

Criminal experts' experience on forensic traces not preserved by health and safety professionals

Vivência de peritos criminais sobre vestígios forenses não preservados por profissionais da saúde e segurança

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ABSTRACT

Objective: to unveil experts' experiences on traces not preserved by health and safety professionals. **Methods:** qualitative research developed with 27 criminal experts through telephone interview. Data were processed in IraMuTeQ and analyzed by the Descending Hierarchical Classification. **Results:** four thematic classes were obtained that evidenced the existence of a communication gap with the pre-hospital service experienced by experts, who believe that training of these professionals and police officers is necessary. In cases of differentiation between suicide and homicide, experts experience corpse mobilization, in addition to weapon removal from the original location. Health professionals mischaracterize the victim's corpse and leave health care objects, such as gloves and syringes, in place, while police mischaracterize the scene, move objects and do not adequately isolate the scene. **Conclusion:** experts experience forensic traces not preserved by health and safety professionals in the position of objects and the victim's corpse, feel a communication gap and point out the need for training and awareness of professionals. **Contribution to practice:** the findings can redirect the training of police officers and health professionals who work with crime situations.

Descriptors: Health Personnel; Emergency Medical Services; Expert Testimony; Crime; Forensic Nursing.

RESUMO

Objetivo: desvelar a vivência de peritos sobre vestígios não preservados por profissionais da saúde e segurança. **Métodos:** pesquisa qualitativa desenvolvida com 27 peritos criminais por meio de entrevista telefônica. Os dados foram processados no *Software* IraMuTeQ e analisados pela Classificação Hierárquica Descendente. **Resultados:** foram obtidas quatro classes temáticas que evidenciaram a existência de lacuna de comunicação com o serviço pré-hospitalar vivenciada pelos peritos, os quais acreditam ser necessário treinamento desses profissionais e dos policiais. Nos casos de diferenciação entre suicídio e homicídio, os peritos vivenciam a mobilização do cadáver; além da retirada de arma do local original. Os profissionais da saúde descaracterizam o corpo da vítima e deixam no local objetos do cuidado em saúde, como luvas e seringas, enquanto os policiais descaracterizam a cena, movimentam objetos e não isolam a cena adequadamente. **Conclusão:** os peritos vivenciam vestígios forenses não preservados pelos profissionais de saúde e segurança na posição dos objetos e do corpo da vítima, sentem lacuna de comunicação e apontam a necessidade de treinamento e sensibilização dos profissionais. **Contribuição para a prática:** os achados podem redirecionar o treinamento de policiais e profissionais de saúde que atuam com situações de crime.

Descritores: Pessoal de Saúde; Serviços Médicos de Emergência; Prova Pericial; Crime; Enfermagem Forense.

Introduction

Given the constant presence of criminality, the Federal Constitution establishes the responsibility of the civil police to investigate criminal offenses. The actors who initiate the process of such investigations, still at the scene of the crime, are external criminal experts who make up the scientific police and are responsible for collecting traces that may produce evidence of how the investigated fact occurred⁽¹⁾.

The crime scene constitutes every area in which the fact that may constitute a criminal offense has occurred. Traces are objects, marks and signs that, when analyzed, can become evidence. Therefore, preserving the place is of great relevance for criminal experts who work in this environment rich in findings that materialize the history of a criminal act⁽²⁾.

In cases of crime, two types of services are commonly triggered: a public safety corpse such as the military police, and the Mobile Emergency Service (SAMU - *Serviço de Atendimento Móvel de Urgência*). Their arrival usually precedes that of criminal experts and their attributions, as they play a fundamental role in preserving evidence, verifying the occurrence existence, promoting the population safety at the scene, asking for support, guaranteeing the scene safety and providing first aid to survivors⁽³⁾.

It is understood that the action of the police to isolate the area reduce hazards and remove civilians from the site may result in damage to the integrity of forensic traces. Likewise, within the victim care process, the main objective of pre-hospital care professionals is, unquestionably, to preserve life; thus, much evidence can be lost and/or contaminated by improper handling of a scene and traces, during health care provision.⁽⁴⁻⁵⁾ It is pointed out, therefore, that there is a real possibility that experts find traces impaired by the work of SAMU and the police. However, there is a gap in scientific documentation regarding whether such an experience occurs and how it occurs.

