

Research Article

How Pathologists Dealt with the First Wave of the COVID-19 Pandemic: A Qualitative Study

Ines Testoni ^{1, *}, Anna Sapino ², Erika Iacona ¹, Alessia Montagner ¹, Luca di Montegnacco ¹, Laura Liberale ¹, Alain Borczuk ³, Fiorella Calabrese ⁴

1. FISPPA Department, University of Padova. Università degli Studi di Padova, Via Venezia, 12/2, Padova 35131, Italy; E-Mails: ines.testoni@unipd.it; erika.iacona@unipd.it; alessia.montagner.1@studenti.unipd.it; luca.dimontegnacco@studenti.unipd.it; laura.libe@fastwebnet.it
2. Department of Medical Sciences, University of Torino, Torino, Italy; Unit of Pathology, Candiolo Cancer Institute, FPO-IRCCS, Candiolo (TO), Italy; E-Mail anna.sapino@unito.it
3. Department of Anatomic Clinical Pathology, LIJMC, 270-5 76th Avenue, New Hyde Park, NY 11040, US; E-Mail: aborczuk@northwell.edu
4. Department of Cardiac, Thoracic, Vascular Sciences and Public Health, University of Padova Medical School, Via A. Gabelli 61, 35121, Padova, Italy; E-Mail: fiorella.calabrese@unipd.it

* **Correspondence:** Ines Testoni; E-Mail: ines.testoni@unipd.it

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Abstract

During the first wave of the COVID-19 pandemic, pathologists had to follow new protocols in their work environment around the world to limit or prevent the possibility of transmission of the infection during the autopsy of infected corpses. By using a qualitative research design, in this study, we investigated the emotions, experiences, and opinions of pathologists concerning changes in clinical practices. We specifically investigated their perspective on death. Our results encompassed five thematic areas, which included the effect of changes,



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courage to face the fear of death and trauma, attitude toward death and resilience, distress caused by internalized death, and the scientific mission and motivation to fight the fear of death. Additionally, disagreement within the scientific community and a negative attitude of people toward the work of pathologists who performed autopsies of COVID-infected cadavers further undervalued their work. We also discussed the necessity of controlling emotions when working in a clinical setting where exposure to dead bodies is inevitable.

Keywords

COVID-19 research; pathologists; distress; trauma; fear of death

1. Introduction

The COVID-19 pandemic greatly pressurized and stressed healthcare workers worldwide, forcing them to make difficult decisions at certain times [1, 2]. Under such circumstances, the pandemic strongly affected the work of pathologists, especially in 2020. Most medical institutions at all levels were unprepared to face a viral pandemic. The representatives of the medical society were requested to mainly provide guidance. The situation rapidly shifted from, “We do not have the appropriate structures to perform an autopsy and avoid contagion” to “You have to operate to facilitate our work in security”. The same problem was faced by the World Health Organization [3] and ministries that decided to allow autopsies to be conducted only within safe structures. Protocols were formulated to protect the health of pathologists. Additionally, complex post-mortem examinations should have been performed following recommended precautionary procedures, i.e., the maintenance of personal hygiene, the use of safety equipment, such as respiratory filters and face protection, and the corpses also needed to be well-maintained, e.g., placing them on sanitized metal stretchers, or in a coffin with the clothes, and wrapping them in a sheet soaked in disinfectant solution [4]. However, the lack of protective devices and validated intervention procedures led to major dysfunctions, and attempts at remediation did not always meet the needs of pathologists and researchers. Many governments did not provide adequate tools to perform sufficient autopsies and even temporarily halted the autopsy of infected corpses [5]. Changing procedures, health risks, and overwork greatly altered the work environment of pathologists. The opportunity was lost to study and understand at an early stage the effects that the virus had on apparatuses, organs, and tissues, which could help to implement treatments for decreasing the mortality rate. Understanding the effects of COVID-19 on organs and the underlying mechanisms at an early stage could have helped in optimizing clinical work [6, 7].

According to the terror management theory (TMT) [8], many dysfunctional social behaviors arising from the pandemic were strongly related to the unconscious fear of death. Specifically, mortality salience generates reactive behaviors or attitudes, and during the pandemic, such behaviors and attitudes were more irrationally distorted [9]. The pandemic promoted existential fear and dread among people, producing an intense existential imbalance [10]. The highly contagious COVID-19 virus caused many deaths, which in turn increased thoughts related to death and mortality and increased distress and anxiety [11].

