

Article

Preservation of traces of crime in emergency units: mobile emergency assistance service

Preservação de vestígios de crime em unidades de emergência: serviço de atendimento móvel de urgência

Lígia Ferreira Costa¹, Marcos Santos Silva², Vitória Maria Costa da Silva Estevão de Azevedo³, Gabriela Granja Porto Petraki⁴, Adriana Conrado de Almeida⁵

Costa LF, Silva MS, Azevedo VMCSE, Petraki GGP, Almeida AC. Preservation of traces of crime in emergency units: mobile emergency assistance service / *Preservação de vestígios de crime em unidades de emergência: serviço de atendimento móvel de urgência*. Rev Med (São Paulo). 2023 Nov-Dec;102(6):e-210380.

ABSTRACT : Objective: to analyze the knowledge of mobile teams from the Mobile Emergency Care Service (SAMU) in the city of Recife, on the preservation of traces of crime. **Methodology:** descriptive, cross-sectional study, carried out at the medical regulation center 192 and mobile teams of SAMU/Recife, in 2021 and 2022. A questionnaire was constructed with 24 questions validated by students and professors of the Academic Master's Program in Forensic Expertise at the University of Pernambuco applied to SAMU professionals. Descriptive statistics were used for data analysis. **Results:** the study population was made up of male professionals, aged between 38 and 47 years, training time and time working in the SAMU with one to four years in the service, in relation to the preservation of traces, they presented a minimum or none, despite recognizing the importance of the subject and expressing the need for training in Forensic Sciences. **Conclusion:** it is concluded that there is knowledge about the importance of preserving the traces of crimes, although it does not know what a Chain of Custody Center is. Professionals do not feel safe and understand that SAMU teams are not responsible for preserving traces.

KEYWORDS: Forensic Sciences; Crime; Forensic Anthropology; Emergency Medical Services.

RESUMO: Objetivo: analisar o conhecimento das equipes móveis do Serviço de Atendimento Móvel de Urgência (SAMU) do município de Recife, sobre a preservação dos vestígios de crime. **Metodologia:** estudo descritivo, transversal, realizado na central de regulação médica 192 e equipes móveis do SAMU/Recife, em 2021 e 2022. Construiu-se um questionário com 24 perguntas validado por discentes e docentes do Programa de Mestrado acadêmico em Perícias Forenses da Universidade de Pernambuco aplicado aos profissionais do SAMU. Utilizou-se para a análise dos dados a estatística descritiva. **Resultados:** a população do estudo foi constituída por profissionais do sexo masculino, faixa etária entre 38 e 47 anos, tempo de formação e tempo de atuação no SAMU com um a quatro anos no serviço, em relação à preservação de vestígios apresentaram um conhecimento mínimo ou nenhum, apesar de reconhecerem a importância da temática e de expressarem a necessidade de capacitação em Ciências Forenses. **Conclusão:** conclui-se que existe um conhecimento sobre a importância de preservar os vestígios de crimes embora desconheça o que é Central de Cadeia de Custódia. Os profissionais não sentem segurança e entendem que não é atribuição das equipes do SAMU a responsabilidade em preservar os vestígios.

PALAVRAS-CHAVE: Ciências Forenses; Crime; Antropologia Forense; Serviços Médicos de Urgências.

¹ Universidade de Pernambuco, Faculdade de Odontologia de Pernambuco, Programa de Pós-graduação em Perícias Forenses, Recife, PE, Brasil. Mestranda em Perícias Forenses. ORCID: <https://orcid.org/0000-0002-7460-4320>. E-mail: ligia.fcosta@upe.br;

² Universidade de Pernambuco, Faculdade de Enfermagem Nossa Senhora das Graças, Recife, PE, Brasil. Graduando em Enfermagem. ORCID: <https://orcid.org/0000-0002-6758-2119>. E-mail: marcos231299@gmail.com;

³ Universidade Católica de Pernambuco, Centro de Ciências Biológicas e Saúde, Recife, PE, Brasil. Graduanda em Medicina. ORCID: <https://orcid.org/0000-0002-7951-1609>. E-mail: vitoriamcseazevedo@gmail.com;