Thus, the importance of unveiling subjective questions regarding experts' experience is pointed out, to contribute to the knowledge gap pointed out

through scientific documentation of how this experience is permeated by situations in which there was a change in the crime scene by other professionals. It should be noted that the study contributes scientifically to the state of the art on forensic trace preservation, and its content may direct specific training of SAMU professionals and police officers to improve their performance in crime situations. Moreover, the study has relevance for nursing, since this category is part of the multidisciplinary team of SAMU, has a management and teaching position in pre-hospital care and, in the forensic nursing specialty, has attributions that deal with forensic trace preservation at crime scenes.

Considering the above, the research question arose: What is experts' experience on traces not preserved by health and safety professionals? Therefore, this study aimed to unveil experts' experiences on traces not preserved by health and safety professionals.

Methods

This was a qualitative study, conducted remotely by telephone interview. The population consisted of experts belonging to the contact network of two professors from the *Instituto Federal de Educação, Ciência e Tecnologia de Pernambuco*, Pesqueira Campus, who, in addition to professors, are external criminal experts of the scientific police of the state of Pernambuco, Brazil.

The first inclusion criterion was to act as an external criminal expert, which is those who do not carry out their work attributions only in the police physical facilities, but go personally to the crime scenes, for trace analysis and collection. The second inclusion criterion was to have at least one year of experience in the scientific police, which increased the possibility of experiencing situations in which traces were found altered. Exclusion criteria were being away due to vacation or medical leave and not responding to telephone contact made for five consecutive working days, once a day and during business hours.

Sample collection occurred by snowball sam-

pling⁽⁶⁾. To this end, the aforementioned two professors at the *Instituto Federal de Educação, Ciência e Tecnologia de Pernambuco* were contacted to suggest and provide the contacts of participants with an eligible profile to integrate the study sample. It is noteworthy that the network of contacts of these professors included criminal experts working in various states and regions, so the invitation was sent to 69 professionals from the five regions of Brazil. Thus, of the 69 invited participants, 27 expressed interest in participating in the study. Data saturation was the criterion adopted to close the gathering so that all experts interviewed were part of the sample⁽⁷⁾.

Data collection took place between March and May 2021. The instrument used, built specifically for this study, was semi-structured and in two parts: the first was an electronic form composed of questions of sociodemographic characterization; the second part was composed by the guiding question: Talk about the situations you have experienced, in which pre-hospital care professionals and/or police officers arrived at the scene before the scientific police and there was suspicion or confirmation of alteration of scene/traces/evidence by these professionals.

Initially, participants were contacted by WhatsApp[®] and email to be invited to participate in the study. Upon obtaining a response with a manifestation of agreement, the link to access the Google Forms was sent via WhatsApp[®]. The link contained the first part of the instrument for sociodemographic characterization and the Informed Consent Form, in which it was possible to select the option "I agree to participate in the research" to register the consent. Thus, each expert answered the characterization questions and then the most suitable date and time was scheduled, according to each participant's availability and preference, for conducting the interview, which was carried out by telephone call.

To start the interview, participants were asked to position themselves in a reserved place. As soon as they verbalized that they were in this condition, they were informed about the start of the audio recording of the interview and then the interviewer verbally

asked the research question. The interviews lasted an average of 30 minutes and, after each interview, the content that was recorded was fully transcribed. To preserve participant anonymity, speeches' texts were identified by the letter E, for expert, followed by an increasing number, assigned according to the interviews' chronological sequence (E1, E2, E3...).

The set of transcribed texts composed the corpus of analysis. Data were processed using *Interface de R Pour Les Analyses Multidimensionnelles de Textes et de Questionnaires* (IraMuTeQ), version 0.7 alpha2, and analyzed using the Descending Hierarchical Classification. Through this type of analysis, the software performs vocabulary grouping in classes of textual segments that are similar to each other and, simultaneously, different from the segments of other classes. The Descending Hierarchical Classification analysis is presented by the software in the form of a dendrogram, which shows the grouping of classes and the semantic relationship between them⁽⁸⁾. The relevance of analysis by IraMuTeQ is highlighted, since the corpus had 32,617 words and 1,638 textual segments and with a utilization rate of 92.4% of processed segments.

