory is that as the data are being collected, new data are constantly compared with the older data and analyzed. Through this, gaps in the analytic process are filled by going back for clarification from the interviewee.

In Chapter 5, the selection of the participants, the interview schedule, the process of interview, transcription, coding and the analysis of the data and the development of the theory are discussed.

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Chapter 5: Analysis of findings and discussion

"The dead cannot cry out for justice; it is the duty of the living to do so for them"

Lois McMaster Bujold

5.1. Introduction

In chapter 4, I explain the various assumptions I made while carrying out the study as well as my reasons for choosing the grounded theory method. This chapter outlines the aims of the study, followed by details of the participant recruitment, participant profiles and data collection. The ethical considerations of privacy and confidentiality of the interviewees are then touched upon, ending with details of the interviews and the analysis. Although in the order of presentation in this chapter, the interviews and the analysis seem to follow one another, they were carried out simultaneously, as is typical in grounded theory. Data analysis started soon after the first interview and continued until saturation was reached.

As explained in Chapter 2 (Section 2.3) the core objectives of routine forensic medicine services are establishing the cause of death, the time of death and confirming anthropometric data to assess the age and identity of the deceased. In times of disasters however, these objectives are realigned (Chapter 2, Section 2.4). Identification and handing over of the body to the family becomes the most important objective of the forensic professional during disasters. This is because, in disasters, the cause and time of death are known, the single most important objective for the forensic doctor is identifying the dead and returning the mortal remains to the relatives for the completion of rites and rituals. Identification thus becomes central to forensic activity in disasters.

Identification is the process of establishing the identity of a person. Identification is based on establishing the age, sex, stature, identifying personal marks, tattoos, scars, surgical implants and many such features that help in establishing identity (Waghmare, Chikhalakar and Nanandkar, 2015) with help from family if present.

5.2. Aim of the study

The purpose of the study is to gain a greater understanding of the ethical issues faced by forensic doctors during disasters in the Indian context and to generate an explanatory theory using the grounded theory approach on the ethical issues.

Through the review of literature, I found a severe dearth of studies analyzing ethical issues faced by forensic doctors during disasters in India (Chapter 3, Section 3.3).

However, looking at studies carried out in other countries on this topic, I found that one of the main issues reported was the ethics of secondary research on the dead. When tissue samples obtained from a dead person are used for establishing identity and cause of death, it is termed as primary use. If, however, a sample is used for any other purpose - for example assessing the genome for a psychiatric disorder, then it is called secondary research. Other ethical issues reported were privacy and confidentiality of the medical or genetic data, informed consent, rights, interests and dignity of the dead, and issues around professionalism and best practices.

This led me to reflect on the question "What are the ethical issues faced by forensic doctors in a diverse and developing country like India, while dealing with disasters and how do the forensic doctors perceive these ethical issues?". The aim of the present study is to explore the forensic doctors' perceptions and attempt to generate a theory explaining what ethical issues forensic doctors face in disaster scenarios in India, how these issues are interrelated, possible causes of these issues and how to resolve them.

Ethical clearance for the study (see Appendix D) was obtained from Yenepoya University Ethics Committee on 14 March 2016 (YUEC170/2016). This was acknowledged by the Research Ethics Committee, Dublin City University.

5.3. Data collection

5.3.1. Study setting

The study was conducted in the Department of Forensic Medicine & Toxicology, Yenepoya University Mangalore, where I have worked as a faculty member for the last 15 years. The interviews were conducted during office hours and in a natural setting for the participants, who answered questions from their offices or mortuaries where they worked. A few interviews were rescheduled due to the participants' schedule and were carried out after office hours.

5.3.2. Sampling strategy

Initially, the participants were recruited through purposive sampling. Purposive sampling provides a rich source of information since a researcher is collecting diverse views of participants. The researcher chooses participants who have undergone experiences or phenomena which are being studied (Bluff, 2005). In the present study, those who had experienced working in a forensic capacity in disaster were recruited as participants. Therefore, the study employed purposive

sampling with specific inclusion and exclusion criteria to begin with and after two interviews theoretical sampling was used.

Grounded theory is characterised by theoretical sampling as the sampling is aimed at generating and developing a conceptual theory and not creating an account of detailed description (Glaser and Strauss, 1967). However, before theoretical sampling is accomplished, it requires initial data to be collected and analyzed by purposive sampling (Sbaraini *et al.*, 2011). During the purposive sampling stage, two forensic doctors who had worked in the capacity of forensic professionals during disasters were contacted. As the theory began to emerge, theoretical sampling was included. The data collected by purposive sampling, when analyzed, showed some concepts and issues which were recurring and needed further explanation. Hence we chose 18 other participants to address these emerging queries.

In the present study, after two interviews, as the analysis was being done, I noticed that the discussion was not throwing much light on ethical issues, but rather was focused on the process. Reflecting on this I sensed a reticence on the part of the participants in comfortably articulating ethical perceptions. When I asked them if they had heard of the recent disaster in north India, many started opening up and bringing the similarities with present disaster and challenges which they faced while dealing with disasters. The participants were then encouraged to describe their own perceptions of ethical issues based on their own experiences with specific disasters.

5.4. Recruitment

The study aimed to draw upon ethical perspectives of forensic doctors during disasters. They were asked to describe the ethical issues they faced while dealing with disasters, and their perspectives in the context of a disaster setting. After the ethical clearance was obtained, a pilot interview was conducted to test the research instrument (tool). The tool, a semi-structured open-ended interview schedule, was pretested to check validity of items, feasibility and practicability. Changes were made to the interview schedule based on the feedback from the pilot study (pretesting).

A list of forensic doctors was procured from the Indian Academy of Forensic Medicine (IAFM) website (Indian Academy of Forensic Medicine, 2020). From the list, forensic doctors were contacted by telephone and were asked if they had experienced working in any disasters or known a colleague who had done so. If

they had worked in a disaster-setting, they were asked to participate in the study. The names of other forensic doctors who took part in disasters were also obtained from our initial contacts. The forensic doctors were contacted personally and briefed about the study before inquiring if they would participate in the study. Colleagues that I had worked with in disasters were also contacted and asked to participate. As the interviews progressed, some more potential participants were contacted.

For those willing to participate in the study, an email was sent which included a brief description of the study, a consent form and participant information sheet. Each participant was asked to choose one from three slots of time offered for the interview. It took 5 to 8 calls per participant to finalize the date of interview and for 13 out of 20 participants, the interview time had to be rescheduled. Only one participant attended the call immediately and was ready for the interview on the first call. Theoretical saturation was reached after 20 participants' in-depth interview data were analyzed.

5.4.1. Challenges in recruitment

Forensic medicine in India is male-dominated and traditionally has had very few female practitioners. From 1971 to 2010, there were 19 females out of a total of 1100 members representing 1.7% of the forensic doctors' population. From 2011 to 2017 the total number of members rose to 1345, of which 84 were females. From 2011, a greater number of female doctors are taking up forensic medicine and they now represent 6.24% of forensic doctors (Indian Academy of Forensic Medicine, 2020). At the time of recruitment (2014), I contacted three senior female forensic doctors in an attempt to include female perspectives in my study. However, they had not worked during disasters, and hence could not be included.

5.5. Participant Profile

The participants hailed from Northern, Southern, Eastern and Western states of India. **Figure 5.1** describes the distribution of doctors across India, with magenta representing the southern states of Andhra Pradesh, Karnataka and Kerala; green representing the western states of Goa, Gujarat and Maharashtra; cyan representing the northern states of Delhi and Uttaranchal; and yellow representing the eastern state of Manipur. The participants averaged 24.4 years of experience working in forensic medicine, with the minimum experience being 9 years and the maximum being 37 years. All the participants were males. Two participants were

associate professors (participant numbers 12 and 19). The rest of the eighteen participants were professors. Of the 18 professors, 9 were heads of the departments while handling their respective disasters (participant numbers 02, 06, 07, 08, 10, 14, 16, 18, 20).

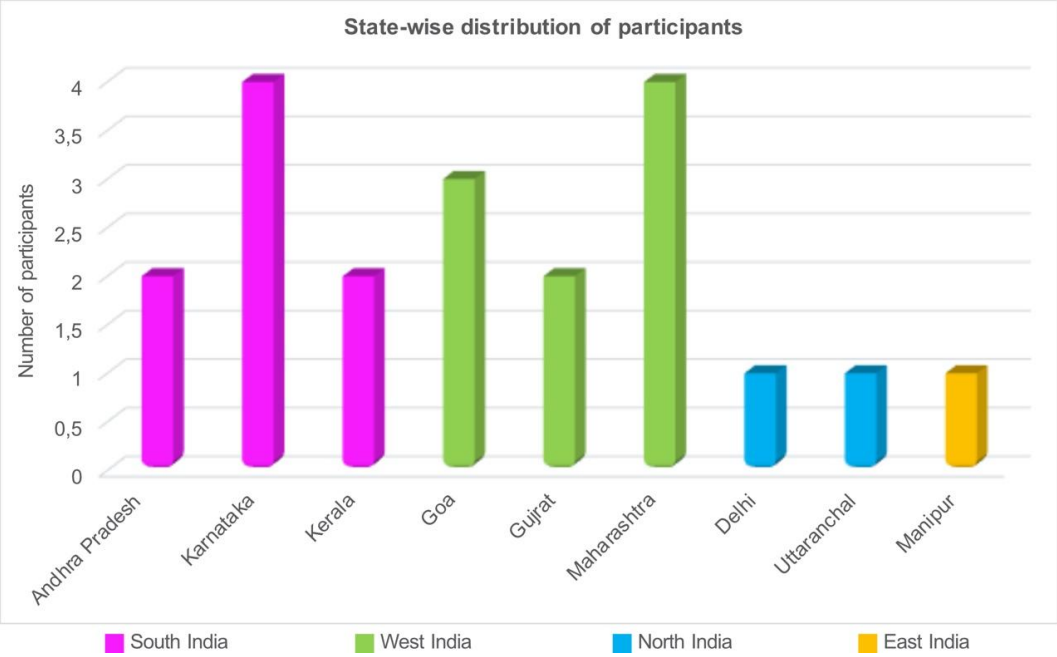

Figure 5.1: State-wise distribution of the participants

5.6. Types of disasters

The total number of disasters (for criteria used to classify events as disasters, see Chapter 1) which formed the basis of discussion on ethical issues was 49. Excluding the same disasters discussed by more than one participant, the total number of disasters was 39. The commonest type of disaster was bomb blast, followed by train accident, then motor vehicle accident and air crash. Uncommon disasters types included fires (including a fire in a fireworks factory), landslides, floods, a cyclone, an illicit liquor tragedy, an elephant stampede, a boat capsize, a building collapse and rioting. The average number of disasters handled by the participant was 4.66. Table No 5.1 describes the distribution of disasters.

Table 5.1: Types of disasters and the frequency of their narration

Type of disaster	Number of narrations	Type of disaster	Number of narrations

Bomb explosion	11	Earthquake	2
Train crash	9	Cyclone	1
Bus accident	6	Mass death due to consumption of illicit liquor	1
Air crash	5	Boat capsize	1
Fire	4	Trampling by elephant	1
Landslide	3	Building collapse	1
Flood	3	Rioting	1
Total: 49			

5.7. Ethical considerations

Anticipating the possibility that the reflection and discussion on deaths in disasters might be stressful to the participants, I let the participants decide how much time they would spend recollecting the facts and their feelings on these disasters. All participants except one refused to be interviewed over Skype but agreed to a telephonic interview after being assured that their privacy would be protected and their confidentiality respected. In order to protect the participants' anonymity, I removed all names and identifying features from the study and assigned each transcribed interview a coded number (from 01 to 20).

Since I am a senior professor with a background in forensic medicine and since a few of the participants were junior to me, I anticipated that a perceived power inequality might lead to participants confining themselves to socially acceptable answers. Hence, at the outset of the interview, I asked the participants to consider me as a student trying to understand the ethical issues and to regard themselves (the participants) as experts since they had worked as forensic professionals during disasters. During the interviews, I patiently listened without any emotions and used probes when needed to elicit more information. Participants sometimes hesitated, or paused mid-sentence while answering some questions, indicating possible discomfort. Over the course of multiple conversations, I gently probed the participants about these issues and often found that the initial answers provided by the participants were the socially acceptable ones, and not what they really felt. After the interviews, I listened to the audio files and transcribed them. I stored the

audio files on my password-protected laptop and during the entire process, no one other than I had access to the audio files or the transcripts.

5.8. Interviews

I interviewed the participants on a date and at the time of their choosing, after informing them about the details of the interview, and receiving their consent. The participants were contacted over telephone a day before the interview to confirm the time of the interview. In two interviews, multiple calls had to be made due to connectivity problems.

I used a semi-structured interview tool, since it gives more flexibility to the researcher to sequence the questions along with appropriate probes to elicit the information. In some cases, I had to schedule a second interview in order to clarify points that arose from the analysis and comparison of data with other participants. I adopted a constructivist approach for the interview (Charmaz, 2006), since I was attempting to generate new knowledge together with the participants, based on their understanding, situation and experience. Hence I had to pay a great deal of attention to the participant's language and meaning. During the final analysis, I spoke to 7 participants again, to confirm that my interpretation of their narratives was accurate.

5.9. Results and analysis

5.9.1. Analysis of the interviews

In the initial stage just after concluding the interview, I carried out the process of line-by-line coding (Charmaz, 2006) of the data. This means that I constructed codes (descriptive labels) from every sentence in the interviews. Line-by-line codes from the interviews were then compared to the data. In this way I re-analysed the initial data and used the patterns that I discovered in analyzing subsequent interviews. As the number of codes extracted from the transcripts grew, I used Glaser's guide on questions to be asked during coding (Glaser, 1978). Glaser has suggested 3 coding questions:

1. What property does the incident indicate?
2. What category does the incident indicate?
3. What is the main concern of the participants?

With the help of these questions, I made a tentative list of categories and continued with the process of theoretical sampling. For analysis of the data, I used the constructivist grounded theory approach of (Charmaz, 2003, 2006).

5.9.2. Process of coding

I carried out the process of coding manually in the initial stages and then used the qualitative research data management software NVivo Pro 11. I initially coded and analysed the data manually since it would make me more familiar with the data and allow me greater insight during the analysis stage.

Writing memos is an integral part of grounded theory. As and when ideas came to me during the analysis of transcripts, I raised memos to record them. A memo, in grounded theory, is a written idea about theoretical categories and their relationships (Glaser, 1978). Many of the memos in this study were initially procedural in nature, and dealt with challenges faced by forensic professionals during the handling of disaster victims' bodies. As the analysis progressed, the memos matured by being compared with other memos. I sorted the memos, moved them around to formulate a category. For example: one such category was timeliness, empathy, communication and many such memos, after subsequent interviews and analysis, were grouped under professional skill and lack of training which formed a category - professionalism (professionalism and other such categories are explained in detail in the analysis of the last cycle of coding, Section 5.10.2.3). I found the process of coding and memoing manually more satisfying than entering the codes and memos in NVivo, but as the data became larger, storing it in NVivo was easier and more efficient.

The analytical process of coding was broken down into four cycles. The first cycle was that of open coding, where codes were identified based on phrases and descriptions used by participants (in vivo coding and descriptive coding respectively) during the interviews. Some in vivo codes were, "...right to privacy is a recognised right, but not a respected right", "Once death occurs everything changes - somebody, a person, becomes nobody", and "Give me any dead body, I shall perform the last rites and get on with my life".

Coding is useful to pick out conflicts "within, among and between participants" (Saldaña, 2013). To illustrate, through descriptive coding, I was able to identify that the perceptions the participants had regarding the role of mass media in disaster situations were in conflict with each other. Some participants believed that the media informed the public about disasters while others believed that they infringed on the privacy of victims in order to increase viewership.

In the first cycle of coding, I compared raw data and descriptive codes that were gathered from the interview transcripts. The codes were close to the data (derived from the descriptions and phrases used by the participants) and were focused on

how ethical issues arise from forensic processes in disasters. Thus I was able to identify the relationship between ethical issues and context. For example, it became clear that “not respecting the dead” was an ethical issue that arose in the context of disaster areas not being cordoned off. In India, before the disaster area can be cordoned off, volunteers and the public freely move about the site, at times helping with the transport of dead bodies. However, they are not trained to handle bodies in a respectful manner. Thus, the connection was established between with forensic doctors not taking part in the shifting of bodies, and the perception of the dead not being respected at the site of disaster and during transfer to the mortuary. The initial coding process resulted in 141 codes.

The process coding is graphically represented in Figure 5.2. The cycle begins at the visit to the disaster site and then it moves in an inward spiral in a clockwise direction ending with handing over of the body to the relatives. Each oval represents an important stage in the process of forensic doctors’ services in a disaster situation. Expressed beside each bubble are the issues that arise at that stage in the process, and represent how forensic doctors perceived the dead body management in disasters.

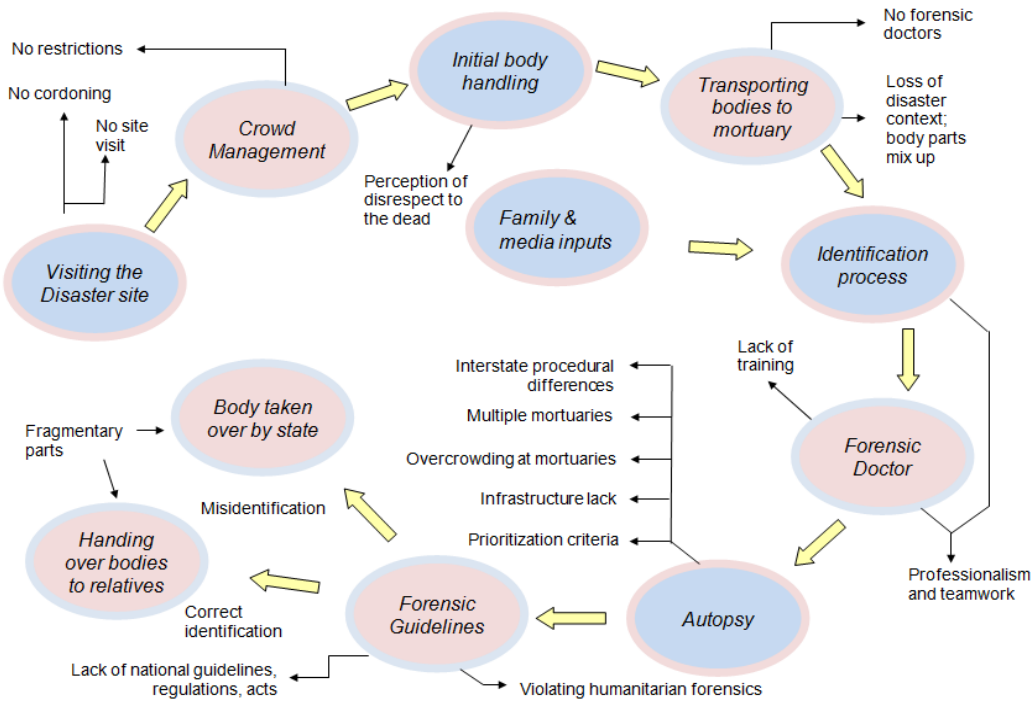

Figure 5.2: First cycle of coding – the various stages in the process of a forensic doctor’s work during disasters

5.9.2.1. Analysis of the first cycle of coding

From the codes, I found that there are three main groups of people affected by ethical issues that arise in disasters: the forensic service providers (in the present study forensic doctors), the family of the deceased and the media. These groups interact with each other in the process of identification, as prescribed by the medicolegal system of the state.

From my initial coding of the data, I found that ethical issues arose at the following stages between when the disaster occurred and when the identification process concluded, or in the case of unidentified bodies, with the body being given for dissection or given mass cremation. The following sections elucidate the ideas that were constructed from the initial analysis of the codes raised from participants' transcripts. Figure 5.2 shows a graphical representation of the various steps at which ethical issues arose. In the following paragraphs, I have listed them as they were described by the participants:

At the disaster site. There are dead bodies and body parts at the disaster site. Forensic doctors are not called to assist in the initial handling and transport of the dead bodies to the mortuary. Before the police are able to cordon off the area, people move in, some taking pictures, and others trying to help out by attempting to rescue disaster victims. The disturbance caused to the disaster site by the crowd often destroys evidence which could have otherwise helped in the identification process. The lack of cordoning and crowd management result in invasion of privacy and lack of respect to the dead (participant 11).

During initial handling of the dead bodies. In the initial handling at the disaster site, the first responders are often untrained passers-by who just happened to be there. At times dead bodies or body parts are not properly tagged, labelled or transported. This often leads to errors in identification of the dead bodies, amounting to disrespect to the dead. Some of the participants in this study report that untrained volunteers lift the body or drag or drop the body or body parts while trying to help in the transporting process (participants 02, 07 and 12). To compound the problem, the accompanying personal belongings, which are useful in identification, are not transported along with the dead bodies (participants 04, 05 and 08). Loss of important circumstantial evidence results in misidentification of the dead, and denial of closure to the family.

During the process of transportation. The decision to shift the bodies to different mortuaries is often taken based on the storage capacity of the mortuary. Mortuaries are attached to medical colleges or government hospitals, and often can hold a maximum of 6 bodies. Instead of making provision for one large temporary cold

storage facility at the disaster site, bodies are transported to different local mortuaries. Family members have to sometimes visit several mortuaries in search of the body of their deceased relatives, thus increasing their emotional trauma. Very often, bodies are transported to one mortuary but accompanying belongings reach another, further increasing the confusion. Hence personal effects that aid the forensic doctor in identification are lost. The bodies are transported without using body bags or stretchers, and this is perceived by some participants to be distressing to relatives and onlookers (participant 12). Thus how procedural deficiencies were perceived as ethical issues began to emerge from the initial coding of the interview transcripts. Furthermore, it became clear that these occur even before the bodies reach the mortuary for autopsy (participants 04, 05 and 07).

During the identification process. Mortuaries often lack enough space to hold a large number of bodies. Thus in disaster situations, bodies are kept on the floor or piled on top of each other. The participants reported this as an ethical issue where the resource limited settings forced them to behave in a way that was interpreted as disrespectful to the dead bodies (participants 02, 07, 08, 11, 14, 15, 17 and 19). There was definitely an ethical issue perceived here.

In the process of identification**,** families often help in identifying the body even before the autopsy can start. Identification is based on physical features like tattoos, scars and many such physical marks, or personal effects like jewellery, watch and apparel (participant 02, 03, 07 and 14). This method is fraught with errors and is likely to result in misidentification as physical features of the dead body may be altered due to trauma, or the local climate. Sometimes, family members visit the mortuary after identifying the photograph of the dead relative from newspapers, or the television (participants 01 and 03).

Another ethical issue arises in situations where the government on humanitarian grounds announces cash compensations for the relatives of the victims. Intentionally or otherwise, people identify and claim to be relatives of a victim and obtain compensation. Often bodies are wrongly handed over. When the real relatives of the deceased come to mortuary, such avoidable errors add to their distress (participants 01, 03, 04, 06, 08, 09, 11, 13, 14 and 16). The police go in search of the bodies and bring them back, along with the compensation award. The extra confusion adds to the stress of everyone concerned (participant 11).

Media role in identification. Many families are alerted to the occurrence of a disaster by the media, which can publish information on the dead and provide the contact details of the relevant authorities. However, media outlets often tend to go

overboard, and publish violent and gory pictures, which are perceived by many as causing harm. While many relatives feel grateful about the role played by the media that alerted them about the death of their family, some objected to the trauma caused when these media outlets display dead bodies in an in-dignified manner.

The method of Identification. Identification is primarily through visual identification. If the bodies in disasters are mutilated, visual identification boils down to identification from clothes and personal belongings. When some bodies remain unidentified, they are treated as unclaimed and given mass burial. Only in three disasters cited in this study (out of 39) was DNA analysis done before handing over the bodies (participant 12).

When the body remains unidentified. Between 72 hours and 7 days (variations in procedure across different states), unidentified bodies become unclaimed and come under state authority (usually the police) for disposal. To label a body unclaimed it is not mandatory to do the DNA test.

When a body is identified, the human rights of the dead and the relatives are respected. Identification allows proper award of compensation and helps provide justice. In two disasters, DNA identification was used as a last resort because a few bodies remained unclaimed (participants 03, 02, 04, 05 and 07). One victim's DNA did not match with that of the first-degree relatives', but since DNA identification was not carried for all victims, the forensic professionals in charge could not conclude whether the deceased was using a fake identity. In one air crash disaster, 12 bodies remained unidentified, and hence unclaimed by the relatives. This was possibly because amidst a large number of bodies and body parts, grieving relatives had misidentified and taken away the wrong bodies (participants 04, 05 and 07). The rights of the dead (which will be discussed in detail in the following chapters, sections 6.3.1.1.4. and 7.3.1.4.) are diminished in the case of unidentified bodies.

According to guidelines of the International committee for the Red Cross (ICRC), DNA analysis should be done before handing over the bodies (Morgan, Tidball-Binz and van Alphen, 2006). Not adhering to standards may violate the humanitarian forensics mandate.

5.9.2.2. Analysis of the second cycle of coding

In the second cycle of coding, the codes were grouped together under similar ideas or concepts, focusing on the various groups of people involved. I found 53 second-cycle codes, by observing patterns amongst the codes from the first cycle and grouping the appropriate codes. Some of the new codes were family, media,

forensic doctor, police, medicolegal services (including mortuary), and the dead body. Once brought to the mortuary, the forensic doctor works on identifying the body with the help of the police and the family. The public learns about the incident and progress in identification of the bodies through the media.

The relatives help identify the body by visual identification or by providing information about belongings of the deceased. Being identified restores dignity to the body, which is returned to the relatives, thereby giving them closure and providing them social benefits. They grieve, heal and move on.