⁴ Universidade de Pernambuco, Faculdade de Odontologia de Pernambuco, Programa de Pós-graduação em Perícias Forenses, Recife, PE, Brasil. Doutora em Odontologia. ORCID: <https://orcid.org/0000-0002-4687-3697>. E-mail: gabriela.porto@upe.br;

⁵ Universidade de Pernambuco, Programa de Pós-graduação em Perícias Forenses, Recife, PE, Brasil. Doutora em Saúde Materno Infantil. ORCID: <https://orcid.org/0000-0001-6141-0458>. E-mail: adriana.almeida@upe.br

Correspondence: Lígia Ferreira Costa, endereço: Rua Amador Bueno, nº 231, Pina, Recife, PE, CEP 51.110-310. E-mail: ligia.fcosta@upe.br

INTRODUCTION

There are occasions when health professionals arrive before the technical-scientific or judicial police, and so the procedures for first recording the location, traces and all activities that occurred in the environment during the service must be performed by the health team¹⁻³.

The criminal investigation of violent acts depends on preserving forensic trace evidence, which is vital to the success of a criminal case⁴. This is because it is possible to prove the guilt or innocence of a given suspect through trace evidence⁵⁻⁷. However, the receptivity of forensic evidence may be compromised if the collection and integrity of forensic evidence are not adequately protected⁸⁻⁹.

Law No. 13,964/2019 - (Anti-Crime Law) was established in order to reduce the mistakes caused by non-preservation of trace evidence, which discusses, among other content, trace evidence and the chain of custody. It establishes that a trace is any object or raw material, visible or latent, discovered or collected, that is related to a criminal offense. The public agent who recognizes an element as being of potential interest for producing expert evidence is responsible for its preservation. Chain of custody is the set of all procedures used to maintain and document the chronological history of trace evidence collected from sites or victims of crimes in order to track their possession and handling from recognition to disposal. Its phases/steps are: recognition; isolation; fixation; collection; packaging; transportation; receipt; processing; storage and disposal¹⁰.

The chain of custody is a set of administrative procedures which certify the preservation and integrity of trace evidence during all steps (collection, receipt and analysis) in order to guarantee the confidentiality and reliability of results¹¹. Crime scene preservation is a problem which demands disseminating basic criminalistics knowledge to the agents involved in helping the victim, the crime location, in addition to elaborating and implementing public social policies^{9,12}.

OBJECTIVES

In this context, we were interested in analyzing the regulation knowledge of the 192 service professionals and the mobile teams of the Mobile Emergency Care Service (*SAMU*) in the city of Recife (PE) on preserving forensic trace evidence of crime. With the specific objectives, it is possible to: outline the profile of professionals from the 192/Recife regulation center and the *SAMU*/Recife mobile teams; describe the knowledge and level of importance that the 192 regulation center professionals and *SAMU* mobile teams attribute to preserving trace evidence; report demands for clarification on the services provided by the 192 regulation professionals and *SAMU*/Recife mobile teams to the competent authorities (judges and delegates), and show the frequency of types of trace evidence; evaluate

SAMU's responsibility in preserving trace evidence from the professionals' perception; and inform the existence of a specific protocol in the service.

METHOD

This is a descriptive cross-sectional study conducted from November 2021 to March 2022. The population was composed of professionals who work at *SAMU* in Recife (PE), including doctors, nurses, nursing technicians, drivers, pilots and telephone operators. The *SAMU* in the city of Recife (PE) was selected, as it has the largest number of mobile teams, and because it is the oldest service in the metropolitan region. An increasing sample size was used to avoid sample and recall bias.

SAMU/Recife professionals (192) who have been working for at least 12 months were included, excluding professionals on vacation or medical leave for health treatment.

The following socioeconomic variables were studied: gender, age, professional experience time, length of service, average salary, in addition to specific variables: preservation of forensic trace evidence of crime (obtained through self-declared information); degree of importance they attributed to preserving the trace evidence; provision of assistance to victims of aggression and/or violence; knowledge of Brazilian legislation on the chain of custody and its stages.