The research took place as recommended by Resolution 466/2012 of the Brazilian National Health Council, and was approved by the Ethics Committee of the Educational Authority of Belo Jardim, Pernambuco, under Opinion 4,572,383/2021 and Certificate of Presentation for Ethical Consideration 40412420.8.0000.5189.

Results

Twenty-seven criminal experts from the five regions of Brazil participated in the study. Northeast participants (11) were from Pernambuco (9), Maranhão (1) and Ceará (1); Southeast participants (6) were from Minas Gerais (5) and Rio de Janeiro (1); South participants (6) were from Rio Grande do Sul (4) and Santa Catarina (2); Midwest participants were from Mato Grosso (1), Mato Grosso do Sul (1) and the Federal District (1); and North participants (1) were from Amapá (1). Among the interviewees 6 were

women and 21 men, the age ranged between 31 and 64 years, with a mean of 39.4 years. Experts had specialization in the field (14) and held master's (7) and doctoral (6) degrees. The mean number of years as a forensic expert was 10.3 years, with a shortest career

span of three and a maximum of 31 years.

The Descending Hierarchical Classification pointed to the corpus being grouped into four classes, described in Figure 1.

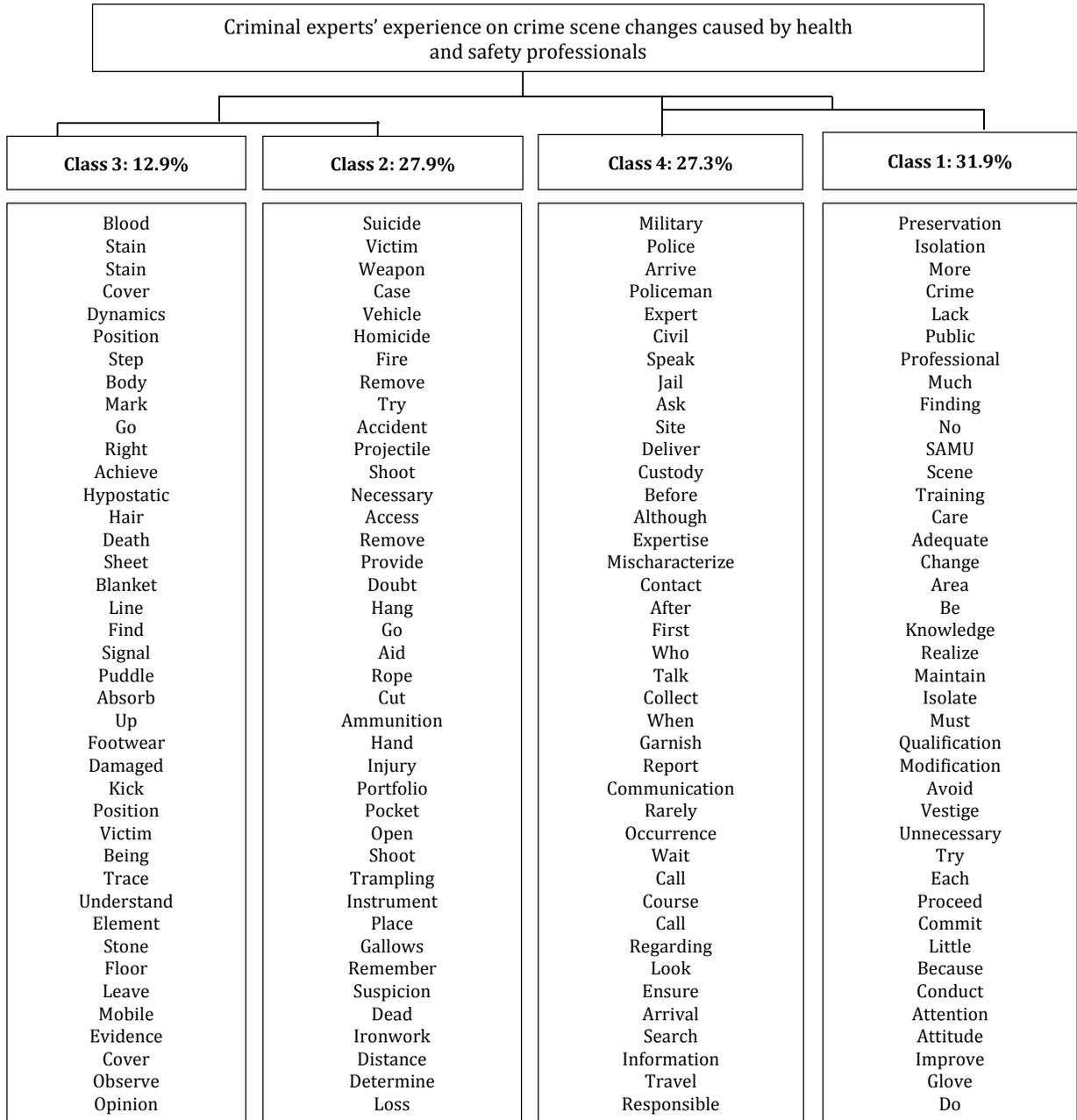


Figure 1 – Dendrogram about criminal experts' experience on forensic traces not preserved by health and safety professionals. Pesqueira, PE, Brazil, 2021

Class 1: Gap in effective communication and need for SAMU and police training

Experts pointed out the existence of a communication gap with the professionals whose arrival at the scene preceded the expertise. One of the problems pointed out was the lack of information passed on to experts regarding what was changed at the crime scene. Experts reported that lack of communication is a common practice among professionals, because, often, when experts arrive at the scene, the health professional is no longer found, nor is there any record of what was done to the victims: *I don't see any care from SAMU when entering the scene, so much so that I don't see in their procedure a warning, a communication, like I had to move here and there, there's no such concern. Communication is zero between SAMU team and expert teams (E16). If experts request, there is communication of what happened, but of their own free will there is not, really the communication between expertise and SAMU is very little (E12). Communication should improve, because communication from other teams to experts only occurs in cases of repercussions (E14).*

The main cause pointed out by the criminal experts as responsible for the unconscious performance of SAMU professionals at the crime scene was lack of knowledge, evidenced by the frequent failures that occur at the scene where SAMU is triggered for the occurrence. Training in forensic situations was the recommendation reported by experts as an empowerment strategy of SAMU regarding the care of not mischaracterizing the crime scene and compromising experts' work: *The SAMU staff is collaborative, but has a lot of flaws. I see that most are unprepared to