Some studies on pathologists investigated the advantages and disadvantages of the changes made to ensure the service of pathologists, from a functional perspective [12–15]. However, studies on the psychological effects of the COVID-19 pandemic on pathologists are limited, especially regarding their relationship with death caused by COVID-19. Only one study was conducted in Pakistan, which found that depression and anxiety were the most important effects [16], but no study considered the impact of death on their lives. Hence, in this qualitative study, we investigated how COVID-19 affected their psychological well-being.

2. The Qualitative Study

2.1 Aims and Methods

In this study, we investigated the experiences and perspectives of pathologists in the first year of the COVID-19 pandemic, focusing on the protocols that changed their working practice. We also investigated their perception of death and safety in the work environment, and the value of the work of pathologists in the fight against the pandemic.

We conducted a qualitative study [17]. This methodology is suitable for analyzing issues that are particularly sensitive [18, 19]. An ad hoc questionnaire was formulated. The participants were asked to express their opinions based on their perceived importance to their psychological well-being; their relationship with death; their opinions concerning changes in work practice; difficulties related to the changes; experiences related to contact with the corpses of patients who died due to the COVID-19 infection; their perceived safety. Italian participants were also given a detailed orientation to the same themes via the internet. The English texts were translated into Italian, and all conversations were recorded and transcribed verbatim. We specifically used the thematic analysis approach [20]. The texts obtained in both phases of the survey were analyzed using thematic analysis [21], which was conducted using the framework analysis method to extrapolate the main concepts [22]. The corpus was evaluated by thematic analysis, which divided it into main concepts or themes [20, 22]. After analyzing the material comprehensively, we performed a detailed analysis of the correspondence between the texts and the categories to identify central themes and their relationships. The phase was further divided into four main steps: coding the data, verifying the evaluated results, searching for alternative explanations, and writing the report. All names mentioned in the following text are fictitious, as participants were guaranteed anonymity. All participants provided informed consent for the use of personal data. The project was approved by the Ethics Committee of the University of Padua (n. E26FA514D0B4B213D1AAC9D22B928FA5).

2.2 Participants

We recruited participants by contacting pathologists registered with scientific societies (SIAPEC, PPS), which had previously launched an internal call to find possible participants. The inclusion criteria were as follows: motivation to participate in the study; performed at least 10 complete autopsies during the first two waves of the COVID-19 pandemic. The participants consisted of 16 pathologists (n = 8 males and 8 females; age: 38 – 66 years [average 54; SD: 9.2]). Nine participants were Italian [n = 2 males and 7 females; average age: 56.5 years; SD: 8.8]). Seven participants had an international background: three from the US, one from Slovenia, one from Russia, one from Spain, and one from the Netherlands. Specifically, John was a 55-year-old married American man, an

atheist with 25 years of service as a pathologist. Noah was a 41-year-old married man, an atheist, with eight years of service. Ellen was a 52-year-old single American woman, very religious, with 15 years of service. Jozef was a 56-year-old divorced Slovenian man, an atheist, with 25 years of service. Claudia was a 56-year-old single Italian woman, very religious, with 26 years of service. Viktor was a 41-year-old married Russian man, a believer, and a pathologist for three years. Sandro was a 56-year-old married Italian man, a believer, with 30 years of service. Laura was a 64-year-old single Italian woman, an atheist, with 28 years of service. Daniel was a married Spanish man, 44 years old, an atheist, with 14 years of service. Giulio was a married 47-year-old Italian man, very religious, with 17 years of service. Bart was a 66-year-old divorced Dutch man, a believer, with 34 years of service. Serena was a 61-year-old single Italian woman with 37 years of service. Virginia was a 38-year-old single Italian woman, a believer, with seven years of service. Rita was a 61-year-old Italian woman with 30 years of service. Franca was a 60-year-old Italian woman with 32 years of service. Orietta was a 66-year-old Italian woman with 30 years of service.

3. Results

We found five areas of thematic prevalence, which included the impact of the changes, courage to face the fear of death and trauma, attitude toward death and resilience, scientific mission to fight the fear of death, distress caused by internalized death, and the scientific mission and motivation to fight the fear of death. The five thematic areas are described in the following subsections.