A questionnaire was created to collect data under the aegis of Law No. 13. 964/19 (Anti-Crime Law) on the preservation of trace evidence¹⁰. The questionnaire consisted of closed questions, with answers being (very important, important, more or less important, not very important, not at all important); (I completely agree, I agree, I neither agree nor disagree, I disagree, I completely disagree); or (always, often, sometimes, rarely, never).

This questionnaire was validated by Master's students of the Postgraduate course in Forensic Expertise at the University of Pernambuco, health professionals with expertise in urgency and emergency (teachers and students), legal professionals (students of the Master's Degree in Forensic Expertise) and the Judiciary Police (Master's students who act as official experts, delegates), a prosecutor from the Public Ministry of Pernambuco and a guest judge from the Court of Justice, both from the State of Pernambuco.

The collected data were entered into Microsoft Excel for Windows 2016® and analyzed using absolute frequencies and percentages for descriptive evaluation. The IMB SPSS version 2513-14 program was used to obtain statistical calculations.

The project was submitted to the Research Ethics Committee of the HUOC/PROCAPE hospital complex opinion no. 46538621.10000.5192 and approved on November 12, 2021.

RESULTS

The profile of research participants consisted of 119 (53.4%) male professionals and 104 (46.6%) female professionals. In addition, 38.1% of the participants were in the age group between 38 and 47 years old, followed by 35% in the age group of 28 to 37 years old. Regarding their education level, 34.4% completed high school, and 50.7% had an average monthly salary of one to two minimum monthly salaries (MS).

For the professional category, 31.4% of the professionals were Nursing technicians, 24.7% had one to four years of experience in the profession, 50.7% had one to four years of experience in their current service, and 43.8% had a weekly workload of between 20 and 30 hours.

Chart 1 - Knowledge of professionals about the Anti-Crime Law (Law No. 13,964/2019) on the provision of assistance and preserving trace evidence of crimes by regulation 192 and SAMU teams. Recife, Brazil, 2022.

Know it	n = 26 (12.1%)
Partial knowledge	n = 65 (30.2%)
Minimal knowledge	n = 51 (23.7%)
Don't know it	n = 73 (34.0%)
Total	n = 215 (100%)

Source. Elaborated by the authors (2022).

Chart 2 - Degree of importance that the 192 regulatory professionals and SAMU/Recife teams attribute to preserving trace evidence, Recife, Brazil, 2022.

Very important	n = 136 (64.5%)
Important	n = 67 (31.8%)
Somewhat important	n = 4 (1.9%)
A little important	n = 3 (1.4%)
Not important	n = 1 (0.5%)
Total	n = 211 (100%)

Source. Elaborated by the authors (2022).

Chart 3 - Demand for clarification on the services provided by the 192 regulation professionals and SAMU/Recife mobile teams to the competent authorities (judges and delegates). Recife, Brazil, 2022.

Always	n = 7 (3.2%)
Often	n = 10 (4.6%)
Sometimes	n = 21 (9.7%)
Rarely	n = 15 (6.9%)
Never	n = 163 (75.5%)
Total	n = 216 (100%)

Source. Elaborated by the authors (2022).

Chart 4 - Frequency of the type of trace evidence found by the 192 regulation/SAMU professionals and mobile teams. Recife, Brazil, 2022.

Blood	Yes n = 149 (83.2%) No n = 30 (16.8%)
Saliva	Yes n = 8 (4.5%) No n = 171 (95.5%)
Semen	Yes n = 2 (1.1%) No n = 177 (98.9%)
Skin and hair	Yes n = 16 (8.9%) No n = 163 (91.1%)
Fingerprints	Yes n = 4 (2.2%) No n = 175 (97.8%)
Knife	Yes n = 44 (24.6%) No n = 135 (75.4%)
Firearm projectiles	Yes n = 52 (29.1%) No n = 127 (70.9%)
Medicine	Yes n = 56 (31.3%) No n = 123 (68.7%)
Illicit drugs	Yes n = 32 (17.9%) No n = 147 (82.1%)
Rope / cords	Yes n = 22 (12.3%) No n = 157 (87.7%)
Others	Yes n = 13 (7.3%) No n = 166 (92.7%)
Total	n = 179 (100%)

Source. Elaborated by the authors (2022).