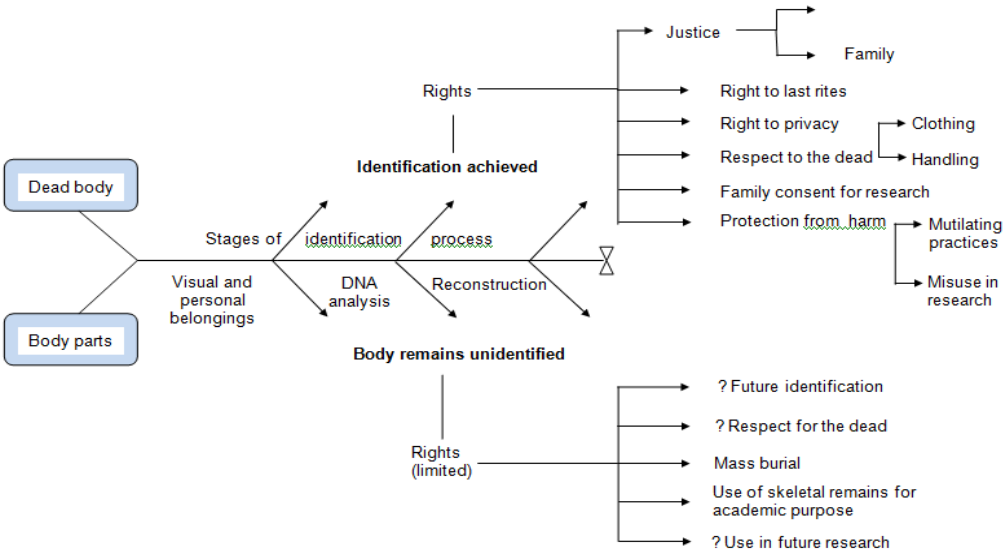

Figure 5.3: Example of second-cycle of coding – outcomes of identification of the dead by forensic doctors

This figure shows one strand of the second cycle coding. Whether it is a body, body part or tissues, they all go through the stages of identification. Visual identification is the most commonly employed method. In case of body parts and tissues, DNA tests may be ordered. The process of identification leads to two outcomes: either a body is identified, or it is not. If a body is not claimed by the relatives within a maximum period of seven days, the body becomes an unclaimed body. The forensic doctor now hands over the body (from the cold storage in the mortuary) to the police to dispose (usually mass cremation).

As depicted in Figure 5.3, identification bestows identity to the dead and they get some rights like right to last rites. The privacy of an identified body is upheld by family members. The identified bodies are covered during transportation, taken to their homes where the relatives arrange for a proper funeral. Such rituals have great relevance in my country. India is a pluralistic society, and funerary rites take

different forms in the various communities. High value is placed on the appropriate last rites being carried out. Hence, the emergent conclusion from the second cycle of coding was that identification is the most important goal of a forensic doctor in ensuring ethical treatment of the deceased. But what happens in the case of unidentified bodies?

Unidentified bodies. Unidentified bodies have fewer rights in comparison to the identified bodies. At times their bodies are not covered and they are likely to get a mass cremation, without the benefit of cultural propriety. People of communities that practice burial are pained to know that most likely their deceased relative has been cremated. Unclaimed bodies come under the authority of the police. Medical colleges approach the police to procure bodies for use in teaching, dissection and surgical practice. However, there are no mechanisms in place to monitor how these bodies are used and some even end up in museums or being used for research. The living wish of the dead person is not known and is not considered. Thus, rights of the unclaimed deceased do not get respected as they remain unidentified.

From the analysis of the interviews, identification of dead bodies during disasters was considered by many forensic professionals as the most important duty towards the dead. It was felt that visual recognition should be supplemented by other methods like dental and fingerprint examination, and finally DNA testing.

5.9.2.3. Analysis of the last cycle coding

In the last cycle of coding, new sub-categories were formed by realigning the axial coding models. Axial coding refers to that stage of the analysis where emergent ideas are built upon and the relationships between various codes and categories is established (Benaquisto, 2008a). During this process, it became clear that all the activities were centred on and grouped under the following sub-categories, (i) uncovering the identity for returning the body (ii) research on the dead, (iii) resource limitations, and (iv) professionalism. Thus, four sub-categories of “identification”, “research on the dead”, “resource limitation” and “professionalism” were identified.

All the sub-categories lead to the core category, the central phenomenon of “respect for the dead” that started to emerge through the analytic process. Interestingly, these four subcategories are linked to each other. Identification helps in the process of ethical research on the dead; lack of professionalism and resource limitation can result in improper treatment of dead bodies, or even in a failure in identification. Lastly from all these subcategories, the main theme of ensuring respect for the dead emerges. Sections 5.10.3.1 - 5.10.3.5. describe in

detail, how according to my analysis of the interviews, the subcategories of (i) identification (ii) research on the dead (iii) resource limitations and (iv) professionalism, resulted in respect for the dead.

5.9.3. Emergent theory

From my analysis of the interviews with forensic doctors, the main theme that emerged was that the dead should be respected and seen to have been respected. Respect for the dead, as an extrapolation of respect for the living stems from the concept of human dignity. This respect can be given to the dead through proper identification, since through identification, the wishes of the deceased, or the consent of the relatives who are the custodians of the deceased, can be acted upon. Once identity is established, the family gets closure. Unclaimed bodies are claimed by the state (handed over to the police) and often end up being used by medical institutions for teaching and research, which may result in disrespect to the dead since their antemortem wishes are not considered. Lack of professional training can cause dead bodies to be treated disrespectfully, and this is exacerbated by limited resources in the form of mortuary infrastructure, lack of storage facilities and lack of body bags.

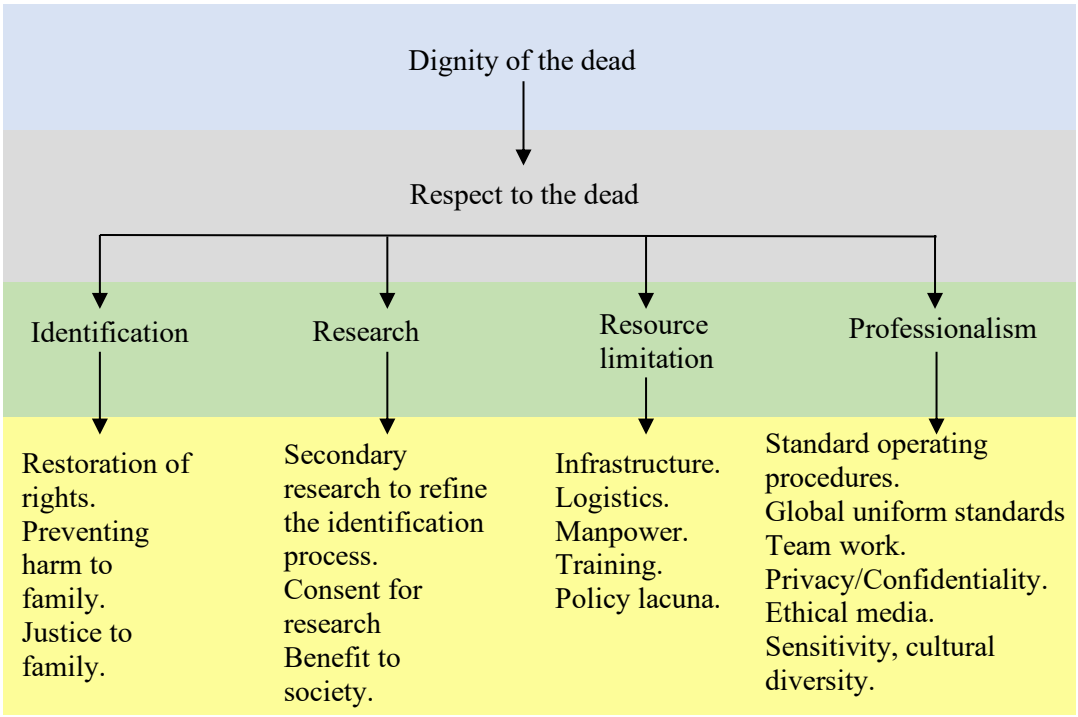

Figure 5.4: Third cycle of coding – the emergence of a theory that relates the sub-categories to the core category

Figure 5.4 captures this information graphically, with the main theme of “Dignity for the dead” upheld by the core category of “Respect for the dead” at the top, followed by the four subcategories that facilitate or hinder the core category of respect for the dead: “Identification”, “Research on the dead”, “Professionalism” and “Resource limitations”. Below each subcategory, are listed the main codes of that subcategory that are important for the core category of respect for the dead to be upheld. In the following sections, I will describe in detail what entails respect for the dead and how the four subcategories relate to this core category and result in either respect or disrespect to the dead.

5.9.3.1. Respect for the dead

Respect for the dead emerged as a core category in my analysis of interviews of forensic doctors and was reported by participants as the most common ethical issue. How does one show respect or disrespect to the dead? My study revealed that lack of respect for the dead began right at the disaster site, where crowd control and cordoning off of the area were not adequate. Improper transportation was another process which resulted in disrespect to the dead. This is because the dead from disaster sites were moved (and still are) without proper use of body bags by untrained volunteers often resulting in unintentional disrespect to the dead. Once in the mortuary, lack of infrastructure and resources resulted in the relatives feeling that the dead were not respected.

In the following paragraphs I will explain how the narratives of the various participants crystallised the discussion on respect for the dead. The statements within text boxes are excerpts of the raw data (interview transcripts) that have been chosen since they highlight the key ideas in the discussion.

> *“Dead person is still a human being, whose life has just ceased. He deserves dignity”* (participant 10).

While the text box describes the view of participant 10, many others (9 out of 20 participants) expressed that we do not show respect to the dead body (participants 02, 05, 06, 07, 08, 09, 11, 12 and 17). They explained that this was not deliberate, but was process related. The disrespect is perceived to be caused by improper transportation, or when dead bodies are piled on top of each other (participants 02, 07, 08, 09, 11, 12 and 17). Inordinate delays in transporting the dead bodies resulted in loss of identifying features due to putrefaction (participants 13 and 20),

as was seen in two disasters when there was a delay of 12 to 18 hours in the bodies reaching the mortuaries. In a few cases, improper storage of dead bodies resulted in mutilation by rodents was reported (participants 13 and 17). Two participants narrated instances in their career where fingers were reportedly amputated from bodies for the purpose of recording of fingerprints. They condemned such extreme destructive measures to establish identity (participants 10 and 20).

Thus, we find that respect is closely linked to the processes of handling (transport and storage) and identification of the dead body. Once the body is identified, the relatives take the body for the last rites. If not, the body remains in the mortuary and is perceived as being disrespected due to lack of storage facilities. Delays in identification were also considered disrespectful to the dead. The reasons for these perceptions included visitors entering the mortuary to look at the dead bodies, media persons taking photographs, and lack of proper storage leading to faster putrefaction. Factors such as improper handling, transport, storage and mixing of body parts not only resulted in disrespect to the dead but also hindered the process and outcome of identification.

While many participants agreed that the dead bodies were disrespected during the process of handling, a wide spectrum of responses from participants was observed with some describing how they went out of their way to be respectful to the dead bodies. Three participants expressed that they respected the dead to the extent that they cosmetically made bodies presentable before handing them over, so that relatives would not be distressed (participants 01, 13 and 19).

> *"We respect the dead body, we do not pass comments, we give respect to the dead body as the dead body teaches us many things. We use dead body to demonstrate autopsy"* (participant 19).

Three of the participants (participants 03, 10 and 12) believed there is a difference between how we treat the living and the dead.

> *"We don't respect the dead bodies. When a patient is admitted to casualty, he is treated with respect, curtains are drawn, and documents are well protected. In dead bodies, it is known whether we are working properly or not. The moment death occurs, lot of equations change. He is on a mortuary table, sometimes without clothes, he is viewed by many"* (participant 12).

The treatment of a person is different when alive, and generally more respect is shown. A dead body is treated differently. In my study I came across similar observations that bodies identified by the families were first to be autopsied and returned for last rites. Such bodies also received more respect than bodies that were unidentified. In addition, identification and returning of bodies to the relatives enabled the deceased to receive last rites specific to their religious and cultural values. In the Indian context, appropriate last rites are very important and necessary, as they are believed to bring solace to the dead individual, her ancestors and all future generations. Failure to perform last rites is believed to cause anguish to the departed soul (participants 07, 09, 11, 15, 17 and 20). Hence, many participants believed that an identified dead body is treated with more respect than an unidentified one making identification an important precondition to respecting the dead. In view of the importance given to identification by forensic doctors in their interviews, the next section deals with the challenges faced in the process of identification of dead bodies during disasters.

"*Families want the dead body handed over soon so that they can give last rites. Some wish to receive the bodies before sunset, to give a holy bath."* (participant 09).

"*When we conduct autopsies and we handle the bodies, we do not purposely do actions to disrespect the dead. Sometimes, the situations are such that in mass disasters, due to space constraints, the bodies are piled up, or placed in haphazard manner on the floor"* (participant 07).

"We kept the bodies covered with white cloth, the family feels that the dead are respected if we cover the body with cloth, I too believe so. But at times due to short supply of cloth we are not able to do that. We should never touch the dead body with our feet, it amounts to disrespect. But when we keep bodies on the floor and walk around it, it may result in our feet touching the dead body (participant 17).

"Once there was a case against me for keeping dead bodies on floor, for disrespecting the dead body, but we have to compromise at times due to lack of space" (participant 17).

5.9.3.2. Identification

As mentioned before, appropriately performed last rites give the relatives a proper sense of closure and the family can be entitled to justice such as succession

document, will, insurance claims and receipt of compensation. However, providing this closure and social justice requires the body to be identified. While the previous section briefly describes how identification increases respect for the dead body, this section details the various difficulties faced in identifying the deceased during the time of disasters. In addition to these details, this section also discusses how the processes that result in delay or failure in identification may also result in disrespect to the bodies and cause harm to their families. By properly identifying the deceased during disasters, forensic doctors play a crucial role in restoring respect and providing rights to the dead individual and the family.

Thus, from an ethical standpoint, three aims guide the process of identification

1. To aid in the performance of culturally appropriate last rites by the relatives.
2. To prevent harm to the deceased and the family.
3. To provide justice to the family.

In the following paragraphs, I describe how these three ethical elements that guide identification arose from the codes and categories from my analysis. Once a body is identified, it will get the respect that is due, because identity helps in returning the body to its family, allowing the family to uphold the wishes of the deceased to the extent possible.

Importance of last rites. Identifying a dead person in a disaster situation and then returning the deceased to the family for last rites helps in respecting the rights of the deceased and the family (Caenazzo, Tozzo and Rodriguez, 2013).

> *"They* [the family] *show lots of love and compassion for their deceased relative. They can express that through last rites. We have a special room for relatives in which they can share some time with the deceased. They can say prayers or wash the dead" (participant 03).*

The death of a person affects not just the immediate family, but also the community at large, and the relationship between the family and the community. Identifying the body and returning it to its family are important on humanitarian grounds since they allow the family the opportunity to perform last rites in a culturally appropriate manner. This allows the family and community the opportunity to grieve and experience closure.

Misidentification. If identification is not carried out properly, this results in bodies being either unidentified or misidentified. Especially in the Indian context, where

the most common method of identification is visual recognition by the relatives, in haste, under stress, or when confronted with decomposed bodies, errors in identification and the wrong body being handed over cannot be ruled out (participants 02, 04, 05, 06 and 07). Chances of misidentification are further increased when forensic doctors are pressured by families who are in a hurry to reclaim the body of their kin.

Misidentification affects multiple families as the deceased kin of one family is claimed and taken away by another. Sometimes, this can be rectified and the body returned to its rightful family. But often last rites are given before the mistake is realized.

According to one participant's narrative of a bomb explosion, when the government announced a compensation of INR 500,000 to the families affected, a couple claimed the body of a deceased old man as their father. This was later found to be a misidentification when the true relatives arrived at the mortuary. Once the true relatives had established their identity and recognised the body, the body was handed over to them (participant 11).

Transportation accidents are another set of disasters that pose challenges for identification. While following an air crash, there is a flight manifest to account for the names and number of travellers, but no such records exist in train or bus accidents. Short haul buses and commuter trains do not even have reservation charts. Disaster on such transport may result in massive casualties but their families may not be alerted.

> *"If a person is travelling in search of a job far away from his home, the accident resulting in his death would be unlikely to alert the family"* (participant 13).
>
> *"After death, identity of the deceased still exists, it is for us forensic doctors to establish it and return the body to the family so that last rites can be done"* (participant 13).

Fragmented or unrecognizable body parts. During disasters, identification is further challenged when bodies are not found intact. Disasters like bomb explosions, industrial accidents and high impact trauma like air crashes may result in the fragmentation of body parts. Similarly, in fires, bodies may be charred beyond recognition, and while transporting such charred bodies, the limbs may come off. As a result, body parts and fragmentary remains arrive at the mortuary, where they are given a unique number and examined. Relatives that come to collect their deceased kin expect to find the body whole. If fragments or body parts

are returned, in addition to compounding their grief the relatives might not identify with the body parts.

> "*Some relatives find it difficult to come to terms with mutilated bodies, as belonging to their own relative. My mortuary assistants are well versed with reconstruction. Our attendants do clean handing over"* (participant 01).
>
> *"We were classifying and handing over after the identification. The relatives were tragic that they could not get the whole body for last rites. We had to explain that the bodies arrived fragmented to us. Families are very sad when fragmentary remains are handed over to them. Few remained unidentified"* (participant 11).
>
> *From the relatives' point of view, getting the body in its entirety would be emotionally better than fragmentary remains. At least they feel relieved that the person did not suffer much while dying and he can be given a decent last rite"* (participant 18).

As an expression of respect to the dead body and the relatives, some forensic doctors have trained themselves to perform reconstructive processes (participants 01 and 13). In spite of this, they are unable to undertake many reconstructive procedures due to time constraints during disasters, and thus a high level of sensitivity is required from the forensic team while handing over fragmentary remains to families.

> *"In a massive blast, if bodies are mutilated and fragmented, if all bodies are not accounted for, arriving at a total number less than actual number of deceased would deprive the family of knowledge about the death of their relative. If there are 10 bodies missing in a disaster like bomb blast and if the count is 9, one family does not get job, financial benefits and deprive family of knowing the fate of their relative. That family does not get money, job or closure. Hence care should be taken to meticulously carry out the task. This also makes one realize that in disasters there is no alternate to team work" (participant 17).*

Mass burials or cremations. Often the disaster management authorities resort to mass burial or cremation as a solution to the problem of decomposing bodies. However, mass burials or cremations may go against the belief of the family,

causing grief and anguish. This could be perceived as a loss of dignity to the dead person and not just the surviving family members.

> *"I do not believe that mass burial or mass cremation is the answer. We cannot give dignity to the dead by depriving them of one last chance of their identification*" (participant 05).

While the previous sections dealt with the connections between last rites, identification and respect, in the following section, I will elaborate on how identification results in justice to the dead and the relatives.

Justice. One of the participants expressed that identifying the dead correctly and repatriating the body is justice for the deceased and her family (participant 12). Since the dead cannot stake a claim to justice, the living should provide them with it**.** Forensic doctors are most suited to delivering justice to the deceased and their families, as they have the skill, knowledge and legal authority to perform this duty. Several participants expressed that doing their duty with care and compassion and giving justice are important aspects of forensic work (participants 03, 07 and 11). Identifying the body translates into justice for the person and the family as they can get closure. Restorative justice is an informal process of rectifying harm in a disaster setting so that communities can heal (Volpe, 2006).

Preventing inconvenience to grieving families. Social justice to the families involves preventing any unnecessary trauma or inconveniences to them, thereby extending to them the sensitivity they deserve in their time of grief. However, standard operating procedures during disasters in India often ignore this aspect of disaster management. Many participants expressed a need for better handling of the dead to prevent such lapses.

> *"The bodies should not be shifted to different mortuaries in the city. Instead some space has to be created near the disaster site where the forensic experts are called there to examine the bodies and identify the bodies. This way the extra anxiety and trouble to the relatives to move from one mortuary to another to identify the relative will not be there. By moving bodies, even the deceased members of one family which travelled together landed in different mortuaries. The surviving family members found one deceased member in one mortuary but had to go in search of other mortuaries to find all the members of the family. So a valuable lesson learnt is to not move bodies around in different mortuaries and to deploy forensic doctors to the scene soon as disaster occurs and set up a temporary mortuary at the site."* (participant 05)

From the time of breaking the news of death to the completion of the last rites, this period is very stressful for the family members. The International Committee of the Red Cross has stressed the need to give affected families top priority while carrying out the identification and to hand over the bodies as soon as possible (International Committee of the Red Cross, 2003). In my study, one fourth the total number of participants expressed that the families wanted the bodies as soon as possible (participants 01, 04, 09, 11, 17 and 20)

One participant narrates that in a disaster involving a building burning down, the bodies were charred beyond recognition and the DNA tests had to be used for identification. However, it took 5 days for the results to arrive and the family members were waiting at the facility the whole time. One of the relatives was reportedly at the end of his tether.

> "*One relative came and said that "give me any dead body, I will do all the rituals and get on with my life*" (participant 04)

One can only imagine the agony the family was going through. It is customary among many communities in India, that the kitchen in a household where a death has occurred does not function until a certain number of days after the last rites have been performed. Such families have to depend on others to provide their victuals and the delay in identification and return of the body affects such families and close-knit communities. This problem is further compounded by the large death toll in disasters that often results in a large number of families crowding the mortuary thereby stressing an already overburdened forensic system. In addition

to a crowd of relatives genuinely hoping to claim their dead kin, disaster situations also attract imposters, further confounding the identification process.

Compensation Impostering. In order to not inconvenience the family, the government allows compensation to the families to be collected immediately after claiming the body of their deceased kin. Thus, many people falsely claim bodies in order to receive the compensation. Nearly half of the participants narrated instances where dead bodies were claimed by imposters (participants 01, 02, 03, 04, 08, 09, 11, 16 and 17) for the sake of compensation. In one case the personal effects were divested from the dead body by a person claiming to be the brother (participant 01).

"Police conducted investigation and learnt that his [the claimant's] *brother had died a couple of years earlier, he was making a false claim of another unclaimed body to be his brother's"* (participant 01).

"*The civil aviation authority announced a huge amount as compensation, so people wanted to claim a body as their relative to claim compensation" (participant 04).*

"Many people visited our mortuary, claiming to be aviation authorities and tried to gather information about the accident and status of work" (participant 02).

"Challenge was, controlling and identifying imposters who claimed as relatives of the deceased to claim 3 lakh (INR 300,000) compensation announced by railways" (participant 03).

"I received a requisition from neighbouring police station that looks after coastal areas, that a small boat had capsized, and two people had died. I had to go and investigate. Some coastal areas have small islands, which literally are submerged in high tide. The islands get exposed during low tide. We got a requisition for two bodies, which are buried in the high land, I had to do an exhumation, one dead body was near a barrel and wooden pole. We exhumed the body. There was no second body. This was an attempt to get compensation from the government… the cyclone had played havoc. The Chief Minister announced compensation of INR 100,000 compensation without Post mortem examination" (participant 08).

"The moment they announce compensation, unidentified bodies pose more problem" (participant 09).

> *"In a bomb blast, one couple took the body of an old man as their father for 5 lakh (INR 500,000) compensation. When the actual children came, the police had to get the body from couple who had taken the body. Once the real relatives established their identity and recognised the body, they were handed over the body"* (participant 11).

Hence, from my analysis, proper identification of the deceased emerged as an important condition for providing respect to the dead. My analysis highlighted the interrelatedness between identification and the cultural value to the relatives of the dead and their communities of providing appropriate last rites. I was able to delineate how improper procedures that resulted in misidentification also resulted in disrespect to the deceased and their families. Sensitivity on part of the forensic doctors while returning fragmented body parts to the relatives was another important issue that emerged from my analysis of the relationship between identification and respect for the dead. Most importantly, the social justice extended to families by proper identification and preventing any unnecessary inconvenience or harm to them was seen by forensic doctors in India to be a way of respecting the dead.

5.9.3.3. Research on the dead

In this section, I will describe the findings regarding the subcategory of research on the dead and detail, based on the participants' perceptions, how the core category of respect for the dead is affected by it. Research on the dead is discussed under two main themes: consent for research on identified bodies and use of research on unidentified bodies. In disasters there are samples collected for establishing identity, from the deceased as well as from the relatives of the deceased. The use of such stored samples for research in relation to consent is discussed.

An unidentified body becomes "unclaimed", after procedures like fingerprinting and DNA analysis fail to lead to identification. Such a body can be used for teaching purposes by medical colleges (anatomy, surgery), or for research. Unidentified bodies, due to an absence of relatives to ensure proper treatment of the remains, can be subjected to improper or unethical treatment such as not being properly preserved, or being used in research without their antemortem wishes being known. The dead body is a great resource for research as well as learning. But the use of bodies for research should conform to ethical practices. The following section explores the ethical issues related to research on the dead in disasters.

Consent for research on identified dead bodies. Among the participants in my study, there was a mixed response regarding the use of identified dead bodies for research in the absence of consent. Half of the participants stressed that research on samples (collected from the dead bodies during the identification process) could only be carried out with consent from the relatives (participants 02, 05, 06, 07, 10, 11, 12, 14, 15 and 19).

> *"If relatives are present, we need their consent to collect samples from the deceased for purposes other than medicolegal investigation."* (participant 14).
>
> *"If identity is established, the consent of next of the kin should be taken before carrying out any research"* (participant 15).
>
> *"I'm of the opinion that the bodies from disasters cannot be handed over to the college for pathology or the osteology or dissection purpose. When one is not sure whether the deceased consented for his body to be used in research it is not in the best interest of the individual. Hence absence of consent should not be used as a blanket consent to use unclaimed bodies*" (participant 05).

A participant with 35 years of experience and having worked in four disasters (participant 06), cautions against taking unnecessary samples during the autopsy.

> "*If tissues are taken to establish identification, it can be used only to that purpose. This holds good for any tissues sent to histopathology, it should not be used without consent, for a purpose not intended for during collection. We should be careful here that during post mortem, we are only taking sample for medico legal use, hence if it is not required for medico legal purpose, it should not be collected for research. Even the left over sample should not be used for research"* (participant 06).

Another (participant 10) with more than 30 years' experience also believed in the importance of taking consent from the next of kin regarding secondary research on unidentified bodies.

> "*You have to take consent of next of kin, for any other research*" (participant 10).

One participant argued that once the body is handed over after identification, stored samples must be destroyed in order to prevent future misuse of the samples.

While the above mentioned participants believed that consent from relatives was necessary for research on identified bodies, others gave varying degrees of importance to respecting the wishes of the relatives. One participant expressed that such samples could be used even without consent if all personal identifiers were delinked and the samples anonymized. Others believed that as consent from the relatives would not be forthcoming in most cases, consent could be presumed so as to make research possible.

> "*If consent is not there, we have to take it from the family. But if you explain everything they will not give consent, we do not ask, we take blanket consent. That works fine. Too much sticking to consent is a double-edged sword - more information, no consent. For the benefit of society, we have to do research. So, we cannot insist too much on consent*." (participant 09)
>
> "*You can use stored samples for research, there is nothing wrong. About the use of bodies for medical education, you can use when it is an unclaimed body. If you collect samples while treating the person, you can use if it for research, if you uphold privacy. If you are only worried of ethics, research becomes difficult*" (participant 17)

Although the intention of such researchers, who do not take consent, is not necessarily malicious, the hurt perceived by the relatives makes it necessary to rethink the acceptability of conducting research without consent.

