**Dead body disposal in COVID 19 patients and its psychological toll on the patient’s family**

**Abstract**

The Novel Corona Virus (COVID-19) outbreak started from the streets of Wuhan city in China and has now spread to most of the countries worldwide including India. The death toll from COVID-19 is constantly rising and so is the inevitable need to manage appropriate disposal of the resulting dead bodies in order to prevent any further spread of infection. The World Health Organization as well as the government of India has responded to this concern by issuing various guidelines regarding safe disposal of dead bodies. The present study provides a summary and interpretation of these guidelines. It further elaborates upon the psychological toll the entire procedure has on the family members of the deceased and their exposure to the risk factors of psychological trauma and stress related disorders as well as complicated grief. The interdisciplinary nature of the study yields opportunities for future researches.

**Key words:**Complicated grief, COVID-19, dead body disposal, psychological toll,

standard precautions,

# **Introduction**

Over the years, mankind has been affected by the emergence and re-emergence of various viral diseases with clinical presentations ranging from benign to deadly. This is not the first time when the respiratory system of humans is attacked. Previously also, outbreaks of deadly diseases in form of severe acute respiratory syndrome (SARS) in 2002 1 & Middle East respiratory syndrome (MERS) in 20122 with symptoms scaling from common flu to severe acute respiratory distress were reported. Presently, the world is encountering a new novel corona virus disease, COVID-19. In December 2019, the outbreaks of pneumonia were observed in Wuhan city of China 3 after which WHO declared it as a Global Health Emergency in January 2020 4,5 and pandemic in March 2020 6. COVID-19 is an acute respiratory disease which predominantly affects the lungs. It is caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), that spreads through droplets, fomites & close contact among humans7,8. The unavailability of vaccines and specific treatment modalities has led to large number of deaths worldwide, which has made the task of handling dead bodies a major challenge. Keeping in mind the cultural trends and religious sentiments of different groups of people, systematic disposal of bodies while ensuring the proper safety of people coming in contact with them is essential. This very fact opens the channel to write this paper.

The document is written with the aim to generate awareness among people and health care workers regarding preparation and planning on safe and protected handling of dead bodies with suspected or confirmed COVID 19 infection. The study targets at summarizing the guidelines issued by various nations, WHO and the Indian government on dead body disposal and briefly reflects upon the psychological toll of the entire procedure on the patient’s family.

The body disposal becomes significant as rapid recovery of bodies helps in identification as well as reduction of psychological effects on the survivors and the health care providers. The bodies should be retrieved promptly without interrupting the ongoing interventions required for active patients and survivors. Managing the dead bodies due to such infectious diseases becomes more demanding when the dignity of the deceased, their cultural, religious traditions and sentiments have to be respected throughout. Simultaneously, the safety of family members, health care workers and environment must also be ensured. The main mode of transmission of COVID 19 is via droplets, fomites and close contact with infected person and a probable spread through faeces9. The chances of increase in the risk of COVID 19 transmission from a dead body are low if proper standard precautions and guidelines are followed10. By far, no such incidence of people getting infected by exposure to dead bodies with COVID 19 infections has been reported9. The potential risk to the people handling the dead bodies is related either to the direct contact with body fluids or human remains where the virus could be present or by the direct contact with the contaminated fomites.

Therefore, the Government of India, Ministry of Health and Family Welfare, Directorate General of Health Services (EMR division), issued the guidelines on 15th March 2020 on dead body management with COVID 19 infection10. Knowing the fact that corona virus is a new disease and that there is a significant gap in the knowledge pertaining to dead body disposal, the guidelines were issued to limit the chances of transmission.

All the health care providers and staff coming in contact with dead bodies, working within the isolation areas, ambulances, mortuaries, crematorium or burial grounds, should be trained in proper infection and prevention control practices and following the standard precautions as stated by the government of India (Table no I)9,10,11.

Table no I: Standard precautions while handling the dead bodies of COVID 19 patients by health care workers as per the guidelines include:

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| --- |
| Standard precautions for health care workers |
| * Hand hygiene * Use of personal protective equipments, PPE (example: gloves, masks, water proof apron * eyewear, face shields etc.) * Safe handling of sharps * Disinfect bag housing body, instruments and devices used for patients. * Disinfect linen, with disinfection of environmental surface |

# **Part A: Guidelines for dead body disposal**

# **Removal of dead bodies from isolation area**

Before removing the dead body from the isolation area, it is advised for all health care workers to follow the standard precautions & preventive practices which include hand hygiene, personal protective equipment (PPE) like water resistant apron, gloves, N95 masks, eye wears face masks, shoe covers etc9,10,11,12. It should be ensured that all the tubes, drain pipes, catheters from the dead body are removed before shifting the body from the isolation wards. To avoid the leakage of body fluids & secretions, the oral and nasal orifices should be plugged. Also, any punctured holes or wounds due to removal of drains, catheters, tubes should be disinfected with 1% hypochlorite solution and dressed with waterproofing material10. It is advised to take proper precautions while disposing the intravenous catheters and other sharp devices. Body should be placed in leak proof plastic bag, exterior of which should also be decontaminated by either 1% sodium hypochlorite solution as per Indian government guidelines10 or by 0.5% hypochlorite solution according to guidelines issued by authorities of Malaysia13.