When asked about the lack of knowledge about preserving trace evidence of crime which makes it impossible to preserve trace evidence, 57.7% of the professionals from the 192 regulation SAMU/Recife mobile teams completely agreed with the question, while 4.3% people disagreed. Moreover, 30.5% of the research participants responded that they completely agreed with the statement that preserving trace evidence is the responsibility of Forensic Medicine and the Judiciary Police, excluding mobile teams.

In relation to the professionals who work in the regulation and SAMU/Recife mobile teams having the capacity to proceed with recognizing, isolating, fixation, and collecting trace evidence in accordance with the Anti-Crime Law, 43.8% professionals do not consider themselves capable of carrying out these procedures, while 57.7% also did not consider themselves capable of proceeding with packaging, transporting or receiving trace evidence to preserve the chain of custody. However, 55.4% of the participants stated that they are always careful to preserve the remains found according to their nature.

The population under study reported that there is no specific protocol in the service where they work for the care and preservation of trace evidence in victims, following the recommendations of Law No. 13,964/19; thus, 45.9% completely agreed and 16.4% partially agreed with the affirmative. Lastly, a significant number of professionals

who work at the 192 regulation center and in the SAMU/Recife mobile teams (78.5%) did not know what the chain of custody center is.

Chart 5 - Assessment of procedures/steps that are the responsibility of the 192 SAMU. Recife, Brazil, 2022.

None	Yes n = 46 (20.6%) No n = 177 (79.4%)
Recognition (identification)	Yes n = 72 (32.3%) No n = 151 (67.7%)
Isolation	Yes n = 115 (51.6%) No n = 108 (48.4%)
Fixation (Description)	Yes n = 22 (9.9%) No n = 201 (90.1%)
Collection	Yes n = 3 (1.3%) No n = 220 (98.7%)
Packaging	Yes n = 2 (0.9%) No n = 221 (99.1%)
Transport	Yes n = 19 (8.5%) No n = 204 (91.5%)
Receiving at the processing center	Yes n = 6 (2.7%) No n = 217 (97.3%)
Storage	Yes n = 4 (1.8%) No n = 219 (98.2%)
Disposal	Yes n = 0 No n = 223 (100%)
Total	n = 223 (100%)

Source. Elaborated by the authors (2022).

DISCUSSION

The profile of participants in this study is characterized by male professionals (53.4%), despite the number of female Nursing professionals being higher¹⁵. This paradigm shift is probably increased by two factors: SAMU members are not only composed of nursing technicians or nurses, they are diverse job classes, including ambulance drivers.

The second factor is the increasing presence of men in health professions, especially in SAMU, as it is related to the dynamics of the service which requires good physical fitness to manage victims of trauma or clinical emergencies, and this would justify the predominance of the age group between 38 and 47 years old.

There is a prevalence of the nursing category (53.4%) of the professional body. This is due to the multiple functions that Nursing performs in SAMU in mobile basic and advanced support units, motorbike team, rapid intervention vehicle and aeromedical service¹⁶.

The average salary of SAMU professionals is between one and two minimum monthly salaries (50.7%). It is shown that the majority of nursing professionals are paid salaries below their merits due to several factors:

working conditions, high physical demands, the adoption of inappropriate postures due to repetitive movements when carrying out activities, centralization of decisions, double employment, overtime, excessive work pace, inadequate physical space and instruments that generate physical and psychological strain¹⁷. The low education level of the mobile teams can be explained by the greater number of mid-level professionals (drivers and nursing technicians).

The length of service and exercise at SAMU was one to four years, which reflects a high turnover rate, with one of the possible causes being the emotional and physical exhaustion to which they are subjected. This data corroborates research on occupational risk among SAMU health professionals¹⁸. The time spent practicing the profession factor is significant. It is over time, with subsequent experience and practice, that professionals improve their capabilities in providing Nursing care⁴.

The 192 Regulation professionals and the SAMU/Recife teams recognized the importance of preserving trace evidence of crimes from the perspective of the evidence's chain of custody. In this sense, the Anti-Crime Package adds two paragraphs to Article 158-A of the Criminal Procedure Code regarding the beginning of the chain of custody with the preservation of the crime scene or with police or expert procedures so that the existence of trace evidence can be detected, and responsibility is attributed to the public agent when recognizing an element as being of potential interest for the production of expert evidence for its preservation^{10,19}. The Anti-Crime Package in § 2 of article 158-A says that the public agent who recognizes an element as being of interest for producing expert evidence is responsible for its preservation^{10,19}.