The view that if consent is sought, the family will not accede, and hence samples or tissues can be used for research without consent is held by many forensic doctors. Nevertheless, it remains problematic from an ethics perspective. Forensic professionals need to understand the viewpoint of relatives and be transparent as to how the research would benefit society.

Thus my analysis highlights the importance of identification in the Indian context as it allows dead bodies and their families a choice regarding the research being conducted on their samples. Hence, through my analysis of consent in the case of identified bodies, I could draw attention to the interconnectedness between identification, consent for research and ultimately respect to the dead. This is because while many forensic doctors in India hold consent to be necessary in the case of identified dead bodies, few of them advocated refraining from research on unidentified bodies (see next paragraph).

Use of unidentified bodies in research. A wide variety of opinions existed on whether unidentified bodies or their tissue samples could be used in research. One-fourth of the participants agreed that consent is not required if the body

remains unidentified and if the research is for the larger good of society (participants 02, 03, 13, 14 and 15).

> *"Consent is not required for stored samples, if it is for the benefit of human society as long as the privacy of the victim is protected* (participant 15).

One response was 'if the body is unidentified, it cannot be used for any research other than for the purposes of identification (participants 05, 06, 08, 11 and 19).

> *"No research without consent should not be done. If the person was alive we would have taken consent. When he dies, we cannot take sample without consent of his relatives. We forensic doctors must take samples only for identification, no other research should be done"* (participant 11).

Another response was "if the body is unidentified, it is the property of the state

i.e. the police and they can authorize the use of tissues for research" (participants 03, 12, 13, 14 and 17).

> "*The unidentified bodies which state has right to dispose, can be used for research. For surgical procedure demonstrations also, the unclaimed bodies can be used. If funds can be generated by providing unidentified bodies for dissection and teaching to medical colleges, the same can be extended to disaster bodies* (participant 13).
>
> *"Research on forensic samples cannot be approved, since unclaimed bodies are not under forensic custody. The unclaimed body is under police. If the research is designed to solve medico legal problem, then it is justified. Any unrelated research cannot be carried out without the authorization from police"* (participant 17).

Some participants also believed that unidentified dead bodies could be used for teaching in medical colleges (participants 13, 14 and 17).

If the participants in my study are representative of the forensic medicine fraternity, then we see that there is significant disagreement with regard to using dead bodies in research. This underscores the need for compiling and implementing regulations and guidelines for research on dead bodies and post mortem samples.

In the case of identified bodies, half of the participants in my study declared that consent from next of kin was not required. This brought into question the ethics of forensic doctors' practices with respect to research, indicating a need for training and sensitization (see discussion, Section 5.11.3). In the case of unidentified

bodies, many participants felt it acceptable to use these bodies for research or teaching, even though they recognized the lack of oversight mechanisms in teaching and research institutions.

In order to conduct ethically acceptable research on unidentified dead bodies and treat them with respect, it is essential that forensic doctors know international guidelines and standard operating procedures. However, training forensic doctors in these new techniques and organizing professional development programs is a difficult task in a resource limited setting like India, as I will describe in the next section.

5.9.3.4. Resource limitations

Nearly half the participants perceived that the dead are not treated well (02, 05, 06, 07, 08, 09, 11, 12 and 17). Almost all participants reported space constraints, lack of storage facilities, lack of body bags, poor mortuary infrastructure and a failure to provide for these amenities in disaster situations. These resource limitations were viewed by the participants as obstacles in the path of identification and thus decreasing their ability to perform at optimal levels – including practicing in an ethically sensitive way.

In disasters, resource limitation can profoundly impact the outcome of identification. For example, many disasters cause the disruption of power supply, affecting mortuaries where the victims of the disaster are stored. If mortuaries do not have backup power supply systems, the stored bodies may be decayed when relatives arrive some days later. Visual identification in decomposed bodies may result in misidentification. It is important to understand the impact of resource limitation in disasters. Hence, this section describes in detail the various issues of resource limitation as viewed by the participants in this study. Furthermore, the impact of these issues on the core category of respect for the dead is also analyzed.

Lack of infrastructure. Most often in disaster situations, there is a sudden influx of a large number of bodies into mortuaries that under normal circumstances, are designed to accommodate 4-8 cadavers. The extra bodies are accommodated on the floor or sometimes piled on top of each other (participants 02, 05 and 08)

Many of the participants expressed that resource limitation was closely related to perceived disrespect to the dead. Lack of preparedness, lack of support from the concerned authorities, lack of mortuary space and lack of cold room facilities were the most cited reasons (participants 11, 17, 19 and 20).

"Proper storage of unclaimed body is a mandatory requirement. Many mortuaries do not have minimal storage facility" (participant 20).

"*In our mortuaries, bodies lie bare, after autopsy. Not keeping dead bodies in cold storage due to lack of facilities, advances putrefaction by allowing decomposition. So, people make their impressions from what they see"*. (participant 16).

"We respect dead bodies, but due to shortage in storage space, we may put 2 bodies in one cabinet to prevent putrefaction. The media makes hue and cry, due to lack of helpers, attenders in mortuary, like body parts kept on the floor. They report that bodies are not treated with dignity" (participant 11).

"Entire mortuary room was very small. We had to vacate office furniture and keep bodies there as we had no option. Where is the space? There was a crowd of 5000 people around. Bodies, body parts on floor. Forensic doctors are not comfortable seeing bodies on the floor. Others may think we are not respecting the dead" (participant 08).

"If there is a lack of space, we may end up piling the body one on top of the other. That is not by choice, but under circumstances that is the only option" (participant 16).

"In disasters, when we have space constraint, we may pile up the bodies, we may put the bodies on the floor, bodies may not have a cover, but that does not translate into us disrespecting the dead. It may appear to relatives that we don't care. We become immune or insensitive in the profession after some years, than a person not used to handling dead bodies" (participant 19).

"We respect the dead body, but we do not have capacity to handle huge number of bodies for storage, we have to place bodies on the floor, so it is possible for the outsiders to feel that that we do not respect dead bodies" (participant 18).

"Dead should be handled with respect, we are used to dealing with dead, but the onlookers feel that we are very casual with dead bodies" (participant 12).

Some participants felt that disrespect to the dead could be due to want of a white cloth for covering the dead body. This view was shared by nearly one fourth of our participants (participants 13, 14, 17, 18 and 19)

> *"If body is kept in mortuary for identification, it should be covered with cloth with only face exposed and placed separately at the minimum and not piled up. Steps have to be taken to prevent press and public from publishing photos of mutilated parts or naked body"* (participant 19).
>
> *"In mortuary, we forensic doctors are responsible, but we need revenue department or hospital to give support, by giving us the white cloth to cover the dead body. Keeping bodies bare after autopsy (due to lack of cloth to cover the dead body) can be viewed as disrespect to the dead, it can cause law and order problems in public and the media can blow it out of proportion"* (participant 14).

This lack of infrastructure is felt even more acutely in villages, where mortuary services are provided only by government hospitals. Thus when disasters occur in villages, the bodies are either examined by unspecialized forensic doctors from the closest government hospitals, or are transported (often over very long distances) to better equipped mortuaries in medical colleges, which are almost always only near cities. In some cases, bodies are buried due to lack of storage space, and exhumed when claimants arrive to collect a body. If no one claims a particular body, it remains buried.

> *"In rural areas, if there is an accident and many bodies are unclaimed, it is problematic. They* [the police] *bury the bodies temporarily due to lack of storage space and exhume bodies to hand over to relatives when they come to claim* [the bodies]*. If relatives are not there, due to shortage of cold storage, they* [the police] *bury the body"* (participant 11).

The harm that can be caused by a lack of infrastructure is illustrated by two participants' description of a railway accident in a remote village. Since the accident occurred at night, the police conducted the inquest at the village railway station, where the bodies had been moved from the actual disaster site (as it was completely dark at the site). Examination and description of the bodies' identifying features and clothes were done by the light of a sodium vapour lamp. Due to a lack of storage space, the bodies were left at the station for almost 12 hours after being removed from under the debris. The bodies were then wrapped in plastic bags and transported by bus to the nearest well-equipped mortuary in a city (120km from the site of the disaster). The bodies reached the mortuary 18 hours after the accident by which time, due to the warm and humid conditions, putrefaction had set in, making identification difficult. The issue was further complicated because the initial

examination (which was done in poor lighting conditions) had resulted in the colors of many bodies' clothes being misidentified.

> *"Bodies were put in plastic bags and tied so that when bodies arrived* [at the mortuary in the city] *18 hours after the accident, the decomposition changes were advanced. By the time bodies were shifted* [from the disaster site] *there were mixed mutilated parts and putrefying bodies. We depended solely on the color to segregate* [parts of different bodies that had been mixed up during transportation]. *We compared the color of clothes on inquest with the bodies we had"* (participant 13).
>
> *"The descriptions in the panchanama* [inquest report made by the police] *did not tally with what was found by forensic doctors. Description and color of apparel worn by victims did not match the police description"* (participant 03).

Inadequate staffing. Disasters place great demand on mortuary services. Many mortuaries do not have adequate manpower and only a few mortuary technicians and forensic doctors (participants 01, 02, 03, 05, 06, 07, 09, 13 and 17). One of the participants suggested that it is due to inadequate staffing that forensic doctors do not visit the disaster scene (participant 20). Deploying forensic doctors to the disaster scene may have a positive impact on body collection, tagging and transportation, before natural consequences like putrefaction compound the problem. However, others disagreed and said that as site visits were not a legal requirement, there was no need for forensic doctors to undertake them (participants 07, 08, 09 and 13). This seems to indicate that, while disaster management policies are in place in the country, there is a need for policy regarding the handling of dead bodies.

> "*Sometimes shortage of staff and attenders may cause burden of overwork to forensic doctors and increase tension for family"* (participant 11).

Better policy would also result in faculty development and training programs that would prepare forensic doctors and mortuary assistants in disaster victim identification (DVI) and other standard operating procedures to be used during disasters. However, better training of forensic professionals is a topic related to both resource limitation and professionalism. I will describe how policy and better training can result in respect for the dead in the next section (5.10.3.5.) of Professionalism.

My analysis of the participants' views on resource limitation revealed that in disaster situations, lack of storage space, lack of cold room facilities and

inadequate staffing all contributed to suboptimal handling of the dead bodies, which in addition to hindering identification, also resulted in disrespect to the dead. The effect of resource limitations on the ethical issues of respect to the dead is twofold: disrespect caused by improper handling and disrespect to the dead and their families by failure in identification (explained in detail in section 5.10.3.2.). Furthermore, my analysis revealed how a lack of resources impacted identification and professionalism, and exposed that insufficient planning in resource limited settings led to the participants perceiving that the dead were not being treated respectfully.

5.9.3.5. Professionalism

In this section, I will describe how the participants' narratives revealed the relationship between professionalism and the core category of respect for the dead. Furthermore, I will elaborate on how a lack of professional practices, similar to resource limitations, result in twofold disrespect through unprofessional handling of the dead and ineffective identification.

In an ideal scenario, trained personnel correctly tag and transport the bodies; the forensic doctor, appropriately trained in identification, posts photographs outside the mortuary and displays all the belongings; the media persons sensitively publish and telecast information enabling the public to be more aware and the families behave responsibly and help correctly identify their dead relative. Thus, when all those involved in a disaster situation align themselves professionally, it leads to correct identification in an expedient manner and to the restoration of the rights of the dead person. During the interviews, many participants expressed a need for uniform training of forensic doctors and mortuary assistants in disaster situations. Hence, professionalism became an important subcategory of the emergent theory of respect for the dead.

Disasters impose huge demands in a short time. The professionalism of forensic doctors is put to test, and they are required to be well versed with managing dead bodies in disasters, method of identification processes (global standards) and local practices. They need to work in a team, and care for the dead bodies, compassion and empathy because they are in communication with the bereaved family.

The codes relating to lack of professional development activities, not adhering to Disaster Victim Identification procedures, lack of sensitivity to cultural diversity, not maintaining privacy of the dead body and confidentiality of the data, media publishing insensitive pictures were grouped under professionalism (lack thereof).

Professionalism involves aligning goals of those immediately affected by the disaster, better teamwork, standardized processes to follow, and respect of the local cultures and mores. Thus, professionalism also ensures that the dead get the respect they are due. Professional attributes are required to be cultivated or emulated to handle disasters efficiently and in an ethical manner.

In the following paragraphs, I will discuss the various issues that affect professionalism of forensic doctors during disasters in India.

Regularly upgraded skill sets and uniform guidelines during disasters. A forensic doctor needs additional skills to cope with disaster situations to efficiently handle bodies and perform identification, such as skills in disaster victim identification and forensic anthropology. Among the participants in this study, only one participant (participant 04) had undergone specific training for disasters, while the others had worked in disasters without any special training. 13 participants wished they had received some training to help them perform effectively during disasters.

> *"In India forensic doctors are trained to working under constrained setting of time and resources. Maybe by making disaster training accessible to all, the disaster services may become better"* (participant 05).

Training becomes even more relevant considering efficient disaster management rests on the initial decisions, which require a skilled forensic doctor with up-to-date knowledge and training in disaster situations. These initial decisions require the presence of the forensic doctor at the scene of the disaster. However, in India, it is not mandatory for forensic doctors to visit the disaster site and bodies are instead sent to the mortuaries by the police. This practice often results in improper collection, tagging and transport of bodies and body parts. The personal belongings and contextual information at the disaster site that help in identification may be lost. For example, in an air crash disaster, the body of the pilot and co-pilot could have been easily identified as they were the only persons in the cockpit. However, during the extraction and transport of the bodies, this information was lost as these two bodies were mixed up with other bodies by untrained volunteers at the scene (participant 02).

> *"Bodies were identified, when they were removed from scene of incidence, specially of pilot, co-pilot and chamber which was removed. Even when identified, But while transporting, too many people had gathered there, scene was improperly managed by local police. It was good some volunteers tried to help, but while trying to help, they did not have any idea as to how to shift. All the bodies were put together and their relation to their seats and other such pertinent details was not mentioned (participant 02).*

In my study, of the 20 participants that shared their experiences of working in disaster situations, 17 said they did not visit the scene. Of the remaining 3 in which the forensic doctors visited the disaster site, only in 2 instances were autopsies done at the site (participants 12 and 15). This finding is important as it highlights that the practice of forensic doctors not visiting the disaster site is widely prevalent in India and is detrimental to the identification of the deceased.

Another aspect brought up by the participants based on their experiences of disaster situations was the need for forensic doctors to develop communication skills. It is possible that years of working with the dead desensitizes forensic doctors (participant 19). A dead body does not emotionally affect a forensic doctor, in the way it does an onlooker or relative. It is the responsibility of the forensic doctor to be sensitive to the emotional state of the relatives of the deceased and deal with them accordingly (participants 02 and 19).

> *"When we handle dead bodies, we should be sensitive to cover the dead bodies, with only face exposed, it is required to give the right of privacy. Even a close relative is not comfortable viewing the dead without clothes. We need to cover the dead and allow viewing. We need to respect their sensitivity* (participant 02).
> *"In mortuary, forensic doctors should be sensitive to others, including student's taking pictures. Some even post the pictures on social networks.We should have ground rules that do not allow for pictures to be freely taken by others. That is the only way privacy of the dead is ensured"* (participant 02).

International humanitarian services require best practices guidelines to be followed in disaster situations (Morgan, Tidball-Binz and van Alphen, 2006; *INTERPOL Disaster Victim Identification Guide*, 2018). Of the 20 participants, 8 were not aware of the international guidelines for dealing with disasters. Thus my analysis indicated that many forensic doctors in India have an urgent need to upgrade their skills.

Ensuring that best practices and guidelines are followed would also result in greater privacy for the deceased and their families during disasters. If the disaster site is cordoned off with as little delay as possible preventing passers-by from viewing the bodies, this would minimize the invasion of privacy of the dead. This was expressed by two participants, who had both performed autopsies at disaster sites where barricading and cordoning off were improperly done (participants 12 and 16). Participants further felt that this breach of privacy is tantamount to harming the relatives, emotionally and mentally since, even though the dead may not perceive the harm, the relatives and friends do (participants 04, 05 and 06).

> "*It is not possible to harm the dead. The dead are beyond harm. They cannot feel, fear or object to their examination. Even if the dead cannot be harmed the relatives can"* (participant 15).

Hence, my analysis of how better training and following guidelines relates to respect for the dead highlights several important points. Not only would better training of forensic doctors aid in efficient identification, such training would also sensitize these doctors to better communicate with the relatives. Following guidelines and standard operating procedures in disaster situations would minimize the invasion of privacy of the dead and their family. Furthermore, my analysis brings out how breaches of privacy of the dead body and harm to the family are related. Hence, better training of forensic personnel and strictly adhering to international and national guidelines would greatly further respect for the dead during disasters. Since the concept of privacy was considered important by several participants, issues of privacy other than those relating to best practices and following guidelines are stated in the next few paragraphs.

Responsibility of forensic doctors towards privacy. Several participants pointed out the importance of respecting privacy of the dead and their families during disasters. Eight participants agreed that forensic doctors need to be responsible for the privacy of the deceased patients. They felt that privacy was not taken seriously enough (participants 02, 03, 04, 05, 11, 15, 19 and 20), some even related how students, who were allowed in the mortuary for teaching purposes, violated the privacy of the dead by taking photographs. Three participants proactively advocated developing a sensitivity towards privacy (participants 06, 16 and 17).

"*Forensic doctors who deal with the dead have a duty to protect their privacy. It is our duty to sensitize mortuary workers, trainees and students to protect privacy of dead* (participant 02).

"In mortuary, forensic doctors should be sensitive to others…including student's taking pictures. Some even post the pictures on social networks. We should have ground rules that do not allow for pictures to be freely taken by others. That is the only way privacy of the dead is ensured" (participant 19).

"*But more important details, more private details like he was suffering from AIDS or was having that problem or this problem. Those kinds of things should be kept extremely confidential and should be revealed only through legal process*" (participant 04).

"The dead have the right to privacy, the dead body cannot be exhibited to all. Their right to privacy, some forensic doctors are sensitive, some are not" (participant 17).

"Privacy of the dead must be respected as in case of living. It is their right and it is our duty to protect it. It is every one's duty to protect the right of the dead" (participant 15).

Seven of the participants blamed the media for violating the privacy of the dead (participants 02, 03, 09, 12, 16, 19 and 20) by indiscriminately photographing the dead, without a thought on how it affects the family of the deceased. Displaying the pictures of the deceased in an insensitive manner, was seen by participants as harming the relatives and undermining the dignity of the deceased (participants 04, 05, 11, 15 and 16). Forensic doctors felt the need to be aware of this breach of privacy and avoid exacerbating it by public display of photos in conference presentations and in academic journals (participants 07, 08, 09, 10, 11, 12, 13, 16 and 20).

"*We don't allow media to take pictures. We need to clean up the body, cloth appropriately then take picture. If any reconstruction is to be done, should be done if that helps in identification"* (participant 03)

"*The role of media is also to protect privacy. Instead of showing gory pictures, they can photograph the persons to establish identity. The role of media is important but they should conform to objective of establishing identification and helping. The dead bodies should be respected. Dismembered or disfigured body should not be shown or printed*" (participant 09).

Two participants (06 and 20) expressed that forensic doctors give great importance to the confidentiality of medicolegal documents, but do not have the same regard for the privacy of the dead and their families. Great care is taken to ensure that the autopsy report is not disclosed indiscriminately. But, on the other hand, privacy is not a value that is enforced on everyone. Few forensic doctors may value it, but by and large it is neglected.

> *"Many agree with concept of privacy but may not be followed at times like in mortuary. We must develop sensitivity amongst our team members*" (participant 06).
>
> *"Since there will be pressure from media, press and public to know the details of the person, state and injuries, confidentiality has to be maintained without any disclosure directly to them"* (participant 20).

Time and pressure constraints During disasters, forensic doctors are under immense pressure to identify and hand over a large number of dead bodies. Besides relatives who come to identify the dead, the onlookers also crowd around the mortuaries, resulting in chaos, which adds to the stress on the forensic doctor.

> "*When the dead bodies were brought, the relatives were very upset, they wanted to have a look at the dead body. When they are in that state, not letting them take a look at the dead body of their loved one's is something we should not do. At the same time allowing everyone to take a look at all the bodies would give rise to chaos, confusion and overcrowding, so we were in a fix. From the crowd it appeared that many thronged out of sheer curiosity*, *but how can one know who is a relative and who is not?* (participant 04).

More than half of my participants admitted to feeling immensely pressured during disasters, no matter how efficiently they performed given the many constraints (participants 05, 07, 08, 09, 11, 12, 16, 17, 18, 19 and 20).

"*When we conduct autopsies and we handle the bodies, we do not purposely do actions to disrespect the dead. Sometimes, the situations are such that in mass disasters, due to space constraints, the bodies are piled up, or placed in haphazard manner on the floor. Even though it looked like we were not paying attention to the dignity of the dead, the fact that we gave time and opportunity even in this huge crowd, we allowed family members to go near their dead relative, made them overlook inconvenience of stacking bodies. By our way of consoling them and methodical examination of body, by showing concern, the dignity can be restored back. Good rapport with relatives is reassuring to them"* (participant 07).

"Another problem is demand for hurrying up the process. Everyone wants body as fast as possible, some make request like "don't do the postmortem on the body", we dialogue with relatives. We cannot issue postmortem certificate without doing the postmortem" (participant 09).

5.9.3.6. Summary of the analysis

Based on my analysis of the interview transcripts, respect for the dead emerged as the core category with identification, research on the dead, resource limitations and professionalism emerging as subcategories that facilitated or hindered the core category of respect for the dead. In the previous sections I have described in detail all the issues under each subcategory and how they relate to the core category. In the next paragraphs, I summarize the most important relations and connections between the subcategories and the core category.

Identification restored rights to the dead by enabling the relatives to safeguard the interests of the deceased. Furthermore, it prevented the body and the relatives from harm and provided social justice and a feeling of closure to the family. Thus the most effective way of ensuring respect for the dead was to identify them and hand them over to their relatives. For identification to be efficient, adherence to global standards was found to be very important.

My analysis revealed a need for comprehensive disaster training programs in India, with hands-on training and expertise that would enable forensic doctors to implement globally accepted standard operating procedures. These programs would bring forensic doctors up-to-date on methods of disaster victim identification, enable proper cordoning off of disaster sites resulting not only in more efficient identification of the dead but also in safeguarding the privacy of the deceased and

their relatives. Sensitivity training could also be introduced in forensic curriculum to foster soft skills like compassion and effective communication.

However, these training programs that would inculcate a higher degree of professionalism in forensic doctors require significant allocation of resources. My analysis highlighted how professionalism is significantly affected by resource limitation. A lack of resources was found to result in insufficient preparedness and training of forensic doctors, leading to them performing ineffectively in disaster situations. Resource limitation, in addition to affecting the quality of trained forensic professionals, was also perceived to affect the availability of infrastructure and manpower. Lack of proper equipment, storage space and inadequate staffing further compounded the problems faced by forensic doctors in effectively identifying and handling dead bodies. Hence identification, an important prerequisite for restoring rights and giving justice to the deceased, is hindered in disaster situations due to resource limitations that result in insufficiently trained personnel trying to perform effectively in sub-optimal conditions under time constraints and pressure. These problems add to the number of unidentified bodies in the aftermath of disasters.

The presence of this large number of unidentified bodies necessitates a mechanism by which their rights may be protected. While use of dead bodies in research remains questionable with consent obtained from the relatives, use of unidentified bodies, whose antemortem wishes are unknown poses an even greater ethical dilemma. Lack of regulations regarding research on the dead may allow researchers to conduct research without oversight mechanisms. My analysis of this issue revealed a spectrum of diverse opinions among forensic doctors in the field, thus highlighting an urgent need for strict guidelines and oversight mechanisms that would prevent the use of unidentified bodies or their parts for unauthorized research.

5.10. Discussion

In the following paragraphs, I compare my analysis of the interviews to the existing literature. This is to bring out the similarities and differences between global ethical issues in dealing with the dead during disasters and the issues faced by forensic doctors in the Indian context. From my analysis of the participants' narratives, respect for the dead emerged as the core ethical issue. This is because forensic doctors saw identification, the main goal of forensic action in disasters, as a process that resulted in giving respect to the dead (described in detail in section

5.10.3.2). Some perceived that conducting unregulated research on unidentified dead resulted in a disrespect of these bodies, thus highlighting the link between identification, consent from the relatives, and ethical research on dead bodies (section 5.10.3.3). Resource limitations and a dearth of training (development programs to foster forensic professionalism) were cited as obstacles in the way of a forensic doctor's professional duty of identifying the dead and ethical duty of respecting them. Hence, the subcategories of identification, research on the dead, resource limitation and professionalism emerge from my analysis as the major factors that influence respect for the dead during disasters in the Indian context. How do the findings from my analysis compare with the literature on respect for the dead?

5.10.1. Respect for the dead

5.10.1.1. Why is it important to respect the dead?

My analysis of the perceptions of forensic doctors in India revealed that respecting the dead was considered important for three reasons:

1. Participants believed that since, until recently, the dead had been alive and considered human, their bodies deserved to be treated with respect.
2. Respecting the dead was seen as a way of showing the relatives that their loved one is being cared for with dignity, even beyond life.
3. The practice of respecting the dead was perceived to instil confidence in the living that they will be treated well after death.

Each of these reasons for respecting the dead find support in the existing literature. Respecting the dead, who until recently were human, agrees with the work of Wicclair (2002), who stresses the need to respect the dead as the body is inseparable from the person. Thus the mortal remains deserve respect even after the person has died. Additionally, Wicclair (2002) sees such a respect to the dead body as a recognition and continuation of the person's worth, dignity and autonomy in life. Thompson (2001) not only argues that a recently dead person is still recognizable as a human being and thus deserves respect, but also stresses that since a dead person is vulnerable, special protection must be extended to protect her rights, a view shared by Knoppers, Saginur and Cash (2006).

In contrast to the view that the dead deserve respect as they were once human, is the opinion that a dead body is an object, and is only respected because of the respect for the living relatives (Macklin, 2003). However, I disagree with this opinion because I believe the living see their reflection and foresee their own future in the dead. Furthermore, from my analysis of the perceptions of forensic doctors, I found

many of them also believed in the concept of respecting all dead bodies, not just the ones with living relatives. Hence my argument is that there is a continuation of this attribute of respect, extended to all human beings beyond life into death. However, while the dead deserve respect for having once been human, respecting them also extends respect and sensitivity to their families. Hence the dead deserve respect both for their humanness and for the sake of the families.