Viewing of deceased by the family may be allowed after fulfilling the standard precautions. Also, the wrapping of body with the sheet provided by the family members over the leak proof bag is allowed. Now the bodies can be handed over to the family members or taken to the mortuary. All soiled linen should be placed in biohazardous bag, exterior of which should be disinfected with 1% sodium hypochlorite solution10. According to the guidelines issued, all the used equipments should be autoclaved. Biomedical waste must be disposed according to the biomedical waste management guidelines. A proper counselling of family members is advised so as to respect their feelings.

# **Cleaning and disinfection of the environment**

It is observed that the novel corona virus can survive on inanimate surfaces up to 9 days. Disinfecting surface with 0.1% sodium hypochlorite or 62-71% ethanol reduces infectivity of corona virus within 1minute exposure time. Similar results are expected against SARS-CoV-214. As per WHO guidelines, materials & surfaces should be cleaned with water & detergent, later applying chlorine 0.1% (1000ppm) or sodium hypochlorite solution with contact time of 10 minutes followed by rinsing with water to remove residual disinfectant9. As per the guidelines issued by the Indian government it is advised that all the materials of isolation area including bed, floor, IV stand, railings etc should be cleaned with 1% sodium hypochlorite solution with a contact time of 30 minutes and then should be allowed to air dry10.

# **Mortuary handling**

Mortuary personnel handling the COVID 19 diseased bodies are advised to observe standard precautions including storing of dead body in cold chambers with approximately 4ºC temperature. Disinfecting the environmental surfaces, instruments, transport trolleys, chambers handle, floor etc with 1% hypochlorite solution after removal of dead body from mortuary is also suggested10.

# **Embalming of infected dead bodies**

According to the guidelines embalming of such dead bodies should not be allowed9,10.

# **Autopsies on dead bodies with COVID 19 infection**

Like embalming autopsies should also be avoided as per the guidelines but if it is required to be performed for some pressing reasons, it should be done with ensuring proper infection prevention control practices9,10. The team of forensic experts and staff in the autopsy room should be well trained and their number should be as limited as possible with full use of PPE. Reduction of prick injuries should be established by using blunt ended scissors and heavy-duty blades with blunted points. It is advised to dissect only one body cavity at a time. Hands should be protected while slicing the unfixed organ, by holding them with sponge. Negative pressure should be maintained in the mortuary. An oscillator saw with suction should be used for sawing bone. Techniques, minimising the aerosol generation, should be followed so as to prevent the chances of spread of infection specially while handling the lung tissues. Body should be disinfected with 1% hypochlorite solution after the completion of procedure. Body should then be placed in the bag, exterior of which should be re-disinfected by 1% hypochlorite solution10. The body now can be handed over to the family members or relatives. Using the standard protocols, the autopsy table should be cleaned thoroughly after the completion of the procedure.

The body does not pose additional risk to the staff handling it’s transportation but still the standard precautions should be followed by transportation staff using PPE. The vehicle should also be decontaminated with 1% hypochlorite solution after the transfer of body to ensure proper precautions10.

# **Measures at crematorium/burial ground**

Dead body packed properly as per the above said measures does not pose additional risk of infection with COVID 19 virus. It is advised to sensitize the staff and the family members about embracing the standard precautions while observing rituals according to their customs & traditions.

As per the guidelines, viewing the dead body for the last time by unzipping the body bag from face side, should be allowed after securing the family with face mask and gloves. It should be ensured that bathing, kissing, hugging of dead body is not allowed but religious rituals including reading of religious scripts, sprinkling of holy water or any other last time rituals that does not include touching of body should be allowed to the family members10. The health care staff and the family members should perform hand hygiene with soap and water after the cremation or burial.