Furthermore, the definition of public agent is broad, as the Administrative Improbability Law (Law No. 8,429/1992)²⁰ defines a public agent as anyone who works, even if temporarily or without remuneration, by election, appointment, designation, hiring or any other form of investiture or bond, mandate, position, employment or public function. It is therefore a scope which encompasses SAMU professionals.

By inserting a health professional, meaning not an official expert, in the context of the responsibility for preserving evidence, this professional who has the culture of worrying about saving lives, will now become responsible for yet another skill that he/she is not used to nor qualified for.

The insufficiency, or even absence, of forensic professionals in the interior of the states, the number of professionals with more than 20 years of service, meaning those who are close to retirement (29% of experts)^{3,21}, the precariousness of working conditions of civil police and criminal expertise, and poor coordination between government bodies^{3,22} are probably factors which support the inclusion of these new incipient actors in the context of Public Safety.

Furthermore, the law does not list which steps are the responsibility of the public agent other than the official expert. It is not clear which steps are the responsibility of health professionals in Positive Law. For some research professionals there is no obligation (20.6%), while for others the obligation would be until the site isolation stage.

Finally, the respective law innovated the role of health professionals as public servants, expanding their duties towards the patient regarding the preservation of trace evidence. However, it did not detail the devices necessary for implementation in the health sector, especially in *SAMU*.

As a result, it is possible to identify the *SAMU* teams' lack of awareness of Law No. 13,964/19 and more precisely the evidence chain of custody which aims to guarantee the suitability and integrity of trace evidence. This becomes a paradoxical gap, given that the majority of participants considered the preservation of trace evidence to be very important, as well as improvement and training courses in Forensic Sciences. Based on these results, there is an urgent need to reflect on the weaknesses found in the Brazilian reality on devices based on Forensic Sciences which aim to preserve trace evidence.

It should be noted that the assistance dynamics of *SAMU* professionals, meaning they are in direct contact with the victim (being present at the scene of the crime or receiving the victim at the hospital) is important, as the professionals reported frequently encountering traces of blood, firearm projectiles, bladed weapons, medicine and other trace evidence items during this process. These are important traces of physical and biological aspects which will guide future judicial judgment by the competent authority.

The victim's clothing is one of the main trace evidence sources of crime. The victim's clothing may contain blood stains, strands of hair, rips and puncture wounds²³.

For the State and society as a whole, the essential thing is the integrity of the evidence, which does not alter the trace evidence left by those involved²⁴. On the one hand, there is a need to preserve the crime scene, and on the other to welcome and provide first aid to the victims²⁵.

It is important to emphasize that when *SAMU* comes into contact with some type of trace evidence in providing care to victims of criminal offenses, it is an obligation to maintain and document the chronological history of the evidence collected in places or from victims of crimes, as well as possible tracking of handling based on its recognition¹¹.

In conducting a study to describe the knowledge of

professionals working in the emergency department of the *Hospital de Urgências de Sergipe (HUSE)* in Northeast Brazil on the preservation of forensic remains, the authors observed that the majority of professionals knew less than 50% of the procedures necessary for the documentation, collection and preservation of forensic trace evidence²⁶, despite health professionals being the first professionals to provide care to victims of aggression and violence²⁷⁻²⁸ and are responsible for collecting and preserving trace evidence⁵.

It is necessary to discuss the role of *SAMU*'s health professionals in Brazil, as well as in preserving trace evidence of crime from the perspective of the population having access to justice and thus guaranteeing a fair trial.

Another interesting point is that the law does not establish consequences for non-compliance with chain of custody rules. Failure to comply with some of the chain of custody rules, especially if they are isolated acts, does not automatically result in the exclusion of evidence. It is necessary to assess whether non-compliance has compromised the integrity of the test. The procedure now established by law will allow the judge to verify authenticity according to his open, motivated conviction, in the case of evidentiary assessment²⁹.

