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EDITORIAL

COVID-19 pandemic era: How risky is the continuous usage of cadavers for teaching and research?



À l'ère de la pandémie COVID-19 : quel est le risque d'une poursuite de l'utilisation des cadavres pour l'enseignement et la recherche ?

Dear Editor,

It is no longer news that the coronavirus disease 2019 (COVID-19) has affected almost every sphere of life. This virus might have also come to stay, pending the time vaccines will be readily available and accessible globally. With the daily surge in the figures of COVID-19 cases and deaths, healthcare delivery and medical facilities are being overwhelmed. Following the series of lockdown measures to mitigate the spread of the COVID-19, medical education is also under stress. Schools were closed, and millions of students were forced to sit-at-home [1,2]. This had hindered medical students' access to dissection rooms, cadavers, skeletons, and pathological specimens, among others. One major issue that is bothering the mind of academia, students, morticians, and other stakeholders, is the degree of vulnerability to the COVID-19 through the continuous use of cadavers, especially when vaccines are not yet readily available for all.

Cadavers in Medical Education

In medical education, the use of dead bodies remains predominant in teaching and learning processes, especially gross anatomy [3]. However, following the school closure, most institutions shifted to online platforms for the continuation of learning, including virtual cadaver dissections [4]. In fact, there have been projections for a 'cadaverless' anatomy [2]. Notwithstanding, many still prefer the traditional wet cadaver dissection, especially in climes where such high-tech virtual platforms in vogue are inaccessible

or unaffordable [5]. To date, except for Australia, where cadaver dissection is optional, other continents like Africa, Asia, and Europe still rely on the use of cadavers for teaching and research [5]. When using cadavers for academic purposes, it is mostly believed that fixatives are potent in deactivating infectious pathogens therein. Nonetheless, Demiryürek et al., [3] confirmed that cadavers, even though preserved, could still be infectious to those handling them during embalming or dissecting procedures. Therefore, it is imperative to establish the safety of using cadavers during disease outbreaks like the COVID-19 pandemic.

Usage of cadavers during COVID-19

In countries where body donation programs are obtainable, it is deplorable to admit corpses with infectious diseases for academic purposes. Thus, during the COVID-19 pandemic, such rule stands [2], and any cadaver suspected to be infectious is to be rejected or excluded from such a scheme and be cremated. Although, it has often been argued that body donation programs should be maximized during the COVID-19 pandemic, and halting such a scheme or rejecting donated bodies may result in the scarcity of cadavers for teaching in the subsequent academic year [1,6]. However, the risks of accepting an infected cadaver seem to outweigh its benefits, especially during this COVID-19 era. Therefore, any cadaver obtained from a certified body donation program should be safe for academic and research purposes.

Albeit, critical issues may arise in situations where the COVID-19 status of a deceased donor is unknown. A similar issue may also arise in regions like Africa and Asia where

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unclaimed bodies stand as the major sources of their cadavers [5]. Besides, these unclaimed bodies usually don't have a medical record to indicate the cause of death [5]. Hence, in such situations, appropriate COVID-19 testing should be done [1]. If positive, such a body should be rejected or cremated. Nevertheless, in climes where there are no body donation programs or where COVID-19 testing is not feasible due to low testing capacities, then, any cadaver received or sourced should be tagged 'infectious' and further COVID-19 safety measures should be taken.

Moreover, following the severe acute respiratory syndrome coronavirus 1 (SARS-CoV-1), it was discovered that formalin and glutaraldehyde were effective for the deactivation of SARS-CoV-1, dependent on the temperature and duration. Besides, better effectiveness of these chemicals was seen at temperature 37 °C within 24–48 h of fixation or preservation [7]. Also, recent studies revealed that formalin and solutions with 70%–95% alcoholic concentrations are effective to deactivate COVID-19 [5,8]. Furthermore, since there are no convincing pieces of evidence, that COVID-19 remains contagious in a well-preserved body; then, common preservatives like formalin and alcohol should remain effective to deactivate it [5,9]. Also, since COVID-19 virus are said to remain on cadavers for hours or days and on surfaces for up to 9 days [10], therefore any preserved cadavers should also be kept for a while before use. Hence, such a well-preserved cadaver would be safe for dissections. Besides, the World Health Organization (WHO) also disclosed that there are no proven facts yet, that people died as a result of contracting coronavirus from any COVID-19 related dead bodies [11]. Although the risk of exposure to the virus by people working with corpses cannot be overlooked.

Morticians and embalment during COVID-19

The role of the morticians or technicians embalming cadavers is very crucial and should not be overlooked during this COVID-19 pandemic, as they are the first contact and most at risk when receiving and embalming fresh corpses. The safety and protection of the morticians during embalming procedures are paramount and will go a long way in protecting end-users and the public at large [12]. Technicians in charge of receiving and embalming fresh corpses must be given proper orientation, special training, and updated information regarding COVID-19 mode of transmission, mutation, and other vital information about it. Adequate personal protective equipment (PPE) such as nitrile hand gloves, fluid-resistant face mask, goggles, and waterproof apron must be provided for use during each embalming procedure [5,13]. As earlier discussed, all corpses received for embalment must be treated as contagious and all COVID-19 safety protocols must be strictly adhered to. Adherence to good hand hygiene and prompt disinfection of embalming surfaces are vital for safety during this era [5,11,13]. Moreover, as the COVID-19 pandemic is seen to be having some adverse psychological impacts globally, therefore, continuous psychological assessment and support must be given to body handlers to reduce psychological stress and to revitalize their mental health. Their workload should also be reduced and technicians above 60 years of age should be exempted from work during this era [12].

Conclusion

Conclusively, in addition to all the issues discussed, the study by Ravi emphasized that a negative result of COVID-19 laboratory testing may not eliminate COVID-19 infection [1]. Therefore, when handling any cadaver, with or without a COVID-19 status record, caution must be taken. Besides, it has been emphasized that a tangible percentage of COVID-19 carriers are asymptomatic, therefore, its chain of a human-human mode of transmission should be broken, especially in the academic environment to avoid catastrophe. The current students' cadaver ratio during dissection sessions should be reviewed to accommodate social distancing. The practical timetable should also be reviewed to reduce overcrowding in the laboratory during practical sessions [5]. All these measures will help to checkmate danger and risk. Lastly, as the COVID-19 vaccines are being rolled out gradually, priority should also be given to morticians, technicians, instructors, students, and researchers dealing with dead bodies, as we navigate through this COVID-19 pandemic; a virus with no specific date of expiration.

Disclosure of interest

The author declares that he has no competing interest.

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