Thompson (2001), Wicclair (2002), and Parker, London and Aronson (2013) all opine that the respect given to the dead and the upholding of their interests benefits their families. Even though the dead body cannot experience humiliation or suffering, the living relatives can and care must be taken to prevent any pain being caused to them (Wicclair, 2002; Tomasini, 2008). Hence families should be involved to the extent possible in ensuring that the deceased are respected and their interests protected (Thompson, 2001; Wicclair, 2002; Parker, London and Aronson, 2013). This literature also lends strength to the analysis in my study that revealed identification to be a crucial prerequisite in safeguarding the rights of the deceased (more details and discussion on identification and its relation to respect to the dead can be found in the next section).

The perception of forensic doctors that respecting the dead instils a confidence in the living that they will be treated with respect in their death is also corroborated by the existing literature. Baumann (2007) suggests that the concept of extending human dignity and hence respect to the dead is driven by a feeling of empathy. Hence, seeing the dead being respected results in a reassurance in the living that they will be treated well in their death (Baumann, 2007). Why we treat dead bodies with respect reflects how we wish our bodies to be treated. This is called “posthumous interest”. It is the interest the living have towards the treatment of their own body after death which calls for the dead body to be respected (Wilkinson, 2014).

While the literature mentioned above supports the view that the dead deserve respect, there is an added dimension to this during disasters. This is seen in the difference between regular forensic work and the humanitarian forensic action that comes into play during disasters. Humanitarian forensic action in such situations mainly tries to extend care to the families of the victims and tries to alleviate their suffering by treating their deceased kin with respect (Thomsen, 2017). I agree with the view that special care must be taken to ensure that respect is given to disaster victims. However, I believe that extra considerations that have not been stated in the literature so far need to be elucidated here.

In times of disasters, a large number of people die very suddenly, often in painful circumstances which evoke in the eyes of the living, a heightened sense of sympathy for the dead and a realization of their own mortality. To the close friends and relatives of the dead, the suddenness of the loss often imposes protracted grief. I believe that in such situations, the victims who have died prematurely deserve a special type of respect which I call **projected respect**. Projected respect takes into consideration not only the respect the person would have accumulated had she lived longer, but also tries to empathize with the inordinate grief of the families caused by the abrupt loss of life of their loved one. This requires forensic faculty to accommodate and give due consideration and support to the family to come to terms with the loss.

5.10.1.2. How can the dead be respected?

While the reasons for respecting the dead are common to India and the rest of the world, sociocultural practices, religious beliefs and economic limitations result in a big difference in how respect is given to the dead in disaster situations in India compared to the rest of the world.

My review of literature (Chapter 3) showed how very few studies have been performed in India or other developing countries on the ethical issue of respect for the dead. In developed countries where the concept of respect for the dead has been extensively studied, respecting the wishes of the dead with regards to consent for research was the main way of extending respect to the dead (Chapter 3). However, in the present study, the perceptions of the forensic doctors revealed that disrespect to the dead occurred due to improper operating procedures, resource limitations and a lack of training of forensic professionals. Hence, cold storage facilities to preserve the dead, hastening of the autopsy so as to return the body, establishing guidelines and standard operating procedures for disaster situations, and training forensic doctors to implement these procedures were seen as the main ways by which respect to the dead could be ensured. Some forensic doctors also suggested that while very small gestures such as covering the bodies, or extending sympathy to the relatives and being sensitive to their grief could go a long way in respecting the dead. However, resource limitations, time and pressure constraints and lack of training were cited by many participants as reasons for their inability in certain situations to extend even these small gestures.

Having thus briefly listed here how more respect could be afforded to the dead in India, I will discuss each of these points in greater detail in the upcoming sections.

I will elaborate all the subcategories that emerged from my analysis, and discuss how they facilitate or hinder respect to the dead.

5.10.2. Identification

According to my analysis, the most important condition to be fulfilled in order to afford respect to the dead body was identification. Identification not only linked the body to living relatives who would safeguard the dead person's interests and wishes, it was also the only way to discern the wishes of the dead and provide closure to their families. Hence, identification is one of the four subcategories that supports the core issue of respect for the dead.

According to the participants of my study, who are all practising forensic doctors, the most discussed right of the dead was access to religion- and culture-appropriate last rites. This seemed to be of particular importance in the Indian context as by performance of the appropriate last rites, the mortal remains are treated in a manner desired by the person while alive and this act gives satisfaction to the relatives after the death of the near one. Thus justice is seen to be done to the deceased and the family of the deceased.

The sociocultural value of last rites in the Indian subcontinent has also been stressed by a study performed in Sri Lanka (Sumathipala, Siribaddana and Perera, 2006). The authors recommend that even in extreme circumstances, when mass burial of unidentified bodies becomes inevitable, the bodies should be placed in culturally appropriate positions, permanent identification tags should be given to each body and overlaying of bodies should be avoided so as to prevent exacerbating the grief of relatives and families (Sumathipala, Siribaddana and Perera, 2006). The importance of understanding last rites in the context of specific cultures has also been highlighted by Thompson (2001), who feels this understanding is key in dignifying the dead. Thus while identification was accepted by all the participants in my study as the first step in respecting the dead, many of them felt a need to improve the efficiency of the identification process during disasters in India.

In developed countries, since 1990, DNA analysis has been used as the primary method of identification (Montelius, Stenersen and Sajantila, 2014). While DNA analysis does not always establish identity in all cases, samples can be stored in the hope of refinement in DNA analysis techniques (Knoppers, Saginur and Cash, 2006). However, in India, DNA analysis for identification is undertaken as a last resort, when only a few bodies remain unidentified (the others having been claimed

by visual identification). This procedure is ineffective not just because visual identification is unreliable, but also because imposters claim dead bodies in order to obtain whatever compensation might be offered. In many such situations, the mistake is not recognized until DNA analysis is used as a last resort, by which time, it may be too late to recover the misidentified bodies. This problem of compensation-impostering was unique to this study and has not been reported in the literature.

This study has brought the importance of identification not only as a process in forensic practice, but also as an ethical duty of the forensic doctor towards the dead during disasters. With objective methods of identification, the chances of identifying the body are better. Providing a correct identification, the forensic doctor helps in transferring the custody of the dead person from the state to the family.

However, proper identification is possible only when resources and infrastructure are adequately available and professional skills of the forensic service providers are well developed. If proper identification is done, then consent can be taken from the next-of-kin, thus re-affirming society's commitment to respecting the dead. If identification is not possible, there should be research guidelines in place to ensure that the dead are not disrespected.

Thus, while forensic doctors in India perceive the need to correctly identify the dead body in a disaster situation, as being the most important step to respect for the dead, the success of identification is affected by resource limitations, professional skill development through training which in turn influence the professional attitudes. These subcategories will be discussed in the subsequent sections.

5.10.3. Research on the dead

Research on the dead was brought up less frequently as an ethical issue by the participants in this study, but was the most discussed topic in the literature review. This was because, in the resource limited setting of managing disasters in India, basic concerns like preserving dead bodies respectfully and efficiently identifying them were more important. However, the participants were asked about their views on research on the dead and their responses were analyzed (section 5.10.3.3). This analysis is compared to the literature and discussed in this section. When the dead bodies are used for research in an ethical manner, it conveys respect for the dead. My analysis of the participants' transcripts revealed that ethical concerns regarding research on the dead revolved around two elements:

1. In the case of identified bodies, consent for research on the dead by the relatives.

2. In the case of unidentified bodies, whether the use of unidentified bodies in research is permissible, and if so, the need for establishing oversight mechanisms for regulation of research on the dead.

The following paragraphs will discuss these elements in detail.

5.10.3.1. Consent for research on identified bodies

Half of the participants in my study did not want to do any research on identified dead bodies in the absence of consent. One even suggested destroying stored samples after identification in order to prevent any possible use of samples without consent. On the other hand, some of the participants suggested that research could be carried out on identified bodies even without consent from relatives because they (the participants) perceived it very likely that research would not progress since families would refuse to consent. Others had no objection to use of stored samples in research, if it was an anonymized sample delinked from its identifiers.

I will now compare these various views that emerged from my analysis with the existing literature, in order to identify the advantages or pitfalls of these views from an ethical perspective. The views of half of the participants who stressed the need for consent when bodies were identified resonate with those of Knoppers, Saginur and Cash (2006), who argue that when antemortem wishes of the deceased are unknown, the body or body parts should not be used for research unless it is aimed at improving identification techniques. This is because improving identification techniques would not just increase chances of the body itself being identified, but also other such bodies in the future.

My analysis of the view that consent from relatives is required for research on the dead highlighted the link between identification, respect and research on the dead. Identification results in connecting the dead body to her family, who would not only ensure that she is respected in her death, but who might even uphold her antemortem wishes. This idea resonates with the views in Wicclair (2002), who argues that in the absence of antemortem consent, family consent needs to be taken, since the family is most likely to act according to the beliefs of the deceased in life, and protect the dead body from disrespectful treatment.

In my experience, the situation in India is in opposition to the recommendation in Wicclair (2002) to use the dead body for research if antemortem consent is known. In India, the relatives are the enforcers of the wishes of the deceased. Thus even if the deceased consented to be used for research after her death, that wish can only be carried out only if the family also agrees to it. For instance, in the interest

of upholding their religious and cultural beliefs, families often prioritize last rites over the wishes of their deceased relative, when those wishes involve being used in research.

Hence the situation in India is more in alignment with (Wilkinson, 2014), who observes that even though families are under no compunction to uphold the antemortem wishes of the dead, it is their duty to respect the dead. Wicclair and Wilkinson's differing arguments show that whether or not the antemortem wishes of the dead are respected by their families, returning the dead body to them would ensure that the body is treated respectfully (Wicclair, 2002; Wilkinson, 2014).

This is why I advocate that the decision regarding the use of the body in research should be taken by the family, since their decision is at least aligned towards respecting the deceased. Furthermore, in the cases where the identified dead are used for research without consent from the relatives, psychological harm may be caused to the living kin.

An example of harm being perceived by relatives is the Alder Hey scandal that occurred in 1999. A hospital was discovered to have removed organs of dead infants while conducting the postmortem, and then stored and examined the organs. When the parents and families learned that their children's organs had been removed without their knowledge they were aggrieved and objected vehemently. While it was considered normal for forensic doctors to remove and store organs from bodies after death, the Alder Hey scandal caused the practice to be perceived as unethical and harmful, especially by the relatives of the children who had been subjected to autopsy (Hall, 2001). Interestingly, the families of the children whose organs were retained at the autopsy opined that had they been asked prior to the organ removal, they would have probably consented; it was because they had been unaware of the act that they felt their rights, and those of their dead child had been violated. The enquiry culminated with the recommendation that consent forms be used even for retention of organs, with specifications regarding future use in research (Hall, 2001).

The Alder Hey scandal illustrates the pitfalls of the view taken by some participants, who held that consent from next-of-kin is unnecessary because it stalls the progress of science. Some participants even said that since relatives would never agree to the use of the dead body in research, consent should be overlooked. Not only do these views assume that the relatives would refuse consent, which need not be true, they ignore the important issue of potential harm to the relatives.

Another view expressed by forensic doctors in this study was that consent can be avoided for research on samples from the dead or their relatives if they are

anonymized and all identifiers delinked. However, some studies have questioned how anonymous such samples can truly be. This is because genetic information from these samples could be used to uncover the identity of the body they were taken from (Schmidt and Callier, 2012). Furthermore, some studies have cautioned against the anonymization of samples before use in research as they believe that the practice might encourage researchers to forego the process of obtaining consent (Datta, Wellings and Kessel, 2013; Parker, London and Aronson, 2013).

Having exhaustively discussed the varying views of the participants on consent for research on identified bodies, I conclude this section with an important caveat: disasters cause inordinate loss of life and can often result in severe grief in the relatives. At such a time, the forensic doctor needs to extend heightened respect to the dead and their relatives (mentioned previously as the concept of projected respect Section 5.11.2). Hence, obtaining the consent to do research on dead bodies or samples should never be prioritized over the grief of the relatives. In an ideal situation, such consent would be sought with appropriate sensitivity by forensic professionals who have been trained in the communication skills required for such interactions. As of now, professional development programs that would result in better communication skills and enhanced professionalism (discussed in 5.11.5) are not provided in India due to resource limitations (discussed in Section 5.11.4). Furthermore, such development programs might also result in more forensic doctors understanding the importance of consent in research on the dead.

Thus we see that the ethical issue of consent for research is connected to the other subcategories in my analysis of resource limitation and professionalism. Having discussed the elements in consent for research on the identified dead, the next paragraphs will discuss the use of unidentified dead bodies in research.

5.10.3.2. Use of unidentified dead bodies in research

My analysis of the participants' transcripts showed a lack of agreement among forensic doctors in India on the use of unidentified dead bodies in research. While some participants advocated for research on the unidentified dead and their samples for the benefit of society, others believed that these bodies were the property of the state and could be used only if the state permitted it. A minority were of the opinion that the unidentified dead should not be used in any research as their antemortem wishes, or wishes of their families were impossible to ascertain.

In disasters, the dead are considered vulnerable because they cannot look after themselves and they are likely to be harmed or exploited for research. If the dead

are not identified, it is possible that their last wishes or beliefs are not being met. In several countries, human rights acts have been adopted to uphold the rights of persons who are not in a position to speak for themselves. Thompson (2001) argues that this protection should be extended to include the dead as they cannot protect themselves or their interests. This is particularly true during mass disasters and the deceased victims should be treated as vulnerable and their rights protected (Knoppers, Saginur and Cash, 2006; Caenazzo, Tozzo and Rodriguez, 2013). In fact, Thompson (2001) argues that research with even the noblest of intentions is abusive if ethical principles are not adhered to. Hence he cautions against the use of dead bodies in scenarios with a poor cost-benefit ratio.

The diverse views of forensic doctors in India indicate that a lack of guidelines on the use of unidentified bodies in research could lead to unregulated research on dead bodies. This is exactly the scenario that the authors mentioned above have cautioned against. Such unregulated research would cause a loss of confidence among people in forensic professionals, resulting in long-lasting and far-reaching consequences. These consequences affect not just the immediate families, but also how people in society believe they will be treated once they die.

In India, the courts have ruled that the dead have certain rights ('Ramji Singh @ Mujeeb Bhai Vs. State Of U.P. & Ors.', 2009) and have made provisions to ensure that the dead are covered with a cloth and that an allowance is paid to the police for last rites. Hence, if all efforts to identify a body fail, last rites must be given after a DNA sample is stored for future comparison with potential relatives. However, I advocate that a few exceptions be made to allow regulated research in the following areas:

1. Research that would help refine techniques of identification. This type of research could help not just that particular body to be identified, but might also result in helping identify dead bodies in the future. Hence, this exception is justified as it could potentially benefit the dead body in question or other unidentified dead bodies.
2. Research on dead bodies that could be of potential benefit to the (unidentified) friends and relatives during pandemic or epidemic outbreaks. Since such research could potentially benefit a large number of people almost immediately, it is justified, since the risk to the dead body is much smaller than the benefit to humanity.

Such research should only be carried out when the appropriate oversight mechanisms like ethics committees are in place.

In this section, I compared the results of my analysis regarding the participants' views on research on the dead, and compared it with the existing literature. When it comes to the use of identified bodies in research, consent from the relatives is important and should not be done away with. In the case of unidentified bodies, last rites should be given after storing a DNA sample for future identification. The body can only be used for research which is either aimed at improving identification techniques, or during pandemic outbreaks when the benefit to society is very high. Oversight mechanisms and guidelines should be established in order to regulate the research.

5.10.4. Resource limitation

Before I discuss my analysis of the participants' narratives, a brief explanation of how mortuaries work in India is necessary. Mortuaries in India are either associated with medical colleges (both private and government run) or as parts of government run hospitals and health centres (Murty *et al.*, 2013). Since medical colleges are regulated by the Medical Council of India, which conducts regular inspections, their facilities are better than those in government run hospitals. Medical college mortuaries are usually staffed by specialized forensic doctors (doctors who have specialized in forensic medicine at a postgraduate level), while mortuaries in government run hospitals are usually staffed by unspecialized forensic doctors with only basic forensic training (which is taught at the undergraduate level).

Not all medical colleges are equally equipped. Medical colleges that offer postgraduate programs are subject to more rigorous inspections and usually have better infrastructure than medical colleges that only offer undergraduate programs. However, even medical college mortuaries do not have the necessary infrastructure to handle a large number of bodies, as in the case of disasters.

At the time of the interview, all 20 participants in this study were associated with mortuaries in medical colleges offering postgraduate courses (implying rigorous inspections by the regulating body). However, many of them had experienced working in different mortuaries. One of my participants had been associated with a mortuary in a medical college not offering postgraduate courses (where the regulating body conducted less rigorous inspections of mortuaries facilities). Four others had worked in mortuaries in government hospitals.

The above description of mortuary setup will provide the context within which I will discuss my analysis of the participants' narratives.

My analysis revealed the connections between resource limitations and the other subcategories that emerged from my theory, and how a lack of resources affected

the core category of respect for the dead. In spite of having diverse experiences in the field of forensic medicine, the participants in my study all agreed that a lack of resources contributed significantly to the perception that the dead were not respected. The lack of resources impacted ethical treatment of dead bodies in disaster settings in two ways: lack of infrastructure and inadequate staffing.

5.10.4.1. Lack of infrastructure

While many participants agreed that the dead were not treated respectfully during disasters, they believed that the reasons for this were not in their control, and were because of a lack of uniform guidelines, lack of proper training, and lack of planning and implementation of standard protocols. Many participants admitted to being unable to perform even simple acts of respecting the dead, like covering the dead body with a white cloth, storing the body in cold storage and not piling bodies over each other. Thus, even though the participants knew what actions to undertake in order to prevent the relatives from perceiving disrespect to the dead body, they were unable to perform these acts due to a lack of infrastructure.

Participants admitted that in disasters there was not enough white cloth to cover every dead body. Not covering the dead body resulted in disrespect to the dead. If the body is not respected, it reduces the status of the body to that of an inanimate object. Since the body represented a person once it should be treated with respect. This can be done through simple acts like covering the body, placing it separately and protecting it from harm, for instance from rats and mice.

However, it is difficult to carry out even the simple acts mentioned above because, in some mortuaries, upkeep is neglected. Some participants described that mortuaries they worked in had broken window panes, with birds often flying through the mortuary space. Mortuaries also lacked adequate cadaver storage capacity (inadequate from the disaster perspective), resulting in bodies being placed on the floor, in rooms without any temperature control facility. Even when mortuaries were equipped with cold storage rooms, they were often non-functional. Expanding storage space in mortuaries, to increase preparedness for disasters or accidents is an urgent requirement.

During disasters, mortuaries are not only swamped with a large number of bodies to be identified, autopsied and returned to families, but also anxious relatives and media persons. This makes it all the more important to plan effectively to set up temporary mortuaries equipped with cold storage facilities near disaster sites. While I am not suggesting this as an alternative to upgrading mortuaries, this plan saves on having to furnish all mortuaries with large amounts of cold storage space,

beds, equipment and other infrastructure, which are difficult to procure in resource limited settings. Forensic professionals from multiple mortuaries could be enlisted to help at the disaster site, thereby preventing a shortage of forensic doctors in any one mortuary. Thus in a resource limited setting, this plan is more cost effective, and also allows forensic doctors to visit the disaster site, reducing the chances of losing evidence during transportation or due to improper cordoning off of the disaster site. Furthermore, this provides a single location for relatives to visit, as opposed to the various mortuaries they otherwise have to go to.

5.10.4.2. Inadequate staffing

Medicolegal services in India, especially in remote areas, are usually carried out by primary healthcare doctors, who lack specialized forensic training. At times other associated professionals such as technicians, and ancillary support personnel are also not trained or sensitized to handle disaster situations.

The recommendations I make regarding how to handle disasters in villages is based on the recommendation I made in the previous section, regarding planning to set up temporary mortuaries near disaster sites. If a disaster should occur in a rural area far from well-equipped mortuaries, the temporary mortuary facility should be transported to the disaster site, accompanied by a well-trained group of forensic experts from various medical institutions to conduct autopsies and help in identifying the victims efficiently. Regular training programs and workshops should be conducted, first for the already specialized forensic doctors, to bring their skills up to date and inform them of international guidelines, and second for the non-specialist doctors in villages to develop at least some skills among them (this aspect will be explained in greater in the discussion of the subcategory Professionalism, Section 5.11.5). Thus expertise can trickle down from well-functioning mortuaries in cities to peripheral health units, health centres in villages and rural areas and help them collaborate more effectively if a disaster were to occur.

My analysis of the participants' experiences brings out the urgent need to upgrade mortuary facilities across India, and at the very least, to plan for setting up temporary mortuaries near disaster sites, in order to make the process of identifying and returning dead bodies to their families not just efficient, but also respectful to the dead. There is also a requirement to develop policies for disaster management and to provide training centres where forensic doctors can receive training to develop global competencies, and in turn, reach out to doctors in villages and give them at least basic training.

Hence, my analysis of forensic doctors' perceptions reveals that resource limitations result in a lack of preparedness to deal with disaster situations in India. This state of affairs has been pointed out by a study that examines the readiness and role of disaster victim identification in India (Ishwer *et al.*, 2014). The authors state two main reasons for slow progress of identification during disasters in India: lack of manpower and unpreparedness to deal with a large number of tissue samples. Interestingly, my analysis not only brings out similar obstacles to the effectiveness of the identification of bodies, but reveals that infrastructure lack and inadequate staffing also prevent the awarding of due respect to the dead.

In this discussion I have also presented a recommendation which would be a cost-effective way of overcoming at least some of the shortcomings in the current state of affairs: Setting up of temporary mortuaries at disaster sites and enlisting forensic professionals from nearby mortuaries. This would prevent loss of contextual information that could aid identification and allow for greater involvement of forensic doctors at the disaster site.

However, infrastructure lack and inadequate staffing were only part of the problem of resource limitations. In my analysis, a major effect of resource limitation was on the training and development of forensic doctors and ancillary staff. As the training of forensic personnel involves several complex considerations, they have been grouped under a separate subcategory called Professionalism.

5.10.5. Professionalism

In this section, I will discuss the narratives of the participants in my study and reveal how the subcategory of professionalism affects the core category of respect for the dead, and is related to the other subcategories of identification, research on the dead and resource limitations. Sifting through the responses I received, I observed that the lack of professionalism in forensic professionals described by the participants stemmed from three main causes:

1. A lack of upgrading of skill sets and establishing of guidelines.
2. Inadequate knowledge among forensic doctors about their responsibility towards protecting the privacy of the dead bodies in their care.
3. Constraints due to pressure and a limitation of time.

5.10.5.1. Upgraded skill sets and guidelines for disasters

This study is the first of its kind that has directly interacted with forensic doctors to see how they perceive the ethical dimension of their role in disaster settings. Through analyzing the narratives of the participants in my study, I realized that

forensic doctors recognized the harm that can be caused to the dead and their family when forensic professionals lack the required training and sensitivity in communicating with grieving families. However, they perceived that preventing this harm was beyond their control due to the resource limited setting, and lack of guidelines and training. Many participants expressed a desire to be trained in carrying out internationally accepted identification procedures such as Interpol's Disaster Victim Identification (DVI) program (*Interpol - Disaster Victim Identification (DVI)*, 2018a).

The issues with the management of dead bodies during disasters in India begin even before the forensic doctor becomes involved in the process. This is because including forensic doctors in an on-site recovery of dead bodies is not practiced in India. This job is left to the first responders who usually consist of local volunteers. Hence there is a lack of trained first responders in India. In such a scenario, forensic doctors who have the wherewithal and experience in handling dead bodies and being in leadership positions can influence the initial working of teams at the disaster site, despite the lack of trained personnel. Their involvement is likely to improve the initial collection, sorting and tagging of bodies and body parts which could go a long way in improving the final outcome of the identification process.

I would like to state here that such situations are not unique to India but are seen across the developing world. The experiences of our participants with the handling of the dead bodies, for instance, by untrained first responders, and handing over the body after visual identification, were quite similar to those reported following the 2003 Bali bombings (Lain, Griffiths and Hilton, 2003).

The importance of proper collection and sorting of bodies was demonstrated by one of the participants' account of an air crash disaster (Section 5.10.3.5). Due to the avoidable loss of contextual on-site information during the collection of dead bodies, a massive amount of time was spent trying to re-identify the pilot's body. In the aftermath of disasters, time is a valuable resource. Streamlining the investigation process to increase efficiency and effectiveness would ensure justice to the victims.

Hence, forensic doctors should be trained so as to work in planned teams together with first responders and the police. These teams should carry out regular mock exercises to prepare how to deal with disasters, and how best to utilize resources in an emergency.

Along with teamwork, many participants stressed the need for communication skill development that would enable forensic doctors to sensitively interact with the families of the deceased. This is particularly important in disaster situations when

hundreds of harried relatives flood the mortuary, each demanding the body of their deceased relative. Amidst the total chaos, communication skill, empathy and patience are required to answer the grieving, frustrated and angry relatives. Hence, from the forensic doctor's point of view, enhanced training to better deal with the dead during disasters should include familiarization with international protocols such as DVI, and skill development in teamwork and communication.

As mentioned in the previous section (Resource limitation 5.11.4) autopsies in India are performed not only by forensic experts but also by medical officers without specialized training in forensic medicine or pathology. Hence the standard of autopsy is varied. Lack of specific knowledge regarding handling of bodies and lack of sensitivity to the needs of the relatives create tension between the body management team and with the relatives. This deficiency may be due to lack of knowledge by the forensic investigator regarding the international laws and awareness of cultural differences.

Many participants believed it was important for forensic doctors to visit the disaster site in order to prevent the loss of contextual information, but admitted that this was not possible due to a shortage of personnel. Having analyzed the perceived needs of the forensic doctors, I describe the recommendations and observations of studies that have previously commented on the need for adhering to standard practices.

Studies in the literature have commented on the varied procedures for identification, exhumation, and returning of bodies to families for last rites from country to country. A lack of knowledge of international guidelines regarding data protection, genetic information from relatives or body parts, and knowhow of local cultural customs regarding the dead contribute to the varied practice (Coupland and Cordner, 2003). To make matters worse, there is a wide variation in recording post mortem findings between and within countries. Overall, worldwide, there is little effort in following evidence- and consensus-based practices, and instead, experience-based practices are used in forensic medicine (Colville-Ebeling *et al.*, 2014).

The different approach of every country to forensic investigations (Coupland and Cordner, 2003) causes problems when forensic doctors from different countries work together following mass disasters. In such situations, lack of guidelines and standard operating procedures results in tensions between professionals (Coupland and Cordner, 2003). The International Committee for Red Cross (ICRC) initiative of guidelines for "The Missing" and "Disaster Victim Identification" (DVI) have laid down standard procedures for investigating the missing in situations of

unrest and in disasters (International Committee of the Red Cross, 2003; *Interpol - Disaster Victim Identification (DVI)*, 2018a). These standard operating procedures need to be adopted across countries so that the forensic services are uniform and conform to a standard.