This is a topic that generates confrontation between different points of view which may involve several public institutions, requiring new scientific work, and therefore new discussions to increase investigation, strengthen forensic expertise and combat impunity are needed.

CONCLUSION

It is inferred that the professionals at the 192 regulation center and the *SAMU/Recife* mobile teams are aware of the importance of preserving trace evidence of crimes, although they are unaware of what a chain of custody center is.

Professionals do not feel confident and understand that *SAMU* teams are not responsible for preserving trace evidence. This fact possibly occurs due to the lack of definition in Brazilian legislation regarding the preservation of trace evidence.

It is important to not forget that the State, above all, must promote actions to strengthen forensic expertise and prioritize improving the production of technical evidence and guarantee access to justice, both for the defendant and for the victims and/or family members.

Specific contributions of each author: Substantial contribution to the study outline or data interpretation – Lígia Ferreira Costa, Marcos Santos Silva, Vitória Maria Costa da Silva Estevão de Azevedo, Gabriela Granja Porto Petraki, Adriana Conrado de Almeida. Participation in writing the preliminary version - Lígia Ferreira Costa, Marcos Santos Silva, Vitória Maria Costa da Silva Estevão de Azevedo, Gabriela Granja Porto Petraki, Adriana Conrado de Almeida. Participation in the review and approval of the final version - Lígia Ferreira Costa, Marcos Santos Silva, Vitória Maria Costa da Silva Estevão de Azevedo, Gabriela Granja Porto Petraki, Adriana Conrado de Almeida. Compliance with being responsible for the accuracy or completeness of any part of the study - Lígia Ferreira Costa, Marcos Santos Silva, Vitória Maria Costa da Silva Estevão de Azevedo, Gabriela Granja Porto Petraki, Adriana Conrado de Almeida.

Financing sources

- Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPQ). Scholarship granted.
- Fundação de Amparo à Ciência e Tecnologia de Pernambuco (FACEPE). Scholarship granted.
- Forensic Expertise Postgraduate Program. Educational institution.
- Nursing faculty of Nossa Senhora das Graças. Educational institution.