3.1 The Impact of Changes

Social distancing negatively affected the work routine of almost all participants. *Jozef* said, "Communication with colleagues changed, no more face-to-face interactions, and this was not so good", while *Noah* said, "Big conferences were canceled, all meetings went virtual, and I tended to work from home as much as I could, but it was terribly stressful". Concerning the new protocols, *Sandro* specified, "We changed the autopsy protocol and paid more attention to performing our daily activities". Similarly, *Virginia* reported, "We inevitably had to follow the safety protocols for autopsies; we performed autopsies more accurately, and we were more conscious and aware than before". *Ellen* remarked, "Additional protocols in cytology, surgical pathology, and autopsy were implemented". *Bart* said, "We had limited access to the lab and decreased research activities. It was so stressful". *Noah* said, "The autopsy workload increased because our institute had to absorb both COVID-positive and COVID-negative cases from neighboring institutes". However, other activities decreased, as *John* remarked, "Diagnostic and surgical pathology activities (i.e., cyto-histopathological examinations) decreased". The situation created more stressful conditions, as *Claudia* described, "We had to do a lot of autopsies and in a new set of safety and danger". *Viktor* mentioned, "Working hours increased, and we had fewer holidays, sometimes no weekends". Two participants reported discomfort while conducting autopsies. *Franca* said, "COVID marked me from a physical perspective because you have to do an autopsy in a different way than the others. You are seen as a spaceship with four pairs of gloves. You have no manual skills, so it is difficult. You are a bit apprehensive that you can cut yourself; there is a technical difficulty". *Rita* stated, "We are not used to working in these protected ways; in the end, you do not move, you do not move your hands, you do not breathe. It is like a game of "let me see what I can take off without hurting myself to improve autopsy activity"".

3.2 Courage to Face the Fear of Death and Trauma

In most participants, the pandemic elicited a strong fear of death. For some, it was an overwhelming experience. "It was the first time in my professional life that I was afraid", said *Rita*. *Orietta* stated, "I was afraid of the unknown and not knowing the situation". *Alberto* said, "The disturbing thing was that, in practice, we had our room with the bodies to be examined, but outside in the corridor there were those that were ready to go to the coffin. It was very impressive because it was new, seeing the corridor where I had to move the stretchers with the bodies because there were 30 of them; this was quite different. There was a terrible, impressive war-like effect". The overload caused extreme exhaustion: "At times, the fatigue was excessive, and everything seemed meaningless and hopeless". However, the motivation to be useful for overcoming the pandemic provided courage. As *Claudia* said, "Courage, a lot of courage. I have to do something, and I must fight against all this, and I'm happy to do so. In certain emergencies, I had extra power, although I do not know where the energy came from".

3.3 Attitude Toward Death and Resilience

Most participants reported that their work did not desensitize them to death, and it was necessary to manage their emotions continuously. *John*, for example, said, "This work immensely increases the capacity to value life", while *Viktor* said, "If you see death every day, you understand that our lives are very important and short. You should not spend life arguing, but should spend more time with your family". Similarly, *Claudia* said, "We appreciate what happens in front of us more, things that perhaps we did not notice before". *Jozef* stated how the condition of desensitization was limited to his work and it did not affect his daily life and stated, "As a pathologist, I am confronted with death every day. Desensitization is present in my professional life, while in private life it does not work". However, *Sandro* stated, "The constant contact with death and, in particular, with autopsy decreases emotional involvement with life", and *Giulio* added, "Death in our work is rationally processed".

However, the pandemic severely affected the perception of death among participants, which was evident in *Franca's* narration, "Because not all centers were up to code, we had to do autopsies on bodies that came from other districts and were frozen ... some even in coffins because it was not possible to move them. We saw the faces. All this affected me deeply and I think it will leave a mark". *Orietta* also stated, "Unfortunately, we were not provided any psychological support to handle this well".

3.4 Distress caused by Internalized Death

For some participants, the experience was traumatic because death was too apparent. "Something touched me psychologically. It will stay with me. I only hope that this will not cause depression in the future", said *Franca*. She added, "As in every stressful situation, a sort of self-defense intervenes. So, often when I go home and speak to my son, I do not know if I can say certain things, I almost deny the evidence of a terrible disease. I hardly want to accept that there are these realities... I want to defend myself from this situation and I say that only those who have a thousand problems die, which in reality is not the case. But I believe it is a self-defense reaction". A similar experience was also reported by *Franca*, who said, "We only saw death for this disease, we did not

see a healed patient. We only saw patients who unfortunately died and this hurt me". *Rita* said, "You see death so concretely, so concrete that it just enters in you from everywhere. I do not fear death because I believe it is a very important part of human life, but it is too much all at once". *Sandro* stated, "We had to handle too many corpses in an exceptional way, not usual, and in this way, death enters you; we had to do the autopsies alone to reduce the risk of contagion. Usually, we work in pairs. We were locked in. And that caused a negative emotional impact".