Humanitarian organizations are regularly involved in the capacity-building programs of local health care providers. In such programs, expert healthcare professionals train and build the capacity of local providers. Such programs, particularly those that focus on the skills perceived as essential by the forensic doctors in this study should be carried out not only by individual institutions but also by state-wide or national organizations.

Forensic action during disasters differs from regular forensic practice (Thomsen, 2017). Education in humanitarian disaster ethics is vital to bridge the gap between the skills required in these different scenarios, thus augmenting forensic services and nurturing humanitarian ethics and care during disaster situations.

5.10.5.2. Responsibility of the forensic doctor towards privacy

Many participants in my study agreed that it was the responsibility of forensic doctors to protect the privacy of the dead, but admitted that it was very difficult to do this due to a lack of resources and professionalism. While forensic doctors went to great lengths to maintain the confidentiality of medicolegal documents, they rarely extend the same effort towards protecting the privacy of the dead. The participants felt that this results in harm being caused to the relatives of the deceased, who perceived that their deceased kin were being treated with disrespect.

The situation is worsened by the presence of the media, who photograph bodies indiscriminately and without respect. Families are often distressed to see the entire body of their dead relative picturized in a state of undress amidst unhygienic surroundings. Some participants expressed a fear that such pictures might result in the family being stigmatized, or the community being stereotyped and misrepresented.

That indiscriminate photography of the dead can result in the misrepresentation and stereotyping of the relatives agrees with the views of (Calain, 2013), who argues that even if consent is taken, it may not have been informed consent. Thus, the purpose for which the dead body is photographed is often unclear to the grieving relatives (Calain, 2013). It is imperative to take the informed consent of the relatives for publication of photographs during disasters (Bhan, 2005; Calain, 2013), as this protects the vulnerability of the dead and the family.

5.10.5.3. Time and pressure constraints

The ethical issues that arise due to a lack of updated skills, inadequate staffing and resource limitations (described in the sections above) are only exacerbated by the time and pressure constraints that forensic doctors are under during disasters. Many participants in my study admitted to feeling stressed due to pressure from relatives to return the body as quickly as possible. While some participants could empathize with the relatives, they still found it extremely difficult to perform under such conditions. I recommend that these perceptions be taken into account while designing the various training programs that would prepare forensic doctors for disasters. Furthermore, when planning the forensic response to a disaster, extra precautions must be taken to ensure the presence of adequate forensic doctors at the disaster site, or at the mortuaries involved so as to ease the burden on individual forensic professionals.

5.11. Summary and conclusion

This chapter explains the method and process of the qualitative research that I carried out in this study. I define the research question, describe the interview process and the method of analysis used. My analysis reveals that respect for the dead emerged as the core category and most important ethical issue faced by forensic doctors in disaster settings. Along with this, four subcategories that affected respect for the dead also emerged: uncovering the identity, research on the dead, resource limitation and professionalism. I describe the findings of my study, with quotes from the participants where necessary, and stress how each subcategory affects the other, as well as the core category. After describing my findings, I analyze and discuss them in comparison to the literature review, following which I suggest how to overcome the ethical issues faced by forensic doctors in disaster situations in India.

My study reveals that the actions that result in a perceived lack of respect to the dead begin at the site of the disaster. The disaster site is not cordoned off, and the first responders are often untrained volunteers who happen to be passing by. If the disaster occurs in a remote area, the bodies have to be transported to far away mortuaries (usually by road). In both these scenarios, body parts are misplaced, contextual evidence that could aid in identification is lost, resulting in the body not being identified, or being misidentified. Once at the mortuary, the bodies are often placed on the floor due to a shortage of storage space, where they are photographed by the media, resulting in a violation of their and their relatives'

privacy. Unclaimed bodies are often given mass burial, or used for research and teaching purposes after presuming consent.

I argue that from the perspective of the family and community, the newly dead are still associated with their personalities and individualities. Thus, from the relatives' perspective, observing the bodies being treated with a lack of respect feels like a violation of the respect that ought to be afforded to the individual. And since identified bodies are treated with respect, unidentified bodies should be as well, since it is possible that a future event might lead to their identification.

Identification allows the dead body to be returned to the family, who would treat the body with respect. They are the authority that can consent for the use of the body in research, and thus have to be consulted before the body or its parts can be used in any study.

My study reveals that many forensic doctors consider consent to be of little importance when using dead bodies or their parts in research, especially when the body is unidentified. But through my analysis of the literature, the pitfalls of presuming consent are discussed. The assumption of many forensic doctors that the families of the deceased never consent to the use of the dead body for research is also questioned. Thus, I recommend that when bodies have been identified, consent from the relatives is imperative before research can be carried out.

My theory recommends that when bodies remain unidentified, they should be treated with respect and given last rites, after storing a DNA sample for future identification. Through careful examination of the existing literature and after analyzing the attitudes of forensic doctors in India, I suggest that research should be conducted on unidentified dead bodies only in two cases:

1. When that research is aimed at improving identification techniques, since this would increase the chances of the body itself being identified, as well as be of use in identifying all other unidentified bodies.
2. When that research can directly save a large number of lives, as in the case of a pandemic outbreak.

However, these guidelines need to be enforced by ethics committees and any research that is conducted on the dead should be regulated by oversight mechanisms.

The responses of the participants reveal that forensic doctors are perceived to treat the dead with a lack of respect, but a severe lack of resources plays a significant role in this perception. Poor mortuary infrastructure and inadequate staffing are the major contributors to the perception that the dead are not respected. I discuss how resource limitations prevent efficient identification, and in many cases even result

in misidentification. Furthermore, this resource limited setting contributes to the lack of training in internationally accepted procedures such as Interpol's Disaster Victim Identification, and lack of sensitivity displayed by many forensic professionals when communicating with grieving relatives. This lack of professionalism arising from resource limitation causes harm to the relatives not just due to the poor communication skills of forensic doctors.

After careful analysis of the participants' narratives, I recommend the setting up of temporary mortuaries near disaster sites, and creating a team of trained experts from multiple mortuaries (in order to prevent a shortage of forensic doctors in any one mortuary). By having a team of trained experts visit the disaster site, loss of contextual information can be minimized and the identification process can be streamlined, with less stress to the relatives of the deceased. The team of experts should also work on constantly upgrading their own skills through internationally accredited professional development programs.

Once the team of experts has reached a globally accepted level of expertise, this team should focus on training other forensic doctors in order to raise the overall skill level, and create multiple teams capable of handling disaster situations. The workshops and programs they teach should be well designed to work in the Indian context. Education regarding guidelines and techniques should be the most focused on, along with some components addressing the immense pressure and time constraints that forensic doctors face during disasters. These teams of experts should also reach out to mortuaries in remote areas and conduct training programs for the unspecialized doctors there so that they learn how to at least cordon off the disaster site and prevent loss of contextual information until the expert team arrives with the facilities to set up the temporary mortuary. This will improve the identification process and also prevent the dead being treated with disrespect.

Thus my analysis of the participant's perceptions during disasters brings out how the core category of respect for the dead is affected by the four subcategories of identification, research on the dead, resource limitation and professionalism, and how the four subcategories affect each other. I address the ethical analysis of respect for the dead through identification in Chapter 6 and research on the dead in Chapter 7.

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Chapter 6: Ethical analysis – Uncovering the identity of the dead

6.1. Research Question

In the present chapter I carry out a normative analysis of how respect is conferred on the dead body through the process of identification. This is one of the ethical issues figuring in the previous chapter, which describes the results, analysis and discussion of the interviews conducted on forensic doctors with experience of providing forensic services of handling dead bodies in disasters. Upon analysing the data, I found four ethical issues: identification, professionalism, resource limitation and research on the dead.

This chapter will address the following question: "Under what circumstances is it ethical to give up on efforts to identify the dead in disasters?". I have chosen the above question for the reasons described in the literature review in Chapter 3 and the in-depth interview in Chapter 5, which brought out the sociocultural value of last rites and importance of identifying the dead body in disasters.

6.2. Relevant Facts

6.2.1. The sociocultural value of last rites

The certainty of death affects choices a person makes in many ways (Fahlander and Oestigaard, 2008). If a person dies in a foreign country, requests on humanitarian grounds are made at the ministerial level to get the mortal remains of the person back to the home country and the family (Times of India, 2019). When such a high value is placed on performing the last rites, identification of the dead becomes crucial. The process of grieving or bereavement is incomplete without the dead body, as living relatives can only achieve real closure after performing last rites in a socioculturally acceptable way.

6.2.2. Challenges in Identification in resource limited countries

In disasters, bodies are found in various states of damage, from fully intact bodies to fragmentary remains like a few limbs or tissues. The forensic doctor examines all of these with the objective of identifying the deceased person. In developing countries an external examination along with an examination of personal belongings in the presence of investigating officer is carried out. The relatives are present during the process and either identify the body directly, or through

photographs. This is called visual recognition, and is usually followed by detailed post mortem examination.

When a body is identified it regains its name and can be united with the family for last rites. Visual recognition is aided to a great extent by family members. This method is popular in low- and middle-income countries. Visual recognition, which even in the best of circumstances, has low efficacy, may pose an even greater challenge when the forensic doctor is confronted with a putrefied body (*Interpol - Disaster Victim Identification (DVI)*, 2018b)Forensic doctors have the responsibility of establishing the identity of dead bodies in disasters.

6.2.3. The process of identification

Immediately after death, bacteria in the dead body and the external environmental conditions initiate a process of decay and decomposition from within the body – a process known as putrefaction. This process affects all parts of the body (including face) thereby causing changes in the physical features (Pinheiro, 2006). In disasters, bodies are received in different stages of putrefaction – some bodies may be fresh and amenable to easy identification, whereas others are putrefied beyond visual recognition (Byard and Tsokos, 2013). Once putrefaction sets in, fingerprinting, dental examination and DNA analysis are required to accurately identify bodies in disasters (Byard and Tsokos, 2013).

6.2.4. What happens when a body is identified?

If the process of uncovering the identity is successful, the body is repatriated to the family. Thus the most evident benefit from the process of identification is that the family can perform last rites and have the satisfaction of fulfilling their duty. For many, performing last rites gives a sense of consolation during the period of bereavement. Grieving is an important aspect of bearing the loss and moving on and brings about healing.

6.2.5. Misidentified bodies

Misidentification occurs when a body is wrongly identified, and is handed over to people who are erroneously assumed to be family. There have been families who have performed the last rites (and in India this often means cremation), only to be told later about the misidentification by which time, it is too late to take corrective action. Such unfortunate outcomes mostly occur when identification is based solely

on visual recognition or/and identification of personal belongings. In misidentification when the wrong party has already cremated the body the actual family cannot receive the body of their missing loved one. Consequently, they have to bear the trauma of not knowing for sure whether their relative is alive or dead, since they are unable to see the body for themselves. Being deprived of closure, they are unable to heal through grieving or move on with their routine life. The interviews in Chapter 5 brought out the strong view that identity brought respect to the dead, to the extent that at least the family can perform the last rites, grieve, heal, find a sense of closure and move on with life (Chapter 5 page 38 para 2).

6.2.6. Unidentified bodies

Three scenarios can unfold for a body that remains unidentified.

1. A body whose identity is not uncovered is subjected to either a mass burial or cremation, which may be against the ante mortem wishes of the deceased or his family (Yadav *et al.*, 2017).
2. The body is handed over to a medical college for imparting medical education. Cadavers are required by medical institutions for purposes of medical education such as teaching human anatomy through dissections (Ajita and Singh, 2007; Rokade and Bahetee, 2013). In spite of multimedia videos and virtual reality dissection methods gaining popularity, the use of dead bodies is not replaceable in anatomical and medical education (Saltarelli, Roseth and Saltarelli, 2014). Medical institutions acquire dead bodies either through donations, or by claiming unidentified dead bodies after a stipulated period of time (Ajita and Singh, 2007; Rokade and Bahetee, 2013; Rajasekhar, 2016). In India, there is no unified Anatomy Act for the country, instead every state or union territory has its own Anatomy Act (a brief comparison of some of these acts can be found in (Rajasekhar, 2016) For example: the (*Maharashtra Anatomy Act*, 1949) allows for a waiting period of 48 to 72 hours for the process of identification, failing which the state can claim the “unidentified” body.
3. The dead body/ body part or tissue is used in research. (Normative analysis of research on the dead is explained in Chapter 7).

6.3. Ethical Principles

I have chosen the following articles of the UNESCO Universal Declaration of Bioethics and Human Rights (UDBHR) as relevant to the analysis of the research question.

1. Article 3 – Human dignity and human rights
2. Article 4 – Benefit and harm
3. Article 8 – Respect for human vulnerability and personal integrity
4. Article 9 – Privacy and confidentiality
5. Article 10 – Equality, justice and equity
6. Article 12 – Respect for cultural diversity and pluralism
7. Article 13 – Solidarity and cooperation.

6.3.1. Article 3: Human dignity and human rights

1. Human dignity, human rights and fundamental freedoms are to be fully respected.
2. The interests and welfare of the individual should have priority over the sole interest of science or society (The Universal Declaration on Bioethics and Human Rights, 2005; Andorno, 2009).

6.3.1.1. Human dignity, human rights and fundamental freedoms are to be fully respected.

We will start with the first clause in article 3 which has 3 different concepts: human dignity, human rights and fundamental freedoms. When it comes to thinking about the research question at hand, i.e. “Under what circumstances is it ethical to give up on efforts to identify the dead in disasters?”, this article can be applied to: 1) the deceased themselves, and 2) their living relatives and friends. Hence, we have undertaken to carry out our analysis of article 3 keeping in mind the 3 concepts (human dignity; human rights; and fundamental freedoms) and the 2 parties they might be applied to (the dead person and living third persons close to the deceased). Thus the following 8 questions arise:

1. Do the dead have any human dignity?
2. If yes, what would respect for their human dignity involve when applied to our research question?

3. Does respecting the human dignity of third persons close to the deceased have any implications when applied to our research question?
4. Do the dead have any human rights?
5. If yes, what does respecting their human rights involve when applied to our research question?
6. Does respecting the human rights of third persons close to the deceased have any implications when applied to our research question?
7. Do the dead have any fundamental freedoms? If yes, what does respecting their fundamental freedoms involve when applied to our research question?
8. Does respecting the fundamental freedoms of third persons close to the deceased have any implications when applied to our research question?

6.3.1.1.1. Do the dead have any human dignity?

I argue that dead bodies have human dignity. After all, dead bodies belong to the human species. So *prima facie* they have human dignity. Why would human dignity be an exclusive feature of the living? Common sense morality stops one from treating the dead with contempt or indulge in behaviour that undermines their dignity. Because the dead are human they are entitled to respect for their human dignity. If someone denies the dead have human dignity, the burden of proof is on them. They need to substantiate that the irreversible stoppage of circulation, respiration and brain functions bringing about death deprive a human person of dignity when the material body still exists.

6.3.1.1.2. What would respect for the human dignity of the dead involve when applied to our research question?

Our interviews brought out a recurring theme that it is the duty of the forensic doctor to respect the dead through certain actions. As was brought out by the interview of forensic doctors (chapter 5), covering the dead body with a white sheet and keeping it in cold storage, identifying the dead body and repatriating it to the family are some actions that promote respect for the dead.

Imagine a situation where sincere efforts are made to establish identity and repatriate the dead body by comparing ante mortem and post mortem data of missing persons and carrying out DNA analysis of the dead and the relatives. The actions described in this scenario convey more respect to the dead than those

carried out in another situation where adequate efforts to identify the dead are not made at all, dead bodies remain uncovered and are passed off as unidentified bodies to medical colleges for research or given mass cremation. This means that the respect for human dignity of the dead would be an argument in favour of attempting to identify dead bodies.

6.3.1.1.3. Does respecting the human dignity of third persons close to the deceased have any implications when applied to our research question?

Last rites and death rituals give the family much needed solace. The shared and reaffirmed bonding with the community, deceased and the family not only gives strength but connects past generations with the present and future (McGuinness and Brazier, 2008). Hence uncovering the identity and returning the body of the deceased to the family helps families to grieve. It is at this stage families and communities support each other in the time of the loss of their loved one. Suppose the forensic doctor makes every effort to identify the body and that results in the identification of the dead body. The body thus identified is repatriated to the family. Contrary to that, if there is a lack of serious consistent effort to identify the dead body, the bodies remain unidentified and thus unclaimed. As a result, the relatives do not receive the dead body of their kin. In the earlier scenario, making efforts to identify and repatriate the body is more suggestive of respect to the dignity of the third person.

Irrespective of religion and culture, the desire of the relatives to identify their kin should be respected (Morgan *et al.*, 2006). Hence respect for the dignity of third persons would imply that every effort should be made to respect, identify and repatriate their dead relatives.

6.3.1.1.4. Do the dead have any human rights?

Most of the articles of the Universal Declaration of Human Rights (UDHR) do not seem to be applicable to the dead. However one article, Article 5 of the UDHR, might be applicable to the dead (*Universal Declaration of Human Rights*, 1948). The article states that “No one shall be subjected to torture or cruel, inhuman or degrading treatment or punishment.” Certain treatments of the dead body can be perceived as degrading, for example, keeping the dead body without a cover. There are instances where dead bodies are not kept in cold storage due to lack of facilities and are bitten by rats, causing disfigurement of the face (Times of India, 2017). This is not only against human dignity but it seems to violate their human

rights not to be subjected to degrading treatment as well. The dead body needs protection from degrading treatment, hence Article 5 UDHR seems to be applicable to the dead.

6.3.1.1.5. What does respecting their human rights involve when applied to our research question?

Identification of the dead body implies indirect freedom of the body from degrading treatment (like keeping the body uncovered) and thereby upholding its human rights. Once identified the dead body becomes a person and the forensic doctor is now more careful to keep it covered and in cold storage, unlike with unidentified bodies regarding whom a lot of uncertainty exists. The right of the deceased to receive respectful treatment translates into the duty of the forensic doctor to establish identity.

6.3.1.1.6. Does respecting the human rights of third persons close to the deceased have any implications when applied to our research question?

Article18 of the UDHR states:

> Everyone has the right to freedom of thought, conscience and religion; this right includes freedom to change his religion or belief, and freedom, either alone or in community with others and in public or private, to manifest his religion or belief in teaching, practice, worship and observance (*Universal Declaration of Human Rights*, 1948).

Performing last rites may be a matter of bidding farewell to the dead in order to facilitate the journey of the soul, or whatever belief the family holds, they have the right “to manifest [their] religion or belief in teaching, practice, worship and observance” according to Article 18 of the UDHR. Not identifying the dead body would deprive the relatives from carrying out last rites and would therefore not be respectful of article 18 of UDHR. Hence respecting the human rights of the third person mandates the proper process of identification and repatriating the dead for the last rights.

6.3.1.1.7. Do the dead have any fundamental freedoms? If yes, what does respecting their fundamental freedoms involve when applied to our research question?

The dead lack agency. Without agency though, it does not make any sense to assign freedom or a lack thereof. Agency is a necessary condition for freedom. Therefore, dead bodies do not have fundamental freedoms.

6.3.1.1.8. Does respecting the fundamental freedoms of third persons close to the deceased have any implications when applied to our research question?

The actions of viewing the dead body, giving the body last rites, performing rituals and conforming to their beliefs bring closure to the family. Performing last rites can help channelize grief and is considered to be restorative to the bereaved relatives (Zisook and Shear, 2009). They heal and move on, after coming to terms with the loss.

Having the dead body identified and repatriated makes the relatives feel less burdened and hence proper identification is more respectful of their fundamental freedom. When relatives do not receive the dead body, they have to carry the burden of not knowing whether their relative is dead or alive. Therefore, putting in time and effort for the purpose of identification is respectful of the fundamental freedoms of the relatives.

6.3.1.2. The interest and the welfare of the individual should have priority over the sole interest of science or society

The second clause of Article 3 of the UDBHR expresses the idea that scientific research, even though aimed at the welfare of society, should not lose focus on the interest and welfare of the individual (‘The Universal Declaration on Bioethics and Human Rights’, 2005; Andorno, 2009). Article 3.2 advises on the balance to be maintained between scientific advances and interest and welfare of the individual. Two questions need to be answered in relation to the dead in disasters.

1. Do the dead have any interests? If yes, what would prioritizing their interest mean when it comes to identification of the dead?
2. How can we understand the interests and welfare of the relatives, and would prioritizing their interest and welfare over the sole interest of science or society have any implications when applied to this chapter’s research question?

Is the article applicable to the dead? After death, the concept of welfare is not applicable, as the body has stopped experiencing anything. The welfare of the relatives of the deceased, however, is a relevant consideration.

6.3.1.2.1. Do the dead have any interest?

In contrast to the concept of welfare, the concept of interest is still applicable to the dead, not in a subjective sense (since the subject is no more) but in an objective sense. When the body is identified, the relatives can construe the wishes of the deceased. However, in the case of unidentified bodies, there are no relatives to make that decision, and the objective interests of the deceased remains unknown.

In such cases, we propose that some sort of best interest standard can be used to get an idea of what the objective interest of the dead may be. We might ask what actions a rational agent would consider as being in the best interests of the dead. Most probably, such actions would include handling the dead body with care and repatriating it to the relatives. Not properly covering the dead body, mishandling the dead body, using the body for dissection and demonstration without consent, improper storage of the dead body causing desecration may be considered against the objective interest of the dead body.

By and large in case of dead bodies, the interest would be in giving respectful treatment during the process of identification. Hence we can assume that identification of the dead body and returning the body for last rites would be in line with the objective wishes of the dead.

6.3.1.2.2. What would prioritizing the interest of the dead mean when it comes to our research question?

When adequate efforts are not made to identify the dead, they remain as unidentified bodies and they cannot be repatriated for last rites. This would go against the interest of the wish for their body to be properly identified and repatriated. Hence prioritizing the interests of the dead means making the identification process stringent.

6.3.1.2.3. How can we understand the interests and welfare of the relatives? Would prioritizing their interest and welfare over the sole interest of science or society have any implications when applied to the research question?

The relatives of the dead have an interest in performing last rites, since it gives them a sense of closure and enhances their welfare. The family gets to learn about the death of their dear one, perform last rites, grieve and move on. In some cases, compensation is paid to the family, while in others, jobs may be given to family members. Carrying out the will of the dead and settling matters of inheritance only come into play after the body has been identified. The welfare of the relatives cannot be enhanced if adequate efforts are not made to identify the dead in disasters. Through a meticulously conducted identification process the body might be handed over to the relatives, which allows them to perform the last rites. This would give them a sense of closure and allow the family to move on. Prioritizing interests and welfare of the relatives is an argument in favour of a thorough process of identification of the dead.

6.3.2. Article 4: Benefit and Harm

In applying and advancing scientific knowledge, medical practice and associated technologies, direct and indirect benefits to patients, research participants and other affected individuals should be maximized and any possible harm to such individuals should be minimized (The Universal Declaration on Bioethics and Human Rights, 2005; Pellegrino, 2009).

Article 4 claims that use of technology should benefit patients, research participants and affected people while minimising harm to them. The questions that arise at this point are:

1. Can the dead be benefited or harmed? If yes, what would maximisation of benefits and minimization of harms imply when it comes to answering the research question?
2. Do considerations of maximisation of benefits and minimization of harm to the relatives have any implications when it comes to answering the research question?

6.3.2.1. Can the dead be benefited or harmed?

The dead cannot be benefited or harmed subjectively as they are beyond feeling. Be that as it may, it does seem possible to distinguish objective benefit and harm.

Some sort of best interest standard could be used to get an idea of what might be objectively beneficial or harmful in relation to the deceased. We might, for example, ask what rational agents might consider to be harmful or beneficial to them after they have died. Arguably respectful treatment of the dead might be seen as beneficial whilst disrespectful treatment might be regarded as harmful. According to this standard subjecting a dead body to degrading treatment could be considered as objectively harmful, whilst seeing to it that last rites are fulfilled could be seen as objectively benefitting the dead. Thus the deceased can benefit through a meticulous process of identification. If, in contrast, inadequate and ineffective attempts at identification are made and the body is simply dumped into a mass grave and not given any due last rites, this could be regarded as objectively harming the deceased. Thus maximisation of objective benefits and minimization of harm to the dead would require serious attempts at identification of the deceased.

6.3.2.2. Do considerations of maximisation of benefits and minimization of harm to the relatives have any implications when it comes to answering the research question?

The relatives go through the trauma of loss of their loved ones. When unidentified bodies or body parts are given a mass burial or given away to medical schools for teaching and demonstrations, the relatives are deprived of performing the last rites and hence cannot experience closure. This scenario is harmful to the relatives. In contrast proper attempts to identify the dead benefit the relatives by allowing them to perform last rites and experience a sense of closure. Thus maximisation of benefits and minimization of harm to the relatives would again imply serious attempts at identification of the deceased.

6.3.3. Article 8: Respect for human vulnerability and personal integrity

In applying and advancing scientific knowledge, medical practice and associated technologies, human vulnerability should be taken into account. Individuals and groups of special vulnerability should be protected and the personal integrity of

such individuals respected (The Universal Declaration on Bioethics and Human Rights, 2005; Patrao Neves, 2009)

In order to apply this article to the research question, the following questions need to be considered.

1. Can dead bodies in disasters be considered a group of special vulnerability, and if yes, what would protecting them and respecting their personal integrity involve when it comes to our research question?
2. Can the relatives of the dead in disasters be considered a group of special vulnerability and if yes, what would protecting them and respecting their personal integrity involve when it comes to identification efforts?

6.3.3.1. Can dead bodies in disasters be considered a group of special vulnerability?

In order to explore the concept of vulnerability it is worthwhile to consider Kipnis (2001) who explores the different domains of vulnerability of research participants and classifies them into 6 types, i.e. cognitive, juridical, deferential, medical, allocational and infrastructural vulnerability (Kipnis, 2001).

Cognitive vulnerability is a condition in which the participant lacks the understanding regarding the study and hence cannot make sound decisions. This is seen in dementia and Alzheimer's subjects.

Juridical vulnerability occurs when individuals are under the legal care of someone, and cannot exercise their freedom of choice. This is seen in minors under the care of hostel wardens or criminals under the care of police officers.

Deferential vulnerability exists when there is deference towards a hierarchical structure and participants make decisions based on their respect for the people influencing them. The influencing person could be a friend or relative. Medical vulnerability occurs when a person is suffering from serious medical illness for which there is no remedy such as end stage renal disease or certain cancers. Allocational vulnerability occurs in a situation in which the somebody does not have access to certain public goods that will be provided when she participates in a research project. For example, a participant may want to take part in a trial for the free health check-up or the blood investigations while ignoring associated risks inherent in the study, thus making her vulnerable to exploitation.