isolate and preserve the site the way they should, they cannot understand the isolation (E8). Most SAMU staff changes thoughtlessly. I don't believe they have a training on crime scene, isolation, preservation; most I know have no idea, they've never seen any article about it, no article about it (E10). Probably, the SAMU does not know that it is altering some element, because I have already given training to SAMU on the crime scene, and we notice that they are quite surprised because they have no idea what a trace could be, so we begin to realize that it is not ill will, it is that they really have no idea how much their change cause damage (E20).*

As for the report about the police, experts showed that they believe that the military have training opportunities to access information on how to act at crime scenes; however, they reported believing that such opportunities were not sufficient for satisfactory police practice because

such practice also depends on the awareness and sensitization of these professionals. In the experts' discourse, reports were highlighted about the need for training regarding the correct way to perform isolation. This, according to experts, should not only consider the victim's corpse, but the other remains at the scene: *Our institution participates in the training course of the military police, and, often, we hold a site preservation course. Some things we see that they learn and put into practice (E22). Isolation has improved greatly after training with the military police, but in general you only have the corpse isolation, you do not have that perimeter necessary for trace preservation (E11). The military police team has training. The point is that, on a daily basis, some teams come out more relapsing in this regard, do not strive to maintain isolation. In addition to training, it is necessary to have awareness and awareness for them to understand how much it harms my work (E13).*

Class 2: Particularities experienced at the scenes of suspected suicide

Experts' experience was permeated by situations in which the initial hypothesis of the investigated situation was suicide; however, expertise was necessary to rule out the possibility of homicide. In these situations, mischaracterization occurred with the corpse removal from the site by SAMU or the family itself, which altered the original scene: *There are cases in which we are in doubt between homicide and suicide, so the corpse position is fundamental, the position that the victim's hand was, if it was a suicide, if it was self-defense, then all this will influence our analysis, so when the victim's position in the scene changes, it ends up hindering the work interpretation (E2). But in some cases, such as suicide, sometimes the family is the one who changes the most, the family tries to remove the individual from the place (E1). In suicide by hanging, when the SAMU staff arrives, it is reasonable to try something, it is usually very common for us to get into a situation of suicide and the corpse is no longer on the gallows system, it is lying on the bed, the rope has been cut or removed in some way (E7).*