Orietta further added, "Psychological services were provided, for support, mainly to clinical departments, especially in intensive care units, where the emotional impact was high. In pathological anatomy, this did not happen. We pathologists are always left on the sidelines and ignored, and even in this situation, we were treated as if we had not suffered trauma". "The autopsy is considered to be the most dangerous, little known, and little practiced medical maneuver, and this creates some prejudices as if we could be infectious", explained *Sandro*.

3.5 Scientific Mission and the Motivation to Fight the Fear of Death

Pathologists were asked to evaluate, on a scale of 1 to 10, the contribution of their work to the scientific knowledge of COVID-19; the average rating was eight.

Most participants were very motivated to study the effect of COVID-19 because, as *Laura* said, "Pathologists usually deal with death, and COVID-19 patients are not different from other patients who die. The work of pathologists is essential for knowledge, for a better understanding of the disease, and developing therapeutic strategies". *Claudia* stated, "Clinicians and the community should trust our job more. Although we are doing an important job for the medical and scientific community, we do not receive much appreciation, which is unbelievable. The people in charge of hospital administration and the health system should support us". *Noah* said, "I am disappointed with the quality of data that was published hurriedly. My own experience regarding pathology sometimes differs from what is published. At some point, we will need to carefully analyze the published information to distinguish valid pathological manifestations of COVID-19 from those that were published but not properly vetted". Additionally, the participants were dissatisfied because they could not conduct their work in the best possible way, as *Claudia* reported, "We had to adapt to the ministerial protocols of the WHO. At the beginning, there was just a ban on performing these autopsies because the regulations were not known. It was not known how this virus could spread". *Franca* stated, "Faced with our decision to start doing these autopsies, we faced scientific societies and some movements that prevented us from conducting these autopsies. In the beginning, I rebelled momentarily, in the sense that I was quite angry because we could not implement these procedures. We are doctors, and we want to contribute to the treatment of these patients". Similarly, *Sandro* affirmed, "We could be useful since a lot remain unknown". *Claudia* stated, "Autopsy has always been used to understand the bases and mechanisms of diseases. Our work may offer important information on the effects of COVID-19".

Figure 1 describes the most significant relationships between the different themes that emerged from the thematic analysis.

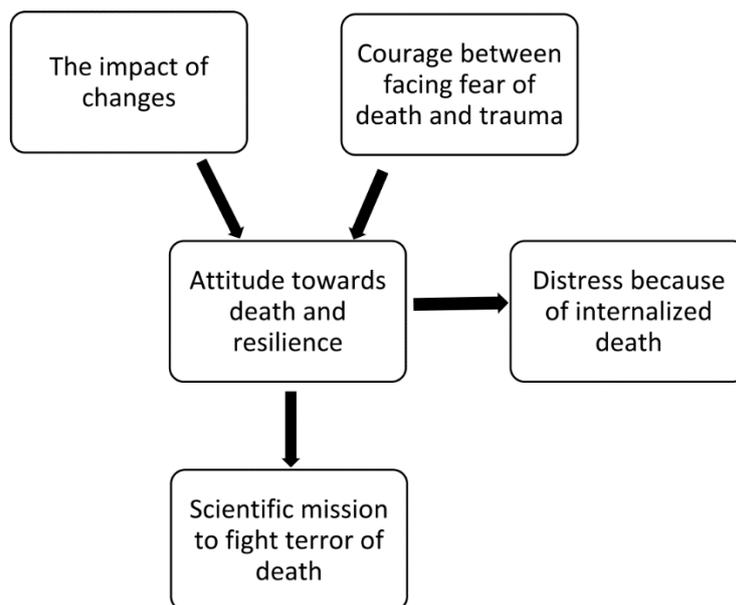


Figure 1 The structure of the thematic areas.