Infrastructural vulnerability could arise in a place lacking the necessary infrastructural, administrative, or logistic support. If the place where the research is carried out lacks the expertise in the form of researchers and ethical oversight, if there is a lack of infrastructural and logistic support like the availability of a telephone to make calls in emergencies, if the political and infrastructural arrangements do not support research, it results in infrastructural vulnerability which may expose participants to harm (Kipnis, 2001).

The dead do not seem to fit into any of the vulnerabilities described by (Kipnis, 2001) who was clearly not considering the deceased but had living research participants in mind when distinguishing the different categories of vulnerability. Nevertheless, we still think it is appropriate to regard the dead as vulnerable because they are completely dependent on their handlers to cover them, keep them safe, and treat them with respect. In this sense the dead are even more vulnerable than any of the categories in Kipnis' analysis since they have a higher degree of dependency (Kipnis, 2001).

6.3.3.2. Since the dead can be considered a group of special vulnerability — as established above — what does it mean that they should be protected and their personal integrity respected when it comes to our research question?

When it comes to the identification process, respecting the personal integrity of the deceased would involve not subjecting the dead to any degrading treatment or using them for research without oversight which would be instrumentalizing them. In addition, protecting the deceased means keeping them covered, in cold storage when possible and preserving them from disfigurement caused by rodents and other infestations.

In contrast, if unidentified dead bodies are used for teaching and dissection demonstration without consent, it is an affront to the personal integrity of the deceased. If they are kept uncovered, subjected to physical neglect or housed in subhuman conditions, or subjected to unnecessary viewing and picturisation, it amounts to degrading treatment. Beyond the process of identification, we need to ensure that the dead body (which is vulnerable) is protected, covered, and well preserved for repatriation or return.

6.3.3.3. Can the relatives of the dead in disasters be considered a group of special vulnerability?

Kipnis' six kinds of vulnerability of research participants do not cover the dead. The dead are a different, more vulnerable class because of their total dependence on others to give them basic cover, protection and to prevent their exploitation (Estacio, 2009).

When considering the vulnerability of the relatives, the classification described by (Kipnis, 2001) is not applicable. Yet the relatives of the dead are also vulnerable as they find themselves uncertain about whether or not their family member is alive. The relatives are vulnerable in another sense. They are more likely to get hurt or injured and require special safeguards (Patrao Neves, 2009a). In the case of the dead in disasters, it is their relatives that are more likely to suffer, not only because they have lost someone close to them but also because they are suddenly thrust into disaster scenes or mortuaries. In some instances, they are not even sure whether their relative is dead or alive and that makes them stressed and anxious. Due to being in that state of shock, the relatives can be considered a group of special vulnerability. Unresolved grief due to inability to find the dead body of their loved one and to offer the last rites could lead to prolonged grief and mental stress (Pan American Health Organization, 2004). Due to all of these factors, the relatives can be considered a group of special vulnerability in that they are more likely to get hurt or injured and require special safeguards (Patrao Neves, 2009a).

6.3.3.4. Since the relatives are a group of special vulnerability, what would protecting them and respecting their personal integrity involve when it comes to identification efforts?

There should be a concerted effort to provide for the rest and recovery of the relatives. Since the relatives identify the body, they should not simply be instrumentalized for identification. They are often put through severe discomfort because most mortuaries are not equipped to deal with the large number of relatives that gather during disasters. Relatives wait for the repatriation of dead bodies amidst significant physical and mental pain. Sometimes, they are troubled by the media and at other times, have to run around to get papers for identification. In such instances, setting up a shaded area and providing them with hydration can save relatives from having to stand for extended durations of time in the sun and prevent their fainting. As advised by the ICRC, a family liaison should be established for the support of the relatives (Morgan *et al.*, 2006). The family should

be provided with a grief counsellor to talk to, as people under stress are known to break down. In addition, properly preserving dead bodies and undertaking serious efforts to establish their identities are actions which result in repatriating the body for last rites, and thus, is in line with protecting the relatives and their personal integrity.

6.3.4. Article 9: Privacy and Confidentiality

The privacy of the persons concerned and the confidentiality of their personal information should be respected. To the extent possible, such information should not be used or disclosed for purposes other than those for which it was collected or consented to, consistent with international law, in particular international human rights law ('The universal declaration on bioethics and human rights', 2005).

When a person is being treated for an ailment, her right to privacy and confidentiality are upheld. Her personal information is kept confidential, keeping in mind that a breach of private information can harm her (Tunick, 2001). When it concerns living humans, privacy and confidentiality, are a given. In order to explore whether this article about privacy and confidentiality can be applied to the dead, we need to answer the following two questions.

1. Do the deceased have privacy and is their personal information still confidential?
2. If yes, what would respecting their privacy, and the confidentiality of their personal information mean when applied to the research question?

6.3.4.1. Do the deceased have privacy and is their personal information still confidential?

(Clarke, 2006) identified four categories of privacy for the purpose of outlining special protection. The four categories are:

1. privacy of the person
2. privacy of personal behaviour
3. privacy of communication
4. privacy of personal data

Privacy of a person deals with bodily privacy and integrity and stands for non-intrusion. Privacy of personal behaviour involves respecting personal information regarding religion, culture, and sexual practices. It also includes the right to private

space to carry out activities free from being monitored. Privacy of communication restricts spying and monitoring of communication of individuals. Privacy of personal data involves the protection of physical and virtual data (Finn, Wright and Friedewald, 2013).

In the case of dead bodies, there is no communication anymore. Nor is there any behaviour. So the kinds of privacy relating to these are not applicable to the deceased. The dead are still people, though. In addition, they still have personal data. So exposing them or indiscriminately photographing them would breach their privacy of person as well as their privacy of personal data. Confidentiality requires non-disclosure of personal data (Gillon, 1985). So this applies to the deceased as well.

6.3.4.2. What would respecting their privacy and the confidentiality of their personal information mean when applied to the research question?

Respecting the privacy of the dead person would mean keeping the body covered, and in cold storage, to prevent putrefaction and securing it from rodent and insect activity. Upholding the privacy of the person would also extend to preventing indiscriminate viewing of the body.

Protecting the privacy of personal data would mean keeping that person's information away from public intrusion. It would include having only those photographs published that aid in identification and avoiding photographs that depict the dead body without clothes or showing pictures that hurt the sentiments of the relatives and the community. Protecting the privacy of the personal data like images would ensure that data is not automatically made freely available (Finn, Wright and Friedewald, 2013).

While privacy is all about protection from undue intrusion, confidentiality is about the restriction on sharing of the information exchanged between a client, patient or a person to lawyer, health carer or an authority which cannot be divulged without permission from the client/patient/person giving the information (Resnik, 2010). Respecting confidentiality of the information would mean protecting the results and reports of the investigation collected during examination and making them available only to the authorities involved in investigating the disaster. Generally, permission from the person whose information is collected is required before this information is divulged to others. Exceptions are cases of notifiable diseases and

outbreaks of epidemics and such conditions where, by alerting the authorities, the danger to the lives of others through spread of the disease is reduced.

Establishing the identity of the dead body relies on showing the body directly to the relatives or by circulating photographs of the deceased along with their description. Although this process helps in identification, it makes upholding privacy and confidentiality difficult since it relies heavily on the discretion of the authorities (usually the police or media) circulating the photographs and descriptions. Some pictures may expose the body in a manner that disrespects the dead and hurts the sentiments of family, friends and community. Confidential data emerging from the investigation should not be disclosed—especially if a person is suffering from diseases and conditions that result in stigmatisation—unless it helps in identifying that person. Disclosing such information indiscriminately may hurt the sentiments of the relatives and indignify them.

6.3.5. Article 10: Equality, justice and equity

The fundamental equality of all human beings in dignity and rights is to be respected so that they are treated justly and equitably (The Universal Declaration on Bioethics and Human Rights, 2005).

We established earlier that the deceased have dignity and at least some rights (Sections 6.3.1.1.1; 6.3.1.1.2; 6.3.1.1.4; 6.3.1.1.5). It goes without saying that the relatives of the deceased have dignity and rights as well. Therefore, the following questions arise:

1. What would respect for the fundamental equality of the deceased in dignity and rights involve?
2. What would respect for the fundamental equality of the relatives in dignity and rights involve?

6.3.5.1. What would respect for the fundamental equality of the deceased in dignity and rights involve?

We argued in the discussion of Article 3 of the UDBHR (Section 6.3.1.1.1) that the dead have dignity since they belong to human species. Having said that, respecting their dignity would involve covering the dead body, storing the body in cold storage and protecting it from vermin and rats. Because dead bodies are, of course, still human, they have a few rights as well – like the right to be free from cruel, inhuman or degrading treatment (Article 5, *Universal Declaration of Human*

Rights, 1948). The actions described above would uphold not only the dignity of the dead body, but also protect it from being subjected to cruel, inhuman or degrading treatment. There should be no discrimination between identified and unidentified bodies, and they should be treated equally with their dignity and rights being respected. Upholding the fundamental equality of the deceased in dignity and rights would thus involve treating all dead bodies with the same respect for their dignity and rights irrespective of caste, religion, race, or nationality and without considering whether a body is identified or not.

6.3.5.2. What would respect for the fundamental equality of the relatives in dignity and rights involve?

Respecting the dignity and rights in general would involve undertaking serious efforts to identify the dead and repatriate them to their relatives (so that the family can experience closure – as discussed in Sections 6.3.1.1.3; 6.3.1.1.6). In the same vein, respecting the rights of the relatives would involve identifying the dead body and returning the same for last rites. By this we would uphold their right to practice religion or manifest religion through freedom of belief or observance (Article 18, *Universal Declaration of Human Rights*, 1948). It would also involve making some arrangements for the bereaved since many of them come from distant places to identify their dead relative. The Forensic doctors should explain the process that will be carried out during identification to the relatives.

Respect for the fundamental equality of the relatives in dignity and rights involves putting in the same effort when it comes to the above without regard for caste, religion, race, or nationality. Consider a disaster that has occurred in a developing country. Amongst the dead are X, a foreign national from a developed country, and Y, a local. Establishing the identity of X and repatriating her while not putting in the same efforts for Y goes against the idea of respect for fundamental equality in dignity and rights. If the decision to repatriate bodies to their home countries is reached and carried out without excluding anybody based on arbitrary grounds, this will express respect for the fundamental equality of the relatives in dignity and rights. The heavy costs of this process need not be undertaken by a single country. Hence, solidarity and cooperation amongst the countries in sharing the burden of identification and repatriation would help in providing justice in an equitable manner. Solidarity and cooperation are further elaborated below (Section 6.3.7).

6.3.6. Article 12: Respect for cultural diversity and pluralism

The importance of cultural diversity and pluralism should be given due regard. However such considerations are not to be invoked to infringe upon dignity, human rights and fundamental freedoms nor upon the principles set out in this declaration, nor to limit their scope ('The universal declaration on bioethics and human rights', 2005).

6.3.6.1. What does it mean to give cultural diversity and pluralism due regard when it comes to identification of the deceased in disasters?

Cultural diversity and pluralism should be respected – but not at the cost of any of the other principles set out in the declaration. Different cultures practice last rites in different ways. When it comes to handing over the dead body to the family for last rites the forensic doctor needs to accommodate the family's cultural practices, especially with regards to positioning and dressing the body in a certain way.

In disasters, families may travel long distances to see the dead body and may want more cooperation from forensic doctors in understanding and respecting their cultures. These families prefer to perform last rites based on their cultural practices. Some cultures require bodies to be dressed in a particular manner. Dressing the dead body of an unmarried woman can be different from the way a married woman is dressed. For instance, the family would request that the dead body of the married woman be dressed in green sari with green bangles and flowers in the hair. Other cultures require the dead body to be in a sitting position when they are taking it for burial.

While mass burials are given to unidentified bodies in some disasters, the cultural variations in last rites and the relatives' feelings hurt due to their inability to perform last rites according to their culture should be understood. Once identity is established, the family takes over in order to transport the body for the last rites. Last rites differ between cultures and include burying, cremation, sky burials, or feeding mortal remains to carrion birds (the Pharsee Tower of silence) (Modi, 1928; MaMing *et al.*, 2018). Due regard for the importance of cultural diversity and pluralism thus means that forensic doctors must not only make serious attempts to identify the body and repatriate it to the family. They must also do whatever is in their power to help the family perform last rites according to their cultural practices.

6.3.7. Article 13: Solidarity and cooperation

'Solidarity among human beings and international cooperation towards that end are to be encouraged' (The Universal Declaration on Bioethics and Human Rights, 2005).

I will tackle the implications of this article when applied to identification of the dead in disasters by looking at the following two sub questions:

1. What would solidarity among human beings imply when it comes to identification of the deceased in disasters?
2. How could international cooperation be encouraged towards more solidarity when it comes to identification of the deceased in disasters?

6.3.7.1. What would solidarity among human beings imply when it comes to identification of the deceased in disasters?

Solidarity is a term that describes the behaviour which fosters unity and brings cohesion among people in trying circumstances (Dombrowsky, 1983). Peace and security, development and human rights are the three pillars of international solidarity. In a world with challenges which are interconnected, the interest of each country lies in fostering good relationships with others (Puvimanasinghe, 2013).

During disasters, there is a breakdown of services (like communication and transport), which causes people to be more dependent on others. In addition, people who have lost their relatives in disasters travel to the place of the disaster to identify the bodies. They often find themselves in alien surroundings under a great deal of stress. Their capacity to respond is overwhelmed (O'Mathúna, Gordijn and Clarke, 2014). The difficulties caused by the breakdown of these services over a part of a city or region can be eased by external support or help.

Solidarity helps people withstand trying and difficult situations in disasters (Dombrowsky, 1983). Hence many volunteer organizations rush to disaster sites to help transport the injured to hospitals and the dead to mortuaries. Throughout the process of identification, the relatives need to be cared for. Solidarity would involve cooperation, complementarity, respect for human dignity and social diversity (Cole, 2008). Creating a culture of care to the bereaved and to the dead encourages solidarity and helps the family and society at large recover from the trauma.

6.3.7.2. How could international cooperation be encouraged towards more solidarity when it comes to identification of the deceased in disasters?

Article 1 of *Universal Declaration of Human Rights*, 1948 states that all human beings should act towards each other in the spirit of brotherhood. In disasters, citizens of different countries may be found injured or dead. International cooperation will help in expediting the process of transporting the survivors and the bodies of the dead to their respective countries.

In disasters involving citizens of many nationalities, the dead, the injured and affected need to be transported. Fostering international cooperation will make it easier for logistics and other types of support to aid the citizens. In the context of identifying the dead in disasters, international cooperation could involve trained international forensic doctors visiting the disaster site, cooperating with local police and forensic doctors and setting up temporary mortuaries, and carrying out the disaster victim identification, thereby developing local competencies.

An example of how solidarity and international cooperation resulted in management of thousands of dead bodies was during the Indian Ocean Tsunami (2004). Experts from Disaster Victim Identification (DVI) teams from 12 countries arrived in Thailand and helped the Thai Police and Forensics in the process of identification (Tsokos *et al.*, 2006). International cooperation and solidarity works to mitigate the global north and south divide in disasters and also fosters goodwill and paves the way for better international relationships. International cooperation should be agreed upon by countries so that technology transfer and sharing of experiences bring about better preparedness and build resilience.

Supposing in a situation, dead bodies cannot be identified and repatriated due to economic constraints due to lack of logistics support, infrastructure or expertise. This may result in hundreds of bodies not being repatriated to their families. Lack of resources should not be a justification to not identify the dead bodies. Solidarity and international cooperation will ensure support to countries which cannot identify their own citizens by providing expertise and logistical support, thereby showing the respect towards identification of the dead in disasters. In times of disaster, pooling and distribution of resources towards achieving equity brings justice (Puvimanasinghe, 2013).

6.4. Conclusion

Articles 3, 4, 8, 9, 10, 12 and 13 of the UDBHR were analysed in the context of the identification of dead bodies. All the articles point to the idea that meticulous identification is very important to uphold the rights, dignity, freedoms and prevent harm to the deceased and family. There is no conflict between the articles except with regard to the article on privacy and confidentiality which demands certain restraints in order to properly respect the privacy of the deceased as well as the privacy of their personal data and confidentiality. For example, care should be taken to publish only those photographs of the deceased that help in identification, and to avoid unnecessary and indiscriminate circulation of photographs. The article also restricts the use of information collected (obtained from samples), to only those purposes for which they were collected. In other words samples are not to be used for tests other than those for which they were collected, unless fresh consent is obtained (Stiennon, 2009).

Below are the recommendations arising from the normative analysis in the chapter.

1. Identification should be taken seriously and meticulous efforts must be made to establish the identity of the deceased, such that it can be repatriated as soon as possible.
2. Resources should be mobilized for future identification. In the instances where identification is not established, a nail, a hair follicle or a tooth should be preserved. If the family turns up at a later date, to claim their kin, after the last rites of the body has been done, the DNA analysis can be carried out and compared with the family's, to look for identification. This way the family can experience closure, without undue delay.
3. The dead body should be well covered and protected against disfigurement.
4. The smallest number of photographs as deemed necessary, should be circulated, and only to those who can help in the identification of the body.
5. Sensitivity should be maintained and pictures with gory details should not be published.
6. Personal information, especially if it might subject the relatives to stigmatization, should not be indiscriminately circulated.
7. Respect to the relatives, their dignity and rights should be upheld by caring for the relatives during the process of identification.

8. The religious and cultural practices of the relatives should be accommodated by forensic doctors insofar as they do not infringe upon any of the other principles set out in the declaration.
9. Solidarity initiatives should be encouraged as they can help quicken the process of getting aid to disaster affected communities.
10. International cooperation should be encouraged so that during disasters, affected communities can receive greater help and recover faster.
11. Many of the recommendations require to be put into practice through the Forensic national and state level academic bodies.

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Chapter 7: Ethical analysis – Research on unidentified dead bodies obtained in disasters

7.1. Research Question

In this chapter I carry out a normative analysis of the following question: "Under what circumstances is it ethical to carry out research on unidentified dead bodies or body parts in disasters?" I address this question for the following reasons.

1. The in-depth interviews with forensic doctors (Chapter 5) showed a wide variation of views on research on unidentified bodies. Some opposed doing any research on bodies (identified or unidentified), while others supported all types of research, to the extent that they considered consent from relatives unnecessary for research on identified bodies, on the grounds that research is for the common good. Such diverging opinions from forensic doctors may result in varied practice giving rise to loss of confidence of lay public in forensic practice.
2. Many dead bodies remain unidentified at the end of the identification process in disasters. Not much thought has been given to the ethics of the use of an unidentified dead body in research (Jones, 2014), despite the concept of "research on the dead" being the most discussed issue in the literature (Chapter 3, Section 3.3.1). This is seen by lack of guidelines and oversight mechanisms in place. At the same time, not doing research on the dead because the guidelines are not established, is a waste of resources. Hence there is a need to study if and how these resources can be used in research in a way that is morally acceptable.

7.2. Relevant facts

To understand the ethical considerations of research on the dead, it is important to first be familiar with the different types of research that are possible on the dead. This section describes the various types of research that can be carried out on the dead. Finally, the current guidelines and practices relating to research on the dead in India are briefly explained.

Thus this section introduces the relevant facts required to deliberate on the ethical issues of research on the dead in order to answer the research question: "Under what circumstances is it ethical to carry out research on unidentified dead bodies or body parts in disasters?" Following this section, the rest of the chapter deals

with a normative analysis of the research question using the UDBHR articles as a tool.

7.2.1. Types of disasters

Disasters are classified as open or closed based on the amount of information available about the identities of the victims in disasters. In open disasters, for example 2004 South Asian tsunami, there is no prior information about the number of victims or their possible identity (*INTERPOL Disaster Victim Identification Guide*, 2018). During such disasters, there is no way to easily narrow down the identity of the victims and hence there is no way of contacting the relatives. In open disasters, a larger number of bodies tend to remain unidentified at the end of the identification process than in closed disasters. In closed disasters, such as an air crash, a list of all passengers and their identities is available, and the process of identification consists of matching the bodies to their identities listed in the flight manifest (*INTERPOL Disaster Victim Identification Guide*, 2018). In such a scenario, the relatives of the victims are informed and arrive at the disaster site or mortuary to await the remains of their dead kin.

7.2.2. Types of research possible on the dead and their samples

Uses of dead bodies in research can be broadly categorized into four types depending on weather the whole body is used, or specific organ systems are studied or only genetic material is used:

7.2.2.1. The use of a cadaver as a whole to determine the effects of mechanical, chemical or putrefactive effects on the body

Dead bodies can be used in road safety testing, or in other accident settings to study the extent of damage to the human body. Thompson (2001) describes a study in which the Department of Transportation, State of California, used recently dead bodies to study the efficacy of airbags in car accidents. However, this study was stopped due to public outcry as the disfiguring of these dead bodies evoked a strong negative response in the community (Thompson, 2001). Some countries have set limitations to this type of cadaveric research, while others have not. For instance, in the UK, there are laws preventing the use of dead bodies for road safety testing, but in the US there are no such rules. In the US, to study processes of putrefaction in the forensic sciences, there exist “body farms” where dead bodies

are left exposed to the elements and their decomposition is studied (Derbyshire, 2015).

7.2.2.2. Use of artificially maintained dead bodies to study organ systems and their functioning

Brain-dead humans, also known as “heart-beating cadavers”, are those who are declared dead by assessment of neurological activity, but their bodily functions (pulmonary, cardiovascular, etc) are artificially maintained by medical technology (Wicclair, 2008). These bodies can be maintained in this vegetative state from days to months, in a few cases even decades (Gorvett, 2016). Brain-dead bodies are very valuable for research as they can be used to study the functioning of various organ systems in the body. In one study, brain-dead bodies were administered doses of lithium to observe its effect as an antidiuretic hormone, in another, brain-dead children were used to aid in the design of a device used to manage cardiopulmonary arrest in children (Wicclair, 2008). Use of brain-dead bodies in research has potential applications in all fields of medicine and studies making use of them for cancer research and cardiovascular research have also been reported (Wicclair, 2008). In 2016, a researcher in India put out an advertisement in local newspapers asking for brain-dead bodies (Mudur, 2016). These bodies were to be used in a study aimed at attempting to reverse brain-death through stem cells. However, public outcry brought down the study (Srinivasan and Johari, 2016).

7.2.2.3. Use of organs and tissues from dead bodies to study the effects of lifestyle or differential gene expression

The dead are a source of biological material such as organs, tissues and DNA. Biological material extracted from the dead is especially useful in research since many organs and tissues like the brain or heart become available for extraction only after death. Furthermore, this biological material can be used to study the impact of lifestyle and exposure to certain environments on human tissues (Van Assche *et al.*, 2015).

This biological material can also be used to study the genetic causes for cardiovascular and neurodegenerative diseases. Walker *et al.* (2014) describe the Genotype Tissue Expression program conducted through the National Institutes of Health, that attempts to study how genetic variation and gene expression affects a person’s susceptibility to common diseases. To achieve this, this ongoing study aims to collect tissue samples from a large and diverse population of living and

dead subjects (*GTEx Portal*, 2019). Another study, called the Comprehensive Individual Molecular Atlas (CIMA), aimed to understand how a single genome could lead to the generation of the varied cell types and tissues of an individual body. Achieving this would require the removal of almost all organs and tissues from the individual's body, which is only possible after death (Walker *et al.*, 2014).

7.2.2.4. Research on samples collected for the purpose of identification from dead bodies and their relatives

In disasters since identification is the most important objective, samples such as nails, teeth, muscles, or parts of bones are collected for DNA analysis. A sample of DNA from potential first degree relatives is also taken for comparison. Samples are often collected in excess, with the view that they may be required for repeating and reconfirming the test results. This results in some mortuaries collecting a large number of samples across decades.

The primary aim of collecting samples from the dead is to identify them. Thus, the term primary research refers to all steps undertaken to identify the body. Secondary research is any further research conducted at a later date on the stored samples collected during the disaster for the purpose of identification (Caenazzo, Tozzo and Rodriguez, 2013). The chance of misappropriation of body part is more likely to result in feeling of commodification by the relatives and society at large than compared to use of stored samples for secondary research. Since samples collected for identification are sources of DNA, secondary research on these samples involves studying genetic or genomic information (Knoppers, Saginur and Cash, 2006; Caenazzo, Tozzo and Rodriguez, 2013). Research focusing on refining identification techniques can also be carried out using these samples, aiding in identifying future unidentified dead bodies. Several authors have opined that if the tissues or data obtained in the process of disaster victim identification are suitably anonymized, further ethically acceptable research can be done on the samples (Knoppers, Saginur and Cash, 2006; Caenazzo, Tozzo and Rodriguez, 2013). However, others have raised questions about the anonymity of DNA samples, as genetic information may provide clues to the identity of anonymized samples (Schmidt and Callier, 2012). Hence, the question of whether such leftover samples can be used in research requires ethical deliberation.

7.2.3. Importance placed by many cultures on the intactness of the dead body

As described in the paragraphs above, dead bodies are a valuable source of human organs and tissue. Disasters typically result in a large number of dead bodies, many of which may be unidentified or unclaimed after the process of disaster victim identification. As there are no relatives from whom consent can be obtained in these cases, these bodies are vulnerable and potentially at risk of being disrespected or abused through unethical or substandard research (Caenazzo, Tozzo and Rodriguez, 2013).

An intact dead body is one that has not had any body parts or internal organs taken from it since the death of the individual. Many cultures give great importance to ensuring that dead bodies of people from their community remain intact before last rites are performed (Boglioli and Mark, 1990). While autopsy procedures have gained acceptance among such cultures, other invasive processes have not, since they involve disfiguring the dead body, and evoke negative reactions across cultures (Thompson, 2001). While a dead body might be currently unidentified, future events might make identification possible. In such an event, it would cause the relatives a great deal of harm to know that the body of their kin was disfigured in the course of research. Such research can be considered to be abusive since it does not give enough importance to cultural sentiments of the potential family of the deceased (Thompson, 2001).

While India does have guidelines as of 2017 on research on the dead (Mathur, 2017), these guidelines need to be refined so as to elucidate the types of research that are permissible on the dead and oversight mechanisms such as ethics committees need to be in place to authorize such research keeping in mind the vulnerability of unidentified dead. The UDBHR provides a set of guiding principles for research on living persons, which if applicable to the dead, could provide ethical direction in deciding what research on the dead would be acceptable. In this chapter, I analyze which ethical principles of the UDBHR could be applied to the unidentified dead in the context of research and how.

7.3. Ethical principles

For the normative analysis, I will first describe the UDBHR articles that are relevant to answer the research question and then analyze them (‘The universal declaration on bioethics and human rights’, 2005). The following articles of the UDBHR are relevant to the analysis of the research question:

1. Article 3: Human dignity and human rights
2. Article 4: Benefit and harm
3. Article 7: Persons without capacity to consent
4. Article 8: Respect for human vulnerability and personal integrity.