REFERENCES

1. Escritório das Nações Unidas sobre Drogas e Crimes. Conscientização sobre o local do crime e as evidências materiais em especial para pessoal não forense [Internet]. Nova York: UNODC; 2010 [cited 2023 Jan 12]. https://www.unodc.org/documents/scientific/Crime_Scene_Awareness_Portuguese_Ebook.pdf. 2023
2. Rocha HNR, Rodrigues BA, Paula GVN, Araújo JPA, Gomes TA, Souza ARN, et al. O enfermeiro e a equipe multidisciplinar na preservação de vestígios forenses no serviço de urgência e emergência. *Braz J HeaRev* [Internet]. 2020;3(2):2208-17. Doi: <https://doi.org/10.34119/bjhrv3n2-073>
3. Camilo LS, Dantas TO, Musse JO, Silva DP, Assis ES. Preservação da cena de crime pelo enfermeiro no serviço de atendimento móvel de urgência: uma revisão integrativa. *Cad Grad Ciênc Biol Saúde Unit* [Internet]. 2017;4(2):184-202. <https://docplayer.com.br/76268273-Preservacao-da-cena-de-crime-pelo-enfermeiro-no-servico-de-atendimento-movel-de-urgencia-uma-revisao-integrativa.html>
4. Gomes CIA. Preservação dos vestígios forenses: conhecimentos e práticas dos enfermeiros do serviço de urgência e/ou emergência [dissertation] [Internet]. Coimbra: Faculdade de Medicina da Universidade de Coimbra; 2016 [cited 2022 Oct 12]. <http://hdl.handle.net/10316/81407>
5. Silva CDC. O enfermeiro e a preservação de vestígios de agressão sexual no serviço de urgência[dissertation] [Internet]. Porto: Universidade do Porto; 2010 [cited 2022 Nov 17]. <https://repositorio-aberto.up.pt/bitstream/10216/26910/2/Cristina%20Silva%20%20Dissertao%20de%20Mestrado%20em%20Medicina%20Legal%20%202010.pdf>
6. Machado MM. Importância da cadeia de custódia para prova pericial. *Rev CML* [Internet]. 2017;1(2):8-12. <http://revistacml.com.br/wp-content/uploads/2018/04/RCML-2-01.pdf>
7. Luciano GD, Deus Filho L. A importância da cadeia de custódia da prova: uma análise do caso O.J. Simpson à luz dos art. 158-a a 158-f do Código de Processo Penal Brasileiro. Unai: Faculdade de Ciências e Tecnologia de Unai; 2020.
8. Gonçalves SIF. Vivências dos enfermeiros na manutenção de provas forenses no serviço de emergência[dissertation] [Internet]. Porto: Universidade do Porto; 2011. <https://repositorio-aberto.up.pt/bitstream/10216/57083/2/TeseSusanaGoncalves.pdf>
9. Silva RX, Ferreira CAA, Sá GGM, Souto RQ, Barros LM, GalindoNeto NM. Preservação de vestígios forenses pela enfermagem nos serviços de emergência: revisão de escopo. *Rev Latino-Am Enfermagem* [Internet]. 2022;30:e3593. Doi: <https://doi.org/10.1590/1518-8345.5849.3593>
10. Presidência da República (BR), Casa Civil, Subchefia para Assuntos Jurídicos. Lei nº 13.964, de 24 de dezembro de 2019. Aperfeiçoa a legislação penal e processual penal [Internet]. Brasília: Presidência da República; 2019 [cited 2023 Jan 31]. https://www.planalto.gov.br/ccivil_03/ato2019-2022/2019/lei/113964.htm
11. Del-Campo ERA. Exame e levantamento técnico pericial de locais de interesse à Justiça criminal: abordagem descritiva e crítica [dissertation] [Internet]. São Paulo: Universidade de São Paulo; 2008 [cited 2023 Jan 12]. https://teses.usp.br/teses/disponiveis/2/2136/tde-27052010-093136/publico/Eduardo_Roberto_Alcantara_Del_Campo_Dissertacao.pdf
12. Ribeiro CL, Maia ICVL, Souza JF, Santos VF, Santos JS, Vieira LJES. Atuação do enfermeiro na preservação de vestígios na violência sexual contra a mulher: revisão integrativa. *Esc Anna Nery Rev Enferm* [Internet]. 2021;25(5):e20210133. Doi: <https://doi.org/10.1590/2177-9465-EAN-2021-0133>
13. Conover WJ. Practical non parametric statistics. 2th ed. New York: John Wiley & Sons; 1980.
14. Altman DG. Practical statistics for medical research chapman and hall. London: Great Britain; 1991.
15. Cabral CCO, Bampi LNS, Queiroz RS, Araújo AF, Calasans LHB, Vaz TS. Qualidade de vida de enfermeiros do serviço de atendimento móvel de urgências. *Texto Contexto-Enferm* [Internet]. 2020;29:e20180100. Doi: <http://dx.doi.org/10.1590/1980-265X-TCE-2018-0100>
16. Ministério da Saúde (BR). Portaria nº 1.010, de 21 de maio de 2012. Redefine as diretrizes para a implantação do Serviço de Atendimento Móvel de Urgência (SAMU 192) e sua Central de Regulação das Urgências, componente da Rede de Atenção às Urgências [Internet]. Brasília: Ministério da Saúde; 2012 [cited 2023 Jan 23]. https://bvsms.saude.gov.br/bvs/saudelegis/gm/2012/prt1010_21_05_2012.html
17. Carvalho DP, Rocha LP, Brum AN, Gutierrez ED, Nogario ACD, Bordignon SS. Perfil de trabalhadores da enfermagem de hospitais universitários e as cargas de trabalho: análise por cluster. *Esc Anna Nery Rev Enferm* [Internet]. 2022;26:e20210194. Doi: <https://doi.org/10.1590/2177-9465-EAN-2021-0194>
18. Leite HDCS, Carvalho MTR, Cariman SLS, Araújo ERM, Silva NC, Carvalho AO. Risco ocupacional entre profissionais de saúde do Serviço de Atendimento Móvel de Urgência - SAMU. *Enferm Foco* [Internet]. 2016;7(3/4):31-5. Doi: <https://doi.org/10.21675/2357-707X.2016.v7.n3/4.912>