4. Discussion

All participants confirmed the need to pay special attention to the topics covered in the survey. All pathologists stressed the importance of the effects of the changes in working protocols and relationships between colleagues. The five thematic areas that emerged were all related to each other. Specifically, the first thematic area, i.e., the impact of change, and the second one, i.e., courage to face the fear of death and trauma, were related to the third one, attitude toward death and resilience. Participants reported that there were substantial changes in professional practice in their departments due to the new protocols, concerning a more controlled way of working and communicating with colleagues. Most perceived the work environment as very stressful. The first thematic area indicated that among the stress factors, pathologists described those imposed by the new guidelines of the WHO and the ministry, including lower attendance in the facility, maintaining distance between colleagues while communicating, working in isolation, complex operations for maintaining personal hygiene and protection, and the handling of protective equipment and autopsies [4, 23]. These instructions were perceived as very stressful and, at times, overwhelming. However, the same dispositions were also considered to be protective and effective in managing the pandemic. Specifically, the changes concerning the autopsy procedures on COVID-19-positive cadavers were perceived as very distressing. Several participants also reported that at the peak of the pandemic, postmortem examinations had dropped considerably, and some centers had stopped these examinations. This was caused by an uneven distribution of workflow, which for some centers, indicated a considerable increase in the number of autopsies. Pathologists who had to overwork were exhausted. Their poor condition was exacerbated by distanced communications and relationships, which reduced the possibilities of information exchange; this, in turn, decreased the opportunity to compare novel practices with colleagues. The second thematic area considered the issue of fear that affected the perception of death. However, such negative feelings were curbed due to the motivation provided by professional expertise, as described in the third thematic area.

As indicated by the fourth (distress because of internalized death) and fifth thematic areas (scientific mission to fight the fear of death), the courage to face the fear of death was challenged by the suffering due to the excessive exposure to too many corpses but strengthened by the motivation to contribute to scientific research in the fight against the virus. Almost all participants reported that it was compulsory to cope with their psychological and emotional experiences due to the nature of their work under the new circumstances. Some reported that psychological support should have been provided throughout their career. Similarly to the protocol followed in other fields of healthcare [24], several participants expressed the need for detailed psychological training to prepare them for critical situations concerning the use of new equipment and the implementation of new bioethical models suitable for disasters and pandemics and for dealing with death. Such measures should be implemented to cope with the effects that contact with death has over many years of work in this field. Several studies have shown that pathologists are particularly vulnerable to psychological stress, especially those dealing with particularly sensitive case histories [25], such as the wave of deaths due to the COVID-19 pandemic. These findings are similar to those of studies on other health professionals, which showed how the COVID-19 pandemic disrupted the balance in the work environment of healthcare professionals [24, 26, 27]. Even the World Health Organization [23] formally recognized this risk to healthcare workers, and thus, more effort is required to manage anxiety and stress in this group and, in the long term, help prevent burnout, depression, and post-traumatic stress disorder. In the absence of adequate support, these factors traumatize and increase the risk of extreme stress and burnout [24, 28]. The distress caused by the COVID-19 pandemic worsened a latent stressful condition. A survey conducted by the American Society for Clinical Pathology (ASCP) in 2020 found that 71% of anatomic pathologists suffered from burnout at least once in their lifetime [29].

Despite facing all these hindrances and challenges, almost all participants reported that their work was important precisely because their findings were important to enhance knowledge. However, as they mentioned, the scientific societies (e.g., see [9]) limited their work in the first year of the pandemic, restricting the effectiveness of the research in this field. Most participants considered that these political decisions were made because of uncertainty, incapacity, fear, and anxiety. On the other hand, some centers were over-burdened to perform autopsies because they were equipped to meet the requirements of the new protocols. As reported in several studies [12, 13, 30], the overwork in those centers further limited the possibility of conducting research due to a large number of clinical requests. According to the participants, the restrictions imposed by the authorities, along with the disproportionate distribution of work, were irrational; the authorities prevented performing autopsies, which was contrary to the aim of pathologists, while the high workload prevented the pathologists from conducting research.

The pathologists were also dissatisfied because the significance of their work was not recognized enough, even during the peak of the pandemic. For example, Claudia stated that clinicians and the scientific community should trust the results of their work more. Some participants consider this issue to be a problem. Although they received some social praise, pathologists were feared and avoided as many perceived them as sources of infection [31, 32]. This attitude of the public was perceived as extremely stressful for the participants. This phenomenon might be explained by relating it to the generalized fear of death, as shown in another study [10].

Our study had some limitations, which might be attributed to the small number of participants who participated in the survey and the limited number of published studies concerning the perception of death among pathologists. Future studies should investigate these issues in detail.

5. Conclusion

Pathologists need to pay attention to their psychological well-being as they are constantly exposed to dead bodies.

All participants unanimously agreed that their work was necessary for research and to meet the needs of the clinic and that they deserved more support from the scientific community. The participants reported certain shortcomings in the ability of institutions to enhance their expertise and also mentioned how the uncertainties surrounding the pandemic affected their perception of danger. A sense of duty and willingness to solve the problem led almost all participants to work, even under difficult circumstances. This, in some cases, led to deeply traumatic experiences that were worsened by the lack of psychological support.

Author Contributions

Each author contributed equally to the research and the article.

Competing Interests

The authors have declared that no competing interests exist.

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