Articles 3, 4 and 8 have already been shown to apply to the dead and their relatives (Chapter 6, Sections 6.3.1, 6.3.2 and 6.3.3 respectively). In addition to these articles, Article 7 is also relevant to the research question of this chapter. I will focus on these articles one by one and analyze how they apply to the issue of research on unidentified dead bodies in disaster settings, thereby attempting to stipulate the conditions under which such research is ethical.

7.3.1. Article 3: Human dignity and human rights

Article 3 has the following two sub-articles:

1. Human dignity, human rights and fundamental freedoms are to be fully respected.
2. The interests and welfare of the individual should have priority over the sole interest of science or society.

How can Article 3 be applied to the research question: ”Under what circumstances is it ethical to do research on unidentified dead bodies in disasters?”.

I start with Article 3(1), which has 3 concepts: human dignity, human rights and fundamental freedoms. When applied to my research question there are two stakeholders: 1) the deceased, and 2) their living relatives and friends. Therefore, I explore how the 3 concepts apply to both stakeholders. Thus my analysis proceeds along the following 6 sub-questions:

1. Do the dead have any human dignity? If yes, what would respecting their human dignity involve when applied to my research question: “Under what circumstances is it ethical to carry out research on unidentified dead bodies in disasters?
2. Does respecting the human dignity of third persons close to the deceased have any implications when applied to my research question?
3. Do the dead have any human rights? If yes, what does respecting their human rights involve when applied to my research question?

4. Does respecting the human rights of third persons close to the deceased have any implications when applied to my research question?
5. Do the dead have any fundamental freedoms? If yes, what does respecting their fundamental freedoms involve when applied to my research question?
6. Does respecting the fundamental freedoms of third persons close to the deceased have any implications when applied to my research question?

The question “Do the dead have any human dignity?” has been addressed in Chapter 6 (Section 6.3.1.1.1), as have the questions “Do the dead have any human rights?” (Section 6.3.1.1.4) and “Do the dead have any fundamental freedoms” (Section 6.3.1.1.7). Hence, in the following sections, I will only address what respecting the human dignity and rights of the dead involve when applied to the research question “Under what circumstances is it ethical to carry out research on unidentified dead bodies in disasters?”.

7.3.1.1. What would respecting the dignity of the dead involve when applied to my research question?

In Chapter 6 (Section 6.3.1.1.1), I have shown that human dignity applies to the dead. I have further argued that this dignity extends even to the unidentified dead not only because they could potentially be identified in the future, but also because of the social value of maintaining their dignity in the eyes of the community. Therefore, research on unidentified dead bodies should be undertaken with caution, keeping in mind their human dignity. Furthermore, I argued that identifying a body is a way of affording dignity to it (Section 6.3.1.1.2). Hence research on improving techniques of identification should be allowed.

The unidentified dead bodies should not be indiscriminately used in research studies (see Section 7.2.2). Invasive research or research that uses the whole cadaver to study mechanical, chemical or putrefactive properties of human bodies should not be carried out using dead bodies. Since such research disfigures the corpse, it violates the value placed by relatives in many cultures on the intactness of the dead body (Boglioli and Mark, 1990), and could be construed as an act of disrespect towards the dead. While research that disfigures the dead is not permissible, research on the stored samples if anonymised is acceptable as such research does not violate the dignity of the dead.

To conclude, I apply the concept of human dignity to the unidentified dead in the context of my research question, “Under what circumstances is it ethical to carry

out research on unidentified dead bodies or body parts in disasters?". Invasive or disfiguring research on the unidentified dead should not be undertaken as it clearly violates the human dignity of the dead. Secondary research on stored samples is acceptable as such research does not compromise the dignity of the unidentified dead. Similarly, research to improve or refine the process of identification is acceptable as in addition to not compromising the dignity of the dead, the results of such research could help identify other unidentified bodies.

7.3.1.2. Does respecting the dignity of third persons close to the deceased have any implications when applied to my research question?

As discussed in Chapter 6 (Section 6.3.1.1.3), identifying and returning the dead body to the relatives respects the dignity of the relatives. However, during disasters, it is not always possible to identify all the deceased and many bodies remain unidentified. This section addresses the implications of research on these unidentified bodies on the dignity of the relatives.

When an unidentified body from an open disaster is used in research, the relatives are usually completely unaware of this, or even of the fact that their relative is dead. In such a case, their dignity is not affected by research being carried out on the body of their kin. However, in the case of future identification through technological advancements (Schmidt and Callier, 2012), when the relatives learn of their loved one having been used for research, their dignity might be violated based on the type of research in question.

If the body of their dead kin was used in research that disfigured it, or if organs were removed and the body's integrity was destroyed, the relatives might feel indignified by such treatment of their dead kin and their own unawareness and helplessness in this situation. Some authors have argued that even when consent is obtained, such research should be avoided as it may violate the human dignity of the community. Using the body in a way that contradicts the sentiments of the community or harms their dignity (once the body is identified) may be perceived as abusive (Thompson, 2001). Thus the dignity of relatives may be compromised if disfiguring or invasive research is carried out on their kin.

In case of secondary research on the samples collected for identification, such as genetic studies on blood or tissue samples, due to the non-invasive nature of the sample collection, the integrity of the body might not be perceived to have been compromised. Hence this does not affect the dignity of the relatives directly. Thus from the perspective of maintaining the dignity of the relatives, there is no objection

to anonymizing and using samples for secondary research. By this argument, research for refining techniques of identification, which is usually non-invasive and uses secondary samples, does not violate the dignity of the relatives of the dead. Finally, after secondary samples have been kept for the purpose of identification in the future, for the sake of maintaining a humanitarian approach to the dead, last rites should be given to the unidentified dead.

7.3.1.3. What does respecting the human rights of the dead involve when applied to my research question?

I have already shown in Chapter 6 (Section 6.3.1.1.4) that of the articles of the UDHR, Article 5 “No one shall be subjected to torture or to cruel, inhuman or degrading treatment or punishment” applies to the dead. Hence this right must be extended to the dead when deliberating on my research question: “Under what circumstances is it ethical to carry out research on unidentified dead bodies or body parts in disasters?”. Any research that is abusive or disfigures the body is considered degrading or inhuman and hence should be avoided. However, using stored samples collected from the dead for secondary research is not torture, or cruel treatment and hence does not violate Article 5. Thus, such research is acceptable.

7.3.1.4. Does respecting the human rights of third persons close to the deceased have any implications when applied to my research question?

As I have argued in Chapter 6 (Section 6.3.1.1.6), with respect to the third persons close to the deceased, identified or unidentified, Article 18 of the UDHR applies. Article18 of the UDHR states that:

Everyone has the right to freedom of thought, conscience and religion; this right includes freedom to change his religion or belief, and freedom, either alone or in community with others and in public or private, to manifest his religion or belief in teaching, practice, worship and observance (*Universal Declaration of Human Rights*, 1948).

Some religions, such as Judaism and Islam, prioritize the intactness of the body. Hence, invasive procedures such as cutting, disfigurement or removal of internal organs, tissues are not acceptable. In addition, there is a religious requirement to bury the body without violating its integrity, as soon as possible (Lewis *et al.*, 2018). Local customs and cultural beliefs of some communities in Bangladesh hold that

the dead can still feel pain and hence even a small cut or needle biopsy is to be avoided (Gurley *et al.*, 2011).

In mainstream Hinduism, while the body is considered to be a shell and holds no value after death, it is important to cremate the body as soon as possible (usually within 24 hours) (Oestigaard, 2013). Hence to Hindus, every day spent during the identification process is an agonizing delay in the performance of religiously prescribed last rites (Olson, 2007).

India is a religious and cultural potpourri, home to innumerable castes, tribes, cultures and religions. Hence, the application of Article 18 to the relatives of the deceased in the Indian context, makes invasive or destructive research on the unidentified dead unacceptable as the research may be a violation of the religious or cultural practices of the relatives. Bodily integrity after death should be preserved. Hence the implication of the relatives' right to their religious and cultural practices on the research question is that the body of the deceased should not be used for research that is destructive or invasive. In other words, except for autopsies, which are conducted on the orders of the state, no undue interference with the unidentified body or body parts should be attempted. However, secondary research on stored samples is acceptable as this does not violate the intactness of the dead.

7.3.1.5. What does respecting the fundamental freedoms of the dead involve when applied to my research question?

As I have already argued in Chapter 6 (Section 6.3.1.1.7), the dead do not have fundamental freedoms as they lack the agency to exercise them. Hence, it is not possible to apply fundamental freedoms of the dead to my research question.

7.3.1.6. Does respecting the fundamental freedoms of the third persons close to the dead have any implications when applied to my research question?

Fundamental freedoms of the third persons close to the deceased extend only to them and not to their dead kin. Thus, conducting research on the unidentified does not infringe upon the fundamental freedoms of the relatives.

Thus when Article 3(1) is applied to the unidentified dead to understand what types of research can be carried out on them, disfiguring or invasive research is ruled out as it compromises the dignity and rights of the deceased. However secondary

research on samples collected during the identification process is acceptable, while ensuring that the body of the deceased remains intact.

Considering the implications on the relatives of applying Article 3(1) to the research question, I conclude that disfiguring or invasive research should not be carried out as this might indignify the relatives, in their own perception as well as that of their community. However, the use of stored samples for research does not compromise the dignity of the relatives and hence is acceptable.

7.3.2. Article 3(2): Interest and welfare of the individual should have priority over the sole interest of science or society

The second clause of Article 3 raises two questions:

1. Do the dead have any interests or welfare? If yes, what would prioritizing their interest and welfare mean when it comes to research on unidentified dead?
2. What would prioritizing the interest and welfare of the relatives over the sole interest of science or society mean when it comes to research on the dead?

The applicability of Article 3(2) has been argued in Chapter 6 (Section 6.3.1.2.1) and I have shown that while welfare does not apply to the dead, the concept of interest does.

7.3.2.1. What would prioritizing the interest of the dead mean when applied to my research question?

Prioritizing the interests of the dead would mean upholding their antemortem wishes. In the case of unidentified dead bodies, as it is not possible to ascertain their antemortem wishes and hence their subjective interest, I use the rational agent approach (as in Chapter 6, Section 6.3.1.2.1) to construct a best interest standard that can be applied to answering the research question.

Such a best interest standard could extend to refraining from any activity that would have been considered disrespectful or undesirable by most deceased individuals in life. Hence, research that disfigures the cadaver, or requires the use of invasive practices should not be carried out on unidentified bodies as many deceased may not have consented to this research in life. Genetic studies could result in stigmatizing the deceased person or her relatives (in case the body is identified at a later date) by bringing out the details about the genetic makeup of that person even if the sample is anonymized and hence should be avoided. However, it is

acceptable to use anonymized samples in secondary research aimed at refining identification techniques as this would not violate the interest of the dead and would help in identification of other dead bodies.

7.3.2.2. What would prioritizing the interest and welfare of the relatives over the sole interest of science and society mean when applied to the research question?

The relatives of the deceased have an interest in being informed of the death of their kin, as well as in being given the opportunity to perform last rites on the body as it would help them experience closure. Hence, as has been discussed in Chapter 6 (Section 6.3.1.2.3) identification of the dead is in the interest of the relatives and enhances their welfare. However, during open disasters, there might be many unidentified dead bodies. Their relatives might not be aware of their death and would be unaware of any research being carried out on their dead kin, and hence their interest and welfare would not be affected by the same. However, if they learn of the fate of their dead relative later due to identification through technological advancements (Schmidt and Callier, 2012), their interests and welfare might still be compromised depending on the type of research carried out on their dead kin.

Genetic research carried out on secondary samples from the unidentified dead might reveal the presence of hereditary or genetic anomalies in the dead or their relatives. If the dead body is then identified at a later time, and the relatives are informed of the genetic findings, it may affect their welfare, health and happiness adversely. Furthermore, if confidentiality of these findings is not maintained and they become publicized, it may result in further compromising the interest and welfare of the relatives as they may face stigmatization or prejudicial treatment in society.

However, in some cases, research on the unidentified dead might enhance the interest and welfare of the relatives. For example, during epidemic outbreaks, research on the dead that might aid society and reduce the impact of the epidemic would be in the interests and welfare of the relatives as they could benefit from the results of such research. Hence, from the perspective of interests and welfare of the relatives, research that could result in their stigmatization should be avoided, while exceptions might be made for certain types of research during times of emergency, when the results of such research could save a large number of lives.

From the analysis of Article 3(2), I conclude that while the dead do not have welfare, they have interest. Research that disfigures the cadavers, or invasive research should be avoided on the unidentified dead as, by using a best interest standard, I conclude that this is against the interests of the dead as understood by a rational agent.

The relatives of the dead, have both interest and welfare. Prioritizing the interests and welfare of the relatives over the progress of science and society implies that research that might stigmatize the dead or the relatives (if the body is identified at a later time) should not be conducted on the dead.

7.3.3. Article 4: Benefit and harm

The text of article 4 of UDBHR is as follows:

> In applying and advancing scientific knowledge, medical practice and associated technologies, direct and indirect benefits to patients, research participants and other affected individuals should be maximized and any possible harm to such individuals should be minimized ('The universal declaration on bioethics and human rights', 2005).

Hence, applying article 4 to my research question results in the following questions:

1. Can the dead be benefited or harmed? If yes, what would maximization of benefits and minimization of harms imply when it comes to answering the research question?
2. Do considerations of maximization of benefits and minimization of harm to the relatives have any implications when it comes to answering the research question?

7.3.3.1. Can the dead be benefited or harmed? If yes, what would maximization of benefits and minimization of harms imply when it comes to answering the research question?

Having established in Chapter 6 (Section 6.3.2.1), that the dead can be benefited and harmed, I will here only address what the minimization of harm and maximization of benefit means when it comes to performing research on unidentified dead bodies or body parts in disaster settings. In the context of research, King (2000) describes three types of benefits to the participants of a research study: direct, indirect and aspirational. If a participant benefits from the research intervention being studied, it is referred to as direct benefit. Indirect

benefit includes benefits that arise from being part of the study, other than the direct intervention. Aspirational benefits refer to the benefits to future patients and hence society as a whole (King, 2000). Hence applying Article 4 to my research question results in only that research to be ethically acceptable, in which the direct and indirect benefit to the dead is maximized.

In the definition of aspirational benefit, the term “future patients” refer to other patients who suffer from the same disease or affliction as the research participant. The idea being that using this participant in the study might help in understanding how to treat other patients with the same affliction. In the context of the unidentified dead, I interpret the term “future patients” to refer to other unidentified dead bodies. As argued in Chapter 6 (Section 6.3.2.1), benefit to the dead can be maximized by identifying them and returning them to their families. Thus, it is acceptable to use the unidentified dead in secondary research aimed at refining and improving the identification process, as this might help improve the chances of identifying other dead bodies.

The same trichotomy—direct, indirect and aspirational—can be applied to harm. Direct harm to the dead can be minimized by avoiding any invasive or disfiguring research on unidentified bodies. Indirect harm to the dead can be minimized by avoiding studies on genetic material of the dead. This is because such studies might reveal incidental findings about the dead, even if the samples used are anonymized (Caenazzo, Tozzo and Rodriguez, 2013; Parker, London and Aronson, 2013). Such findings, if published, might result in the stigmatization of the relatives of the dead, if the body is identified at a later time. Thus, in order to prevent indirect harm, research on genetic material taken from the dead should be avoided.

In order to minimize aspirational harm—the harm to other unidentified dead bodies—it is sufficient to identify and return them to their families. Thus it is acceptable to use the dead in secondary research aimed at improving the process of identification, as this would improve the chances of other unidentified bodies being identified and thus minimize harm to them.

Hence, to minimize harm, invasive, disfiguring and genetic research should be avoided on the unidentified dead. In addition, in order to benefit the other unidentified dead, it is acceptable to use the dead in research aimed at improving the identification process

7.3.3.2. Do considerations of maximization of benefits and minimization of harm to the relatives have any implications when it comes to answering the research question?

As has been discussed in Chapter 6 (Section 6.3.2.2), identifying the dead body would maximize benefit and minimize harm to the relatives of the deceased, and is the optimal outcome of the identification process. But in open disasters, the relatives are usually not aware that their kin has died and therefore are not directly harmed or benefited by any research that is carried out on the dead body. However, the body might be identified at a later time, due to technological advances (Schmidt and Callier, 2012). At this point, the fact that the body of their kin was used for research might harm the relatives based on the type of research carried out.

Genetic research carried out on stored samples taken from the unidentified dead could reveal anomalies that might adversely affect the health and happiness of the relatives, if the findings were to be made public (for an explanation of this, see Chapter 3, Section 3.4.2). In addition, the relatives might be harmed further because of stigmatization by their community. Many studies have suggested anonymizing samples from the dead and using them for genetic research should protect the dead and their relatives from any potential harm (Knoppers, Saginur and Cash, 2006). However, advances in understanding of genetic markers make the anonymization of samples increasingly difficult (Schmidt and Callier, 2012). Thus, anonymizing the samples might not help protect the identity of the dead, and poses a real risk to the relatives, if the body is identified at a later time. Thus such research should be avoided.

In some cases, research on the unidentified dead could benefit the relatives. For instance, during epidemic outbreaks, research on the dead that is aimed at reducing the impact of the epidemic could benefit the relatives of the deceased, as well as society as a whole.

Thus, maximizing benefits and minimizing harm to the relatives implies research that disfiguring research should be avoided as it is against the best interest of the dead, and genetic research should be avoided as it may result in harm to the relatives. However, it is acceptable to use the body in secondary research aimed at improving the process of identification, as such research is not invasive or disfiguring, and does not result in incidental findings. Furthermore, such research can improve the chances of maximizing benefits and minimizing harm to other dead bodies by increasing their chances of identification. In addition to such

research, it is also acceptable to use the unidentified dead in research during emergencies like epidemic outbreaks, if the research can help reduce the impact of the epidemic, thus indirectly benefiting the potential relatives and society.

7.3.4. Article 7: Persons without the capacity to consent

Article 7 states the following:

In accordance with domestic law, special protection is to be given to persons who do not have the capacity to consent:

1. Authorization for research and medical practice should be obtained in accordance with the best interest of the person concerned and in accordance with domestic law. However, the person concerned should be involved to the greatest extent possible in the decision-making process of consent, as well as that of withdrawing consent.
2. Research should only be carried out for his or her direct health benefit, subject to the authorization and the protective conditions prescribed by law, and if there is no research alternative of comparable effectiveness. Research which does not have potential direct health benefit should only be undertaken by way of exception, with the utmost restraint, exposing the person only to a minimal risk and minimal burden and, if the research is expected to contribute to the health benefit of other persons in the same category, subject to the conditions prescribed by law and compatible with the protection of the individual's human rights. Refusal of such persons to take part in research should be respected ('The universal declaration on bioethics and human rights', 2005).

7.3.4.1. Does Article 7(1) apply to the dead? If yes, how does it affect my research question?

Article 7(1) upholds the best interest of the person on whom research or medical practice is carried out, and ensures that the person is involved to the greatest possible degree. While medical practice does not apply to the dead, it is possible to carry out research on them. In this scenario, the dead do not have the capacity to consent or refuse this research. Hence, I argue that the dead belong to the class of persons without the capacity to consent, and in determining whether research can be carried out on them, their best interest must be a leading consideration. In case of identified dead it is important to respect antemortem wishes in relation to research, if there are any. In case of unidentified dead, however, there are no antemortem wishes to respect.

Article 7 requires adherence to domestic law, which is obviously different in different countries. In India, when a person is incapable of making healthcare- and healthcare research-related decisions, a surrogate decision maker, or a legally authorized representative (LAR) decides on behalf of the person, so as to protect

her interests (Mathur, 2017). In addition, research on persons who cannot consent is regulated more thoroughly by ethics committees and institutional review boards. Care is taken to ensure that the surrogate decision maker or LAR is informed about the risks and benefits of the process in a language that they understand. The national regulatory body for research in India is the Indian Council of Medical Research (ICMR) and in relation to use of forensic biological samples it states that the forensic doctor is authorized to permit the use of unidentified bodies or data in her mortuary for research (Mathur, 2017).

In case of the identified dead, the ICMR guidelines state that the relatives are the legally authorized representatives (Mathur, 2017). Hence, while it is not directly possible to involve the dead in the decision-making process, in case of the identified dead, their relatives can consent for research in accordance with the best interests of the deceased. This authorization can also be used by the relatives to withdraw consent and terminate their deceased kin's participation in the research process.

In the case of the unidentified dead, the ICMR guidelines state that the forensic doctor in charge of the mortuary is authorized to make decisions regarding the bodies' use in research (Mathur, 2017). Thus it is the duty of the forensic doctor to consider the best interests of the deceased and decide whether or not the bodies can be used in research accordingly (Martin, 2009). However, as the antemortem wishes of the unidentified dead cannot be determined and there are no relatives to safeguard their interest, they are at a greater risk of exploitative research. Hence, in addition to guidelines that keep in mind the best interest standard of the dead to guide the forensic doctors, forensic research committees should be constituted at a national and regional levels to oversee proposals involving research on the dead.

These committees should function with the best interest of the unidentified dead in mind. This means that any research that might cause harm to the dead (elaborated in Section 7.3.3.1), such as disfiguring research or genetic research, should be avoided. Research aimed at improving the identification process can be argued to generate benefits to the dead, and hence such research might be permissible. The examples provided here are illustrative and not an exhaustive list of acceptable and unacceptable types of research. Each proposal would have to be overseen by the committees and the benefit of the research must be weighed against the harm. Only in cases where the benefit outweighs the harm, should the proposed research

be permitted, thus ensuring protection against research that might be harmful to the dead.

7.3.4.2. Does Article 7(2) apply to the dead? If yes, how does it affect my research question?

Article 7(2) has two points for consideration. The first stresses that the research carried out should be for the direct health benefit of the person, while the second states that research which does not directly benefit the health of the individual in question should only be carried out if the research contributes to the health benefit of others in the same category.

In my analysis of Article 7(2), I find that the concept of health benefit cannot be applied to the dead as it is not possible to better the health of the deceased. However, the broader concept of benefit as such does apply to the dead as has been argued in Chapter 6 (Section 6.3.2.1) and in this chapter (Section 7.3.3.1). Hence, identifying the dead and returning them to their relatives can be seen as being in their benefit.

Article 7(2) also allows for research that benefits the health of persons in the same category. In the context of research on the dead, this would translate to the benefit of other unidentified dead bodies. Thus, applying Article 7(2) to the unidentified dead, allows the dead body to be used in research that could benefit other dead bodies. As has been established in Chapter 6 (Section 6.3.2.1), all dead bodies can be benefited by being identified and returned to their families. Thus it is acceptable to use a dead body in research aimed at improving or refining identification techniques as this might benefit future dead bodies by increasing their chances of being identified. Several authors have presented the same argument that research on unidentified bodies should be restricted to the very specific purpose of improving identification techniques (Knoppers, Saginur and Cash, 2006; Caenazzo, Tozzo and Rodriguez, 2013) as can be seen from the conclusion of the literature review in Chapter 3 (Section 3.4.1).

Thus, applying Article 7(1) to the research question: “Under what circumstances is it ethical to carry out research on unidentified dead bodies or body parts obtained in disaster settings?” I conclude that a national and regional forensic research committees need to be in place to weigh the potential benefits and harms of various research proposals and interpret, based on a best interest standard, whether research is acceptable in each case. Further applying 7(2) to the research question permits the use of the dead in research aimed at improving identification techniques since such research benefits other dead bodies (persons in the same

category as the dead individual). Thus it is acceptable to use the unidentified dead in research that improves identification techniques. However, any research involving the dead or their body parts should be overseen by national and regional forensic research committees, to ensure that the research being carried out is in accordance with the best interest of the dead.

7.3.5. Article 8 – Respect for human vulnerability and personal integrity

Article 8 states that:

> In applying and advancing scientific knowledge, medical practice and associated technologies, human vulnerability should be taken into account. Individuals and groups of special vulnerability should be protected and the personal integrity of such individuals respected ('The universal declaration on bioethics and human rights', 2005).

Article 8 highlights the importance of safeguarding the personal integrity of vulnerable populations. The concept of vulnerability and its impact on research are important because the history of human experimentation consists of a long list of instances where vulnerable communities and populations have been exploited and experimented upon for the development of techniques that have benefited privileged communities (Patrao Neves, 2009b). In order to apply this article to the research question, the following questions need to be considered.

1. Can dead bodies in disasters be considered a group of special vulnerability, and if yes, what would protecting them and respecting their personal integrity involve when it comes to our research question?
2. Can the relatives of the dead in disasters be considered a group of special vulnerability and if yes, what would protecting them and respecting their personal integrity involve when it comes to identification efforts?

7.3.5.1. Can dead bodies in disasters be considered a group of special vulnerability, and if yes, what would protecting them and respecting their personal integrity involve when it comes to answering my research question?

In Chapter 6 (Section 6.3.3.1), I have argued that because the dead cannot protect themselves from interventions, and because they depend completely on their handlers to treat them with respect, they should be treated as a group of special vulnerability. Having established that the dead can be considered as a special

vulnerable group, I now explain the implications of protecting the dead as well as respecting their personal integrity.

Dead bodies are likely to be used as instruments because they are vulnerable, and they may not receive the protection which is due. Protecting the dead implies ensuring that they are not used in ways contrary to their best interests and are not harmed (see Section 7.3.2.1; Section 7.3.3.1).

Respecting the personal integrity of an unidentified body implies not disfiguring the body, or removing organs or tissues from it. Thus, unidentified bodies should not be used in cadaveric research or other invasive research, as this would destroy the integrity of the body. However, research on suitably anonymized genetic samples can still be undertaken as this does not directly affect the integrity of the deceased individual. This argument also allows for using the dead body in research aimed at improving identification techniques, as long as such research is non-invasive and does not violate the personal integrity of the body. In order to respect the personal integrity of the body and protect it from possible violation in the future, the body should be given last rites after storing a DNA sample for potential identification.

7.3.5.2. Can the relatives of the dead in disasters be considered a group of special vulnerability and if yes, what would protecting them and respecting their personal integrity involve when it comes to answering my research question?

As I have argued in Chapter 6 (Section 6.3.3.3), the relatives of the deceased are a special vulnerable group since they experience grief and suffering at the loss of their kin, or uncertainty and anxiety at not knowing their fate. I now explore the implications of protecting the relatives of the deceased as well as respecting their personal integrity.

As in the case of the dead (see Section 7.3.5.1), protecting the relatives of the deceased implies safeguarding their interests, and ensuring that the body of their dead kin is not in a way that might cause them harm (see Section 7.3.2.2; Section 7.3.3.2).