Experts' reports highlighted situations in which the handling experienced consisted of removing a firearm from its original location, carried out by both police officers and SAMU professionals. This change involved an essential element for understanding the dynamics of death and consequent differentiation between suicide and homicide. Thus, experts expressed concern about the possibility of prejudice in the interpretation of the facts and commitment related

to the line of investigation: *I remember a case of suicide in which the victim used a firearm to end his life and, before the arrival of the forensic team, the military police themselves took and took the weapon from the scene (E5). The person fired himself into his own head, suspected of suicide. It is natural in this type of situation that the weapon is in the victim's hand or falls from the victim's hand. When I arrived at the scene for expertise, the victim was in bed and the gun was on top of a furniture in the bedroom, without ammunition. The family informed me that it was SAMU, it was in his hand, but when they came to help, they took the gun away because it was dangerous. They took the gun out of the victim's hand, disarmed him, took all the ammunition from the inside and put it on top of the furniture. This is not done; you can't do it. The main proof of what had occurred was mischaracterized (E3).*

Class 3: Types of changes witnessed by crime scene experts

Experts' reports showed distinct damage that is found in forensic remains. According to experts' experience, SAMU professionals often mischaracterize the victim's corpse, while the police mischaracterize the scene and handle objects.

Experts' reports pointed out that, although public safety police officers have the function of ensuring the crime scene isolation and preservation, their action results, in many cases, in the handling of furniture, objects and the removal of elements from the scene, which compromise expertise: *What we see most, by the military police, is when we arrive at the scene, they already have the documentation, or they have already removed the weapon from the place. There is more risk of the population catching it, but could this risk be remedied by isolating and preserving the place, instead of removing the weapon? I understand that there are places where, due to the danger, instability, it is necessary for this weapon to be removed and be in the possession of a policeman, but it is not every and every place that needs to be done (E10). The military police happen to open drawers, open doors, especially by car; pick up documents, the victim's cell phone, sometimes collecting some case (E20). Some police officers even take the weapon from the victim's location and then they go to give it to experts. This mischaracterizes the site (E27). We went to attend a murder. The battalion commander himself went to the scene and collected all the fragments of projectiles from firearms and cases. When we arrived, he delivered it in a bag. It's here, I've collected everything for you to save expertise time. Then I said, "now I am in a pickle here, I'm not here*

to save time, I'm not going to collect". I will not accept that. I don't know if this was at the crime scene (E5).

Regarding the alteration of traces caused by SAMU professionals, experts experience situations in which the victim's corpse was handled based on changing its position and overlapping the sheet to cover the corpse. This fact was pointed out by experts as an obstacle to forensic interpretation, since the victim's corpse is a key piece, as it may contain crucial information for expertise, and the handling of the original position can damage the crime dynamics interpretation: *We can see from the corpse position that SAMU was here. The corpse has its fingers crossed, its hands on its chest and its legs stretched out and crossed, almost typical of the position it places in the coffin (E9). When they touch the corpse, it happens in cases where the head is turned down and turned sideways, the most common is the change from ventral decubitus to supine (E11). In general, the main changes that we find are changes in the victim's corpse positioning, pockets turned, use of sheets and thermal blanket, often they use to cover the corpse and bloodstains footprints (E1). It is very common that when covering the corpse, some important trace can be lost. For example, if you have a short-range shot, sometimes you have a powder residue, very subtle in the person's own clothing, a sheet can disturb that trace (E14).*

Another problem experienced by experts was identified: scene contamination with materials used in the victim's health care. According to experts, the insertion of elements that are not original to the scene contaminates the site and can misinterpret facts: *First, the emergency care contaminates the place with gloves and cotton, and SAMU professionals do not worry about it (E11). We find procedure gloves, medicine bottles or any product (E13). SAMU professionals, after performing their duties, leave their gloves, gauze segments, disposable syringes and others. In these places where there was any kind of offense, I have found everything (E26). When the sheet is placed, it ends up interfering with the entire bloodstain profile that is there, because you put the cloth on top, the blood will be absorbed in that cloth, so it gets in the way. And another thing too, from where the sheet came out it has someone's DNA, and you will insert into the scene, this way hinders all investigation (E14).*

It was observed that experts' experience is permeated, also by the understanding about the need for SAMU professionals to alter forensic traces in an attempt to save life. There was consensus in the statements regarding the attempt to save life as a priority: *Normally, when the victim is still*

in distress condition, every scene should be changed, because the preference is life (E13). If you still have life, life is always a priority. We call it necessary mischaracterization, which is that mischaracterization that you produce to save someone's life, there's nothing to question in this case (E3).