As stated in the guidelines the ash does not possess any risk therefore can be collected to perform the last rites. Ensuring that the social distancing measures are properly followed at the crematorium or burial ground by avoiding large gatherings & reducing the number of family members to as minimum as possible is recommended10. Involvement of children, older individuals of more than 60 years of age, any immunocompromised person or person with chronic illnesses like respiratory illness, diabetes, heart diseases should be restricted9. Family members and friends gathered in the ground should be allowed to observe the body by maintaining a minimum distance of 1 meter10. It should also be noted that belongings of deceased person should be handled with gloves and cleaned by detergent followed by disinfection with 70% ethanol solution or 0.1% bleach. Machine washing of the clothes of deceased with detergent and warm water at 60-90ºC should be done. In cases of unavailability of machine washing, clothes should be soaked in hot water and soap in large drum using sticks to avoid any splashing. This should be followed by emptying of drums and soaking of linens in 0.05% chlorine for approximately 30 minutes. Later the dressing should be rinsed with clean water and allowed to be sun dry15.

The table number II shown below, represents the WHO guidelines summarising the equipments for the dead body management in context of COVID 1910,11,12,16

**Table II:** Equipment for management of dead body in context of COVID 19

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| --- | --- |
| **Equipment’s** | **Details** |
| Hand hygiene | * Alcohol based rub * Running water * Soap * Disposable towel for hand drying (paper/tissue) |
| Personal protective equipment | * Gloves (single use, heavy duty gloves) * Boots * Waterproof plastic apron * Long sleeve gowns * Anti-fog googles * Face shield * Medical mask * N95 or similar level respirator (for aerosol generating procedures only) |
| Waste management and  environmental cleaning | * Disposable bag for biohazardous waste * Soap and water or detergent * Disinfectant for surfaces- hypochlorite solution 0.1%   (1000ppm), 70% ethanol, or hospital grade disinfectant. |

# **Part B: Psychological toll of dead body disposal on patient’s family**

The COVID-19 virus has taken more than 1,70,000 lives worldwide till April 21st 2020. As the death toll continues to rise, the virus presents us with a psychological crisis that has already changed the way we live and is now changing the way we grieve.

Losing a loved one is an intensely emotional and traumatic experience often called as bereavement. The human emotional and biological response to bereavement is grief which involves a period of intense yearning for the deceased as well as feelings of sadness along with constant thoughts, memories and imagery of the bygone relative17. An individual experiencing grief passes through various stages of shock, denial, anger, bargaining, testing and acceptance18. This process is further facilitated by the rituals and traditions post death and the social support from friends and family. While grieving is a natural coping mechanism to loss, grieving alone can be both, difficult and unnatural and individuals in this present time of COVID-19 are facing a similar challenge.

From the point of being tested positive, the virus requires the infected patients to stay in complete isolation in order to prevent infection. In many situations, the families are not allowed to accompany the patient to the hospital, make regular visits or perform anything like palliative care. In cases of death due to corona virus, there are strict guidelines regarding dead body handling as seen in the first section of the paper. Such situations where there is a lack of closure and an inability to say a final goodbye to the deceased is often accompanied by feelings of guilt of not being able to support a family member in his/her last times. These feelings may further exasperate due to the inability to perform the last rites of the individual as per the family tradition. In countries, where the government disposed the bodies, the life-long impact on the family members who could not view their relative for one last time is unimaginable.

Different cultures provide individuals with different mourning periods. For instance, the North Indian Hindus observe 13 days of mourning where family members express grief through various rituals amidst the safe haven of relatives and friends. This period helps the individual to deal with the trauma. However, this relief of “not being alone” has also been taken away due to social distancing.

In such difficult times, the chances of individuals and families to suffer from complicated grief involving an experience of distress and functional impairment for many years after loss19, especially in death of a child or life partner, is likely to rise. Studies have reported the risk factors for complicated grief to be similar to the present times including nature of death & unexpected death20-27. Social situations, unavailability of resources post death28, interference with natural grieving process, low social support and inability to practice cultural processes after death29-34. The conceptual nature of Complicated grief fits itself into DSM-5’s category of Trauma and stress related disorders and can thus significantly affect the mental health of the families undergoing the experience35. One of the major concerns here is that once all this ends, the world might get so busy in recuperating the health systems and economies, that it might lose focus of the psychological toll that Corona Virus has caused, until one day, another mental health survey is done and the rise in incidence of depression is empirically shown to the numerically attuned mind.

# **Conclusion**

The COVID-19 virus outbreak has been widely covered as a once in a century pandemic and posits a challenge to the entire world and its health systems. As it continues to spread and create fear and distress, it is essential to develop procedures to contain the virus until an end tool is developed. One such procedure covered by the current study is regarding the appropriate dead body disposal of COVID-19 patients. This procedure is essential to ensure the safety of the frontline healthcare workers, families, survivors and the environment. The paper’s interdisciplinary approach further yields researches from anatomical and behavioural sciences to join hands for the better understanding of human systems. The losses cannot be recovered, however each time a life is saved or a transmission is prevented, it is a victory over the virus.

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