Research on the dead does not affect the personal integrity of the relatives in any way. In conclusion, applying Article 8 to the research question, the body should not be used in cadaveric research, or research involving organ removal as it is invasive and violates the personal integrity of the body. However, using the stored samples taken from the body in secondary research is acceptable according to Article 8 as

such research is not invasive and does not violate the personal integrity of the body.

7.4. Conclusion

Most international guidelines do not discuss how elements of human dignity, respect, benefit and harm extend to dead bodies. However, the manner in which a forensic doctor handles the dead body with respect enhances the positivity of the last memories in the minds of the relatives. Hence dead body and body parts need to be given respect. The values the families hold regarding the last rites should take priority. it is only the relatives of the dead who can fulfil her last rites or last expressed wish. The family and society owe it to the dead, to the extent possible, to satisfy the last known wishes of the dead person. If an individual feels assured that when she is no more, her last wishes will bear fruition, she is more likely to support and sustain the values of her society while alive. It does not seem right to disrespect the dead body, because it still retains “human” looks. The body looks like us, so it is one of us.

The UDBHR articles 3, 4, 7 and 8 as discussed above have been applied to my research question:”Under what circumstances is it ethically acceptable to do research on the dead body or its parts in a disaster setting?”. In the following paragraphs, I will recapitulate the results of applying each article to my research question, and conclude with recommendations for the decision-making process regarding research on the dead.

Thus when Article 3 of the UDBHR is applied to my research question, I conclude that it is acceptable to carry out secondary research on the stored samples collected from the dead for the purpose of identification, except if the results of this research might stigmatize the dead or the relatives (if the body is identified at a later time). Furthermore, secondary research aimed at improving identification is acceptable as this does not violate any of the clauses of Article 3, and in addition, might help in identifying other dead bodies. Research on the dead that is aimed at reducing the impact of an emergency, such as during an epidemic outbreak is considered acceptable, according to my analysis. This is because, in addition to improving treatment methods and saving a large number of lives, it may enhance the welfare of the relatives.

In applying Article 4, I use a best interest standard for construing which research could benefit or harm the unidentified deceased or their relatives, with a goal to maximize benefits and minimize harm. I conclude that it is acceptable to use the

dead in secondary research aimed at improving the process of identification, as this might benefit other unidentified dead bodies. Furthermore, harm to the dead can be minimized by not using the dead in research that is disfiguring, or invasive since this is against the best interest of the deceased. Research on genetic samples collected from the unidentified dead should also be avoided as the incidental findings of such research might harm the relatives if the body is identified at a later time. However, as in Article 3, research on the dead during emergencies is considered acceptable if it benefits the relatives, either directly, or indirectly by saving a large number of lives.

Applying Article 7 results in the conclusion that in accordance with domestic law, national and regional forensic research committees should be set up to oversee research on the unidentified dead and thus protect their interests. Furthermore, Article 7 allows for the dead to be used in research that would benefit other dead bodies. Hence, according to this article, research aimed at refining the process of identification becomes acceptable as it increases the chances of identification of future dead bodies. However, research on refining identification techniques is only an example of research that could benefit other dead bodies. Thus, forensic committees would need to decide on a case by case basis whether the proposed research is ethically acceptable by weighing the harm to the dead against the benefit to relatives, future dead bodies and society in general.

Applying Article 8 to the research question, while the personal integrity of the relatives is not affected by disfiguring or invasive research, such research should not be carried out as it destroys the personal integrity of the dead body.

Thus, applying the relevant articles of the UDBHR to the research question ”Under what circumstances is it ethically acceptable to do research on the dead body or its parts in a disaster setting?”, I conclude that certain types of research should not be carried out on the unidentified dead. These would include disfiguring research, invasive research where organs are removed. All of the relevant articles of the UDBHR applied here (Articles 3, 4, 7 and 8) deem such research unacceptable. In addition, research on genetic material obtained from the dead is unacceptable as the incidental findings that result might harm the relatives of the dead, if the body is identified at a future time (Articles 3, 4 and 7). Hence such research should only be carried out if either antemortem consent or consent from the relatives has been obtained. However it is acceptable to use the stored samples collected from the dead in secondary research, as this is acceptable according to Article 3, and does not violate any of the other articles. Research aimed at improving the process of

identification is also acceptable as it may lead to benefit of other dead bodies, by increasing their chances of identification. In addition, research during emergencies like epidemic outbreaks aimed at reducing the impact of the outbreak is acceptable, as this could save a large number of lives and indirectly benefit the relatives.

Before carrying out any kind of research, the harm of such research to the dead and their relatives needs to be carefully weighed against the benefit to their relatives or other dead bodies or societies in general. National and regional forensic committees should be constituted to evaluate research proposals on a case by case basis, weigh the benefits and harm to the dead and their potential relatives, and then use a best interest standard to allow research that does not violate any of the articles of the UDBHR.

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Chapter 8: Conclusion and future outlook

In this chapter, I summarize the results of my study, explain its limitations, and conclude with some suggestions for future research based on this study.

8.1. Summary of results

In Chapter 1, I describe the 4 objectives of this study (Section 1.1):

1. To explore the ethical issues faced by forensic doctors in disaster settings as identified in the literature.
2. To identify the ethical issues faced by forensic doctors in India during disasters
3. To ethically analyze two important issues, selected from those identified through the literature review and the in-depth interviews respectively.
4. To develop a set of recommendations based on this analysis.

In the following paragraphs, I describe the steps undertaken to meet these objectives.

8.1.1. Research Objective 1

In order to achieve the first objective, I reviewed the existing literature (Chapter 3) published over the last 20 years and study the articles relevant to the ethical issues faced by forensic doctors in disaster situations. I used different combinations of the keywords “forensic medicine”, “ethics” and “disaster”, along with their synonyms in three search engines (ScienceDirect, PubMed and EMBASE). Furthermore, I used snowballing and included a few relevant articles that did not appear in the results of the searches, and found a total of 28 relevant articles. Through analyzing these articles, I identified “research on the dead” as the most discussed of 10 ethical issues in the existing literature. This was followed by the issues of “privacy, confidentiality, medical and genetic data & incidental findings”, “informed consent”, “rights, interests and dignity of the dead”, and “guidelines and best practices”.

However, most of the existing literature is written by researchers in developed countries, and focuses on the perspectives of developed countries. Only two of the 28 articles are from developing countries - Sumathipala, Siribaddana and Perera, (2006) from Sri Lanka, and Bhan (2005), from India. Thus, in addition to identifying that “research on the dead” is the most discussed ethical issue in the literature, I concluded that the perspectives of experts in developing countries like India,

regarding ethical issues faced by forensic doctors during disasters need to be studied (for a more detailed description of the results, see Chapter 3).

8.1.2. Research Objective 2

In achieving research objective 1, I showed that there are very few studies in the literature that focus on developing countries. Addressing the need for such studies leads directly to research objective 2. Thus, to identify the ethical issues faced by forensic doctors during disasters in the Indian context, I carried out a qualitative research study using the framework of grounded theory. I conducted in-depth interviews of 20 Indian forensic doctors with the experience of working in professional capacities during disasters in India. I used the grounded theory approach to come up with an explanatory theory to understand ethical issues faced by forensic doctors in disasters. The interview transcripts were coded, and the codes and categories were analyzed using the method of constant comparison (for a detailed discussion of the same, see Chapters 4 and 5). Thus, I constructed a grounded theory, which describes a central theme and explains how all the ethical issues related to this theme.

The analysis of the codes and categories brought out that, according to forensic doctors in India, “respect for the dead” is the central theme to which all other ethical issues during disasters are related. The most discussed ethical issue is “Identification of the dead”, followed by the issues of “research on the dead”, “resource limitation”, and “professionalism”. This is because in India, identification of the dead during disasters is done primarily through visual recognition by the family of the deceased, leading to many cases of misidentification. Furthermore, the lack of proper cold storage facilities and resources to cover the dead in many mortuaries results in the dead being kept on the ground, with the exposed bodies piled on top of each other. This lack of infrastructure is complemented by a shortage of trained professionals, with many forensic doctors being neither well trained in techniques and guidelines required during identification, nor adequately sensitive to the needs of grieving families. The unidentified bodies often end up being used for teaching purposes in universities, used in research, or given mass cremation (along with the other unidentified bodies). All these issues contribute to the perception that the dead are not treated with the respect they are due (for a detailed discussion of qualitative research and grounded theory, see Chapter 4; for a discussion of the methodology and analysis of the in-depth interviews, see Chapter 5).

8.1.3. Research Objective 3

As explained above (Sections 8.1.1 and 8.1.2), the ethical issue of “research on the dead” is the most discussed issue in the academic context (in the literature), while the issue of “identification of the dead” is the most debated in the Indian context. Having established these issues, I carried out an ethical analysis of the same, in the context of the unidentified dead during disasters, thereby addressing research objective 3.

Chapter 6 describes the method of ethical analysis of the issue of “identification of the dead”. As I considered the unidentified dead in disaster settings, I framed the research question “Under what circumstances is it ethical to give up on efforts to identify the dead in disasters?”. I choose UNESCO's UDBHR as a tool to analyze this question since it is based on a human rights framework (as opposed to a framework specific to a particular religion or culture) and because it is designed to be used by developed and developing countries alike. In addition, it has been unanimously accepted by 191 countries (for a detailed discussion of the reasons for choosing the UDBHR as a tool, see Chapter 1, Section 1.2). However, not all the articles of the UDBHR are relevant in the context of unidentified dead bodies. Articles 3, 4, 8, 9, 10, 12 and 13 are the only articles applicable. I proceeded to discuss in what way they are applicable, and what results from this in relation to the research question, thus creating a solid foundation for formulating the recommendations (organized and discussed along with the other recommendations in Section 8.1.4).

In Chapter 7, I considered the issue of “research on the dead” in the context of unidentified dead bodies in disaster situations and framed the question “Under what circumstances is it ethical to carry out research on unidentified dead bodies or body parts in disasters?”. As in the case of analysing the issue of identification, I carried out the ethical analysis of this question using the UDBHR. Only Articles 3, 4, 7 and 8 of the UDBHR are relevant in answering this question. As done in Chapter 6, I discussed in what way these articles are applicable and their implications on answering this research question. Based on this analysis, I formulated and presented my recommendations (for a detailed discussion of the ethical analysis of the two ethical issues, see Chapters 6 and 7).

8.1.4. Research Objective 4

Based on the results of literature review, the qualitative analysis of the interviews, and the ethical analysis of two important ethical issues. I recommended steps to be taken around identification of the dead and to prevent the unethical treatment of the unidentified dead during disasters, thus addressing research objective 4. In this section, I organize these steps organized in four categories, and provide a summary of the recommendations.

8.1.4.1. Preparedness for the disaster

1. Facilities to set up temporary mortuaries with adequate cold storage space at the disaster site should be developed.
2. Disaster-response teams consisting of forensic experts should be created in order to streamline the process of forensic action during disasters. The forensic doctors in this team should be associated with different mortuaries and medical centres, so as to prevent shortage of forensic doctors in any one medical centre during a disaster.
3. Training programs should be conducted to ensure that the disaster-response team is up-to-date in its knowledge and skills regarding the procedures to be undertaken during disasters.
4. The disaster-response team of forensic experts should be used to develop skills at a local level. Thus the process of managing disasters can be streamlined, allowing for efficient handling of disaster situations.
5. International cooperation should be encouraged as, in addition to facilitating the circulation of knowledge and skills, international aid during disasters would be of great help to the people affected.

8.1.4.2. At the disaster site

1. The disaster site should be cordoned off promptly and meticulously.
2. Forensic doctors should be present at the disaster site to ensure maximum collection of on-site evidence, and to prevent bodies and belongings being misplaced.
3. If on-site mortuaries are not set up, the dead should be transported to the mortuary in proper body bags, and should be handled by trained personnel.

8.1.4.3. At the mortuary

1. Forensic doctors should carry out the process of identification meticulously.
2. If the body remains unidentified even after a meticulously carried out process of identification, a DNA sample of the body should be stored for possible identification in the future, before the body is given last rites (such mass burial or cremation) or used in research (under the oversight of ethics committees or institutional review boards).
3. The dead body should be kept covered and stored safely (away from rodent and insect activity) in cold storage.
4. Discretion should be used in circulating photographs and descriptions for the purpose of identification. The privacy and confidentiality of the deceased individual should be respected.
5. The relatives of the dead should be treated with sensitivity by the forensic doctors, and their dignity should be upheld. Wherever possible, the cultural and religious practices of the relatives should be accommodated.

8.1.4.4. During research

1. Research that is invasive or disfiguring should not be carried out on the unidentified dead.
2. It is ethically acceptable to carry out research on anonymized, stored samples collected from the dead during the process of identification. However, these samples should not be used in genetic studies since genetic markers might reveal who the sample belonged to.
3. It is ethically acceptable to carry out research on the dead during emergencies, if the results of that research could save a large number of lives.
4. In all cases where the dead or their body parts are used in research, oversight mechanisms such as ethics committees should be instituted to ensure that the dead are treated ethically.

8.2. Limitations of the study

8.2.1. Generalizability of the study

The recommendations presented in the previous section are the result of the literature review, the qualitative analysis of the interviews, and the ethical analysis of two important ethical issues. Since the participants in this study were forensic

doctors in India, the ethical issues perceived by them are specific to the Indian context and only to some extent generalizable to other developing countries. Most likely, they are even less generalizable to developed countries. To illustrate this, consider the following. Through the interviews, I identified that one of the reasons the dead are perceived not to be treated with respect by forensic doctors is that in disasters, they may not have white sheets to cover the dead, and if there are no cold storage freezers to accommodate the bodies, they are kept without cold storage. This often leaves bodies exposed to rodent activity. However, this issue might not be problematic in developed countries. Thus, it remains to be seen to what extent the recommendations in this study are applicable in other countries.

8.2.2. Specificity of the articles of the UDBHR.

The articles of the UDBHR have been developed to apply to living human beings. However, since there is no bioethics instrument developed to apply to the dead, I choose the UDBHR since it is an instrument which is globally accepted.

Since the UDBHR is developed to apply to living humans, its articles have to be suitably interpreted in order to make them work in relation to the dead. In certain cases, such an interpretation is not possible. For instance, Article 6, which deals with consent cannot be interpreted to apply to the dead.

8.2.3. Absence of female forensic doctors among the participants.

The forensic doctors that participated in the in-depth interviews were all male, due to the highly skewed ratio of men to women in forensic medicine in India, and because the female forensic doctors contacted during the recruitment stage had not experienced working as forensic professionals during disasters. The effect of this lack of knowledge regarding the perspectives of female forensic doctors needs to be studied and research has to be undertaken in order to ascertain what perspectives have been missed in this study and what bias, if any, might have been introduced by this feature of the study.

8.3. Avenues for future research

8.3.1. Generalizing the present theory

Future research to study the ethical issues faced by forensic doctors in disasters settings in different countries, to generalize the current theory and to verify if the

recommendations that emerge from this study are applicable in those countries. For instance, qualitative studies can be carried out where forensic doctors of a country are interviewed regarding the forensic medicine facilities in that country and the ethical issues they face during disasters. Analyzing these interviews can help develop recommendations specific to that country. In addition, along with interviewing experts and identifying ethical issues according to the framework of qualitative analysis, quantitative studies can be carried out, where questionnaires can be developed based on the ethical issues I have identified and the recommendations of my study. The results of this survey can provide a quantitative means to estimate not just the important ethical issues of that country, but also verify whether the recommendations of this study can be used in that country.

8.3.2. Developing an ethical framework for dealing with the dead

Based on the second limitation mentioned above (Section 8.2.2), it is important to develop a globally acceptable bioethics instrument that focuses on the dead. The goal of such an instrument should be to establish norms of handling the dead in an ethically acceptable way. It should also specify what human rights apply to the dead. In addition to this, the framework should address how to ethically carry out research on the dead, including when a dead body is unidentified. Dead bodies are a significant resource for research, and studies on the dead or on beating-heart cadavers are going to be on the rise, since many consider them appropriate subjects for treatments and methods that pose great risk to the living (Wicclair, 2008). In order to prevent unethical practices, a strong framework of ethical principles needs to be developed. Thus, a new branch of research ethics—thanato-ethics—is required that focuses solely on creating guidelines and recommendations regarding establishment of laboratories and research centers that perform research on the dead, training of researchers and acting as oversight committees when the dead are used in research.

8.3.3. Addressing the lack of perspectives from female forensic doctors in this study

As mentioned above (Section 8.2.3), only male doctors participated in this study. Thus, future research could address the lack of knowledge regarding female perspectives, by conducting in-depth interviews with female forensic doctors who have worked in some professional capacity during disasters. Such research could help create a better and more complete set of ethical recommendations.

8.3.4. Application of Forensic DNA Phenotyping in mass disasters for the process of identification

If the Forensic DNA Profiling is carried out on the stored sample or biological sample at the disaster site, some traits of the deceased can be predicted. Forensic DNA phenotyping can be used to predict pigmentation traits like eye color, hair color and skin color (Kayser, 2015). Further research and progress in this field may lead to predicting the appearance of the deceased based on the DNA. While such innovations may help in forensic investigations, the decision to use it should be weighed against the potential harm it may cause by way of stigmatization of a community or vulnerable group.

8.3.5. Incidental Findings (IF) and responsible handling of the data

While carrying out genetic research or DNA kinship analysis in Disaster Victim Identification, some unexpected findings such as the propensity for personality disorders or misattributed paternity place forensic doctors in ethical dilemmas (Chapter 3, Section 3.3.2.3). Forensic doctors are confronted with the tough choice of “to reveal or not to reveal”. Some studies suggest informing the participant undergoing the genetic test about the possible incidental findings and obtaining prior consent as to what should be done with these findings (Clayton, 2008). However, this cannot be done in disasters since the person undergoing the test is dead, and needs to be identified. The decisions regarding how to deal with IFs needs to be based on thorough ethical deliberation, considering the benefit or harm to the relatives, and how their privacy might be affected by the findings.

8.3.6. Bringing the new learnings into the discursive field

The learnings from this study can be viewed from the perspective of how this new knowledge might fit within the culture and practice of forensic medicine; how the things uncovered can be brought into the discursive field so as to help in decision making process with respect to resource allocation.

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Appendix A: Participant information sheet

(This was sent via email to the participants)

Request time for your interview regarding Ethical issues faced by Forensic doctors in disasters and giving you details of the study.

Dear Sir,

Thank you so much for your email id. It was nice talking to you on the telephone.

I am carrying out a qualitative study on Ethical issues as experienced by Forensic doctors in India while dealing with disasters. The study is a part of my PhD research. I am trying to understand ethical issues relating to the dead in disasters using "Grounded Theory Approach" that can guide forensic doctors. Your insight will help me understand ethical issues in disaster situations better. Your details will be kept confidential. It will impose on you a time burden of about 45 minutes to an hour. I request you to go through the IC form and let me know if you can be a participant for the interview.

I am attaching informed consent form for you if you are willing to be a participant. Please be assured that your name will be kept confidential and no data will be attributed to you directly or indirectly. Please sign and scan and email the Informed consent form with date and time for the interview. Interview can be via mobile or skype. Please let me know which is a good time to call you. It will take about 45 minutes. Since the time is around 45 minutes, I suggest you to have full charge in mobile. I may make short calls in case I need some clarification. I will do so after messaging you and getting your positive response. After my study is complete, I will again contact you to disseminate my findings.

Looking forward to an enriching discussion

Best

Vina

Appendix B: Informed consent form

I Dr _____. Age_____ Working as Forensic Doctor in Department of Forensic Medicine and Toxicology _____

Do hereby affirm that

Dr Vina Vaswani, Professor, Department of Forensic Medicine, Principal Investigator has explained to me about her research Titled “Ethics of Forensic Medicine in disasters”. The study has been described to me as I understand, I am given time to contemplate and clarify. Dr Vina has assured me that my privacy will be respected. The interview will be for 45 minutes to one hour. I give my consent for Skype interview/telephonic interview and audio recording. The data generated will be kept confidential, and my identity will not be revealed during conference presentations and publications. I understand that I have a right to refuse and or withdraw from the study at any point in time. In case I have any doubt or require clarification, I have been informed that I can contact her on her cell no 09449003989. I give my consent freely, voluntarily and without any coercion.

Place Signature

Date Name

Appendix C: Semi-structured interview schedule

Demographic starters:

D1. Doctor, since how many years are you in forensic service?

Please provide descriptive answers

Q1. How many disasters have you worked in and what type of disasters were they? Were the disasters in India or abroad?

Q2. Can you explain a bit on the background of those disasters?
Like number of deceased, condition of body, what happened immediately flowing disaster

Q3. How did you get there and on which day of the disaster (eg day 1, day 2, Day 3)?

Q4. What were the most challenging ethical issues you have faced while dealing with disasters?

a. In hindsight would you do anything differently?

Q5. Do any other ethical issues come to mind as being evident in disaster situations, from the perspective of the forensic practitioner?

Can you elaborate further on the challenging issue?

SP1. Were all the bodies identified? If some bodies remained unidentified, what was your approach? Did you come across any ethical issues?

SP2. How long did the process of handing over the bodies to the relatives take? Did you come across any problems?

SP3. Were blood or tissues or samples for DNA analysis taken? What happened to them? If tissues were taken, how long were the tissues kept?

SP4. According to you, can the stored samples from dead be used for research? Do you see any problem with that?

SP5. What are your views on consent? For example, do you think consent is required for research on tissues from dead?

SP6. What is your notion on harm to the dead? Is it possible to harm dead?

SP7. Did any actions you saw or carried out in disaster situations amount to disrespecting the dead?

SP8. Do you think there is difference in approach to disasters while working in international settings compared to regional disasters?

SP9. According to you how trained are forensic doctors to handle with disasters? Would that influence the success of identifying the bodies?

SP10. What is the role of media in photographing to help identify bodies? Do you see any issues with media photographing the dead?

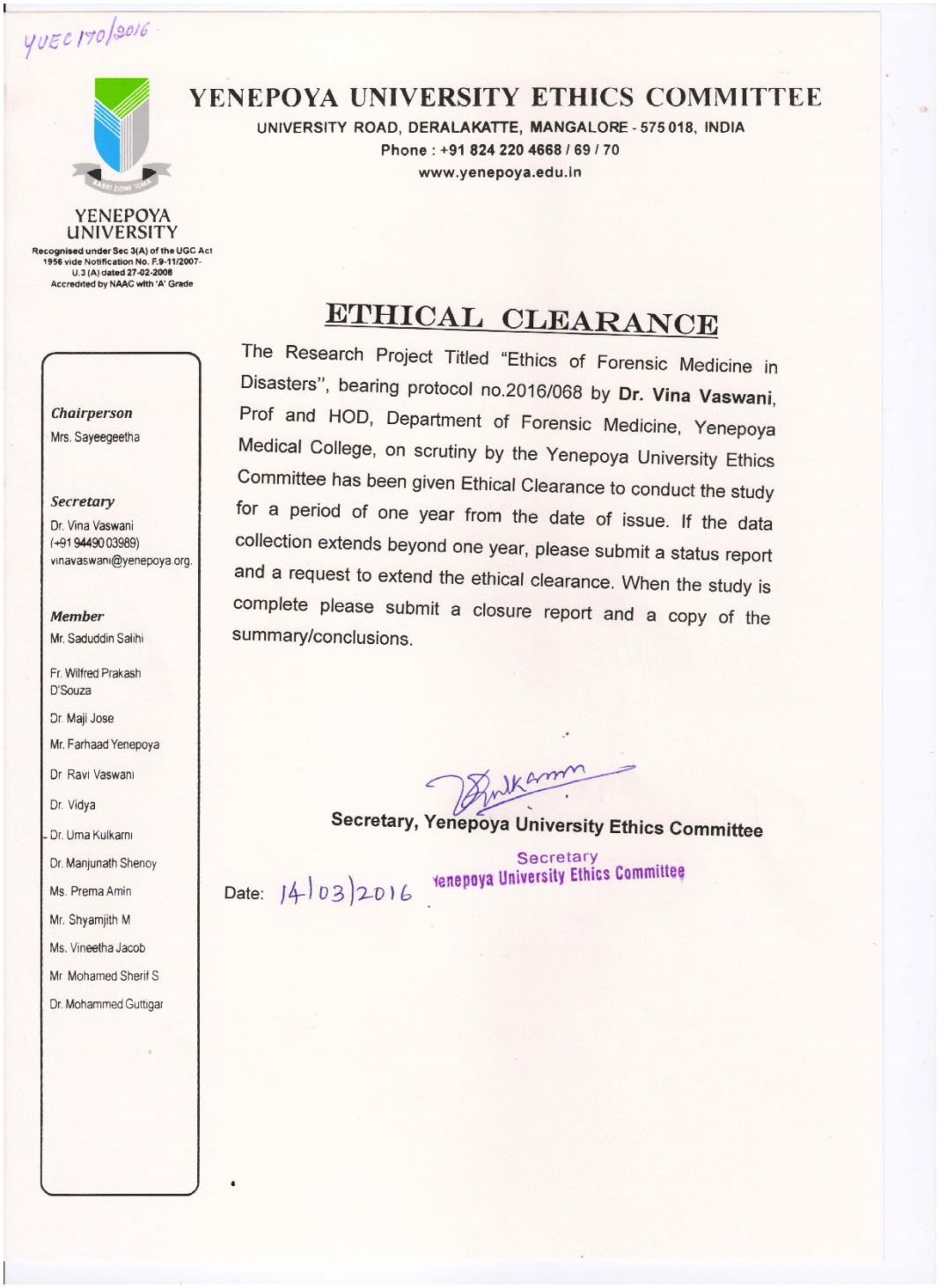
SP11. Is there an issue with privacy of the dead? Do the dead have right to privacy?

Who according to you should protect the privacy of the dead?

Thank you for your valuable input and time.

Appendix D: Ethical clearance

The ethical clearance for this study was obtained from Yenepoya University Ethics Committee and was acknowledged by the Research Ethics Committee, Dublin City University.



YUEC 170/2016

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Mr. Shyamjith M
Ms. Vineetha Jacob
Mr. Mohamed Sherif S
Dr. Mohammed Guttigar

ETHICAL CLEARANCE

The Research Project Titled "Ethics of Forensic Medicine in Disasters", bearing protocol no.2016/068 by **Dr. Vina Vaswani**, Prof and HOD, Department of Forensic Medicine, Yenepoya Medical College, on scrutiny by the Yenepoya University Ethics Committee has been given Ethical Clearance to conduct the study for a period of one year from the date of issue. If the data collection extends beyond one year, please submit a status report and a request to extend the ethical clearance. When the study is complete please submit a closure report and a copy of the summary/conclusions.

Secretary, Yenepoya University Ethics Committee

Secretary
Yenepoya University Ethics Committee

Date: 14/03/2016