Class 4: Relevance of public safety professionals' conduct for criminal expertise and the need for investment in material resources

Experts' experience was marked by the knowledge about public safety professionals' role at a crime scene being essential for trace preservation. This role was pointed out as being composed of the assignment of isolating the area, ensuring place safety, not entering the scene and being careful in/in addition to not handling objects, not stepping on bloodstains: *The police, when they arrive at the scene, the first one who arrives must preserve as they find the place. This is in the Code of Criminal Procedure and often does not happen, whether by invention to the corpse, by popular people, who can remove their goods, even weapons (E27). The function of the military police is to preserve the place, keep the place isolated and the function of expertise is to carry out the investigation of the place, but, many times, this trampling happens that one ends up invading the other's field, mischaracterizing the site (E3). It would be very important and extremely positive for a technical team of forensic experts that the police, whether civil, military or army do not move objects, pick up projectiles and/or fragments and/or any type of ballistic evidence, do not step on the bloodstains, do not enter the crime scene, especially nowadays, with the technology of forensic genetics, with the collection of substance for DNA research, it can mask, make us collect so many, when less would be enough (E26).*

Although experts reported difficulties in carrying out an investigation, as they did not find adequate isolation, there was a perception of poor working conditions of the police that do not favor the delivery of the preserved scene for experts to carry out the work. The lack of minimum materials to carry out isolation in police vehicles, such as an isolation strip, makes the perimeter demarcation impromptu with the use of objects from the scene itself, which makes it difficult to locate all traces: *Often, the vehicle does not have an isolation strip, the state should also provide materials that could help the police to carry out the proper isolation and preservation (E10). I work at the expert corpse and I am the one who buys the isolation strip, many times, at my base there is no isolation strip, now if I, a criminal expert, who depend on*

it, I don't have to get there, imagine the military policeman who is the first to respond. Most likely it will not have, and should be a mandatory item in any vehicle (E17).

Discussion

Experts' experience proved to be permeated by the communication gap between professionals who arrive first at the crime scene and with external experts, who are responsible for the case. The existence of a communication gap is also pointed out in a systematic review carried out by researchers in Australia, regarding the effective communication of police officers. The results of the aforementioned review showed that the management of crisis situations demands the ability to exchange information between emergency teams and the police, and the authors pointed out the need for simulations and regular training that can contribute to the effectiveness of communication⁽⁹⁾. Thus, when considering that, in the context of trace preservation, the communication gap causes damage to the quality of expert conclusion, the relevance of training and intersectoral articulation between health and safety to face the problem is pointed out.

Experts' speeches pointed out that SAMU should be the target of training, as they are not trained to act in crime scenes. The lack of training was also evidenced in a study from Turkey, on the knowledge of doctors and nurses in trace preservation in the operating room⁽¹⁰⁾. It is worth noting that health professionals' role expands as new demands arise. Thus, the subject of trace preservation, despite not being recent, has shown itself to be increasingly relevant and, therefore, presents itself as pertinent to be the target of investments for training with professionals.

Changes in corpse positioning, use of sheets and thermal blankets stood out as the main changes made by SAMU in the victim's corpse, which emerged in experts' statements. Research from Brazil showed that, in carrying out expertise, the non-compatibility of blood spots denounce the corpse mobilization as well as the use of a sheet produces secondary infor-

mation and alters the primary formation of blood splatters⁽¹¹⁾. It is noteworthy that the attempt to save life is inevitable, even if the crime scene⁽⁴⁻⁵⁾ changes. In these cases, the need for sectoral interventions to optimize communication and registration is ratified. Furthermore, even if the possible intention to preserve the privacy/secretcy of a corpse's identity is understood, the need for awareness of SAMU professionals not to perform or allow corpse overlapping with a sheet is pointed out, in order to minimize damage to expert interpretation.