19. Presidência da República (BR), Casa Civil, Subchefia para Assuntos Jurídicos. Decreto-Lei nº 3689, de 3 de Outubro de 1941. Código do Processo Penal [Internet]; Brasília: Presidência da República; 1941 [cited 2023 Jan 14]. https://www.planalto.gov.br/ccivil_03/decreto-lei/del3689.htm
20. Presidência da República (BR), Casa Civil, Subchefia para Assuntos Jurídicos. Lei nº 8.429, de 02 de junho de 1992. Dispõe sobre as sanções aplicáveis em virtude da prática de atos de improbidade administrativa, de que trata o § 4º do art. 37 da Constituição Federal; e dá outras providências [Internet]. Brasília: Presidência da República; 2014 [cited 2023 Jan 17]. http://www.planalto.gov.br/ccivil_03/leis/L8429.htm#:~:text=LEI%20N%C2%BA%208.429%2C%20DE%202%20DE%20JUNHO%20DE%201992&text=Disp%C3%B5e%20sobre%20as%20san%C3%A7%C3%B5es%20aplic%C3%A1veis,fundacional%20e%20d%C3%A1%20outras%20provid%C3%AAs
21. Ministério da Justiça (BR), Secretaria Nacional de Segurança Pública. Diagnóstico da perícia criminal no Brasil [Internet]. Brasília: Ministério da Justiça, 2012 [cited 2023 Jan 12]. <https://www.mpm.br/arquivos/CAOPCEAP/Diagn%C3%B3stico%20Per%C3%ADcia%20Criminal%20no%20Brasil.pdf>
22. Fórum Brasileiro de Segurança Pública. Anuário Brasileiro de segurança pública – 2015 [Internet]. São Paulo: Fórum Brasileiro de Segurança Pública, 2015 [cited 2023 Jan 12]. https://forumseguranca.org.br/storage/9_anuario_2015_retificado_.pdf
23. Peel M. Opportunities to preserve forensic evidence in emergency departments. Emerg Nurse [Internet]. 2016;24(7): 206. Doi: <https://doi.org/10.7748/en.2016.e1618>
24. Silveira AM, Pereira A. Isolamento e preservação de local de crime - procedimento substancial à integridade do trabalho pericial. RBC [Internet]. 2020;9(2):56-61. Doi: <https://doi.org/10.15260/rbc.v9i2.355>
25. Cruz CMPC. Práticas e conhecimentos dos Enfermeiros de Serviço de Urgência na recolha e manutenção de provas forenses [dissertação de mestrado]. Coimbra: Escola Superior de Enfermagem de Coimbra; 2017 [cited 2023 Jan 18]. <http://web.esenfc.pt/?url=jivAMIJW>
26. Musse OJ, Santos V, Santos DS, Santos FP, Melo CM. Preservation of forensic traces by health professionals in a hospital in Northeast Brazil. Forensic Sci Int [Internet]. 2020;306:e110057. Doi: <https://doi.org/10.1016/j.forsciint.2019.110057>
27. Ministério da Saúde (BR). Portaria nº 204, de 17 de fevereiro de 2016. Define a Lista Nacional de Notificação Compulsória de doenças, agravos e eventos de saúde pública nos serviços de saúde públicos e privados em todo o território nacional, nos termos do anexo, e dá outras providências [Internet]. Brasília: MS; 2016 [cited 2023 Jan 10]. https://bvsms.saude.gov.br/bvs/saudelegis/gm/2016/prt0204_17_02_2016.html
28. Boone DL, Costa TMT, Tana DB, Lopes SC, Cortes MCS, Freitas ED, et al. Serviço de atendimento móvel de urgência: perfil dos atendimentos por causas externas. Rev Soc Bras Clin Med [Internet]. 2018;16(3):134-9. <https://pesquisa.bvsalud.org/portal/resource/pt/biblio-1047936>
29. Magno LE, Comploier M. Cadeia de custódia da prova penal. Cad Jurídicos [Internet]. 2012;22(57):195-219. https://www.tjsp.jus.br/download/EPM/Publicacoes/CadernosJuridicos/cj_n57_10_cadeia%20de%20cust%C3%B3dia.pdf?d=637437206976264894

Received: 2023, April 06

Accepted: 2023, December 03