Still, regarding the handling of the victim's corpse, in addition to SAMU, the family had a significant participation in experts' reports, especially in cases of suicide, in the attempt to help relatives. Studies conducted in Brazil have pointed to the home environment as the place of greatest occurrence of suicide cases, and hanging stands out as the most prevalent method⁽¹²⁻¹³⁾. These findings corroborate the world scenario as observed in a scoping review conducted by researchers in Australia, in which 36 articles were analyzed and, of these, 17 that pointed to the place where the hanging took place, showing the domicile as the one with the greatest use of force⁽¹⁴⁾. Such characteristics possibly explain the fact that the family finds and tries to provide first aid to the victim by cutting the material used for the gallows and removing the corpse from the original position. The complexity of these alterations in the scene elements makes it more difficult for experts to establish the nature of death; therefore, they need to be well reported and documented by professionals who arrive first at the site.

Regarding experts' experience on police action at a suicide scene, it was evident the concern of the damage to expertise due to the fact that the police removed a firearm from the victim's vicinity. Police attitudes in a forensic situation were also evidenced by a study by Canada, in which it was observed that police managers ignored the challenges that experts faced in interpreting evidence of crime, when proper preservation was not performed by safety team⁽¹⁵⁾.

Therefore, the police attitudes experienced by experts explained the need for training with a specific purpose, not only to multiply information but to sensitize the police to the recognition of their attributions in forensic scenarios.

When considering the relevance of the topic of biosafety in health professionals' practice, reports by experts on the abandonment of materials used in health procedures by SAMU are worrisome. In Nigeria, similar results were found in the hospital service, related to the standard disposal of inadequately performed waste, which culminated in an increased risk of biological contamination by occupational exposure⁽¹⁶⁾. The abandonment of these materials in the crime scene represents the insertion of new elements in the place, in addition to offering risks to experts of exposure to injuries by sharps and biological agents present in the materials used on the victim.

Inadequate isolation was pointed out as one of the problems in carrying out the investigation, but the experts themselves pointed out inappropriate working conditions faced by the police officers responsible for the scene. In Brazil, a study on crime scene isolation and preservation stated that, before the arrival of experts, the isolation carried out by the police did not cover the entire necessary area⁽¹⁷⁾. Thus, it is noteworthy that a possible cause for such insufficient isolation may be the limitation of materials.

Study limitations

It is pointed out as a limitation of this study the fact that the interviews were carried out by telephone, since the absence of face-to-face interviews may have limited the deeper understanding and unveiling of investigated aspects. However, it is pointed out that, given the distribution of participants in the five regions of Brazil and the need for sanitary measures of social distance, inherent to the COVID-19 pandemic, the telephone interview proved to be relevant and viable strategy.

Contributions to practice

The present study has unpublished content of intersectoral relevance. The results may be of interest to health, public safety and education professionals. The findings contribute to the advancement of knowledge by revealing the experiences of external criminal experts, in order to contribute to understanding the reality experienced, which needs to be the target of research and interventions that aim to solve the problem faced by experts. Its results can be used to argue the need for redirection in the formation and continuing education of police officers and health professionals who work with crime situations. Such redirection needs to overcome the barriers of individualized training by professional category and be thought of from an interdisciplinary and transdisciplinary perspective.

Conclusion

Criminal experts' experience on forensic traces not preserved by health and safety professionals proved to be permeated by frequent changes found by experts in handling the victim's corpse and by the scene contamination with materials used in health care where the SAMU operates. As well as by the police and changes made to the place, belongings and objects. The study showed a communication gap between professionals who arrive first on the scene and experts as well as the need for training for health professionals and greater provision of materials for police officers to carry out adequate isolation to preserve traces.

Authors' contribution

Data conception, design, analysis and interpretation: Silva RX, Galindo Neto NM.

Article writing: Silva RX, Souto RQ, Galindo Neto NM.

Data analysis and interpretation, relevant critical review of intellectual content: Silva RX, Sá GGM, Souto RQ, Alcoforado JMSG, Barros LM, Souza HPJ, Galindo Neto NM.

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Agreeing to be responsible for all aspects of the manuscript relating to the accuracy or integrity of any part of the manuscript being investigated and resolved accordingly: Silva RX, Sá GGM, Souto RQ, Alcoforado JMSG, Barros LM, Souza HPJ, Galindo Neto NM.

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