




THE ROLE OF FORENSIC ANTHROPOLOGISTS: A REVIEW OF THE SITUATION IN BRAZIL

PAPEL DOS ANTROPOLOGISTAS FORENSES: UMA REVISÃO DA SITUAÇÃO DO BRASIL

EL PAPEL DE LOS ANTROPÓLOGOS FORENSES: UNA REVISIÓN DE LA SITUACIÓN EN BRASIL

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ABSTRACT

Forensic anthropology has been gaining importance in Brazil, for example, in the context of mass disasters, missing persons, and criminal investigations. One of the cornerstones of the forensic anthropologist's role is identification, and Brazil is no exception. The role of forensic anthropologists has been studied in various locations around the globe, such as Thailand and Australia. In this context, this scientific manuscript aims to analyze the role of forensic anthropologists in Brazil, describing the profession's main roles and clarifying similarities and differences in comparison to other countries. This study is a systematic and integrative literature review, following a pre-established protocol. The PubMed (MEDLINE) and LILACS databases were searched, supplemented by additional research. These searches in PubMed and LILACS yielded an initial number (n) of 104 studies. After removing duplicates, 99 studies were left. After reading titles and abstracts, 85 studies were excluded, leaving 14 articles for full reading. Finally, 13 studies were excluded, leaving 1 article. A complementary search included 5 more relevant studies, resulting in a final "n" of 6. Based on the results, combined with the discussion, it was possible to note that forensic anthropologists in Brazil play essential roles in identifying missing persons, both in criminal and mass disaster contexts. The field is gaining increasing relevance in Brazil, but still faces structural challenges. It is considered that further investment is needed to maintain this growth and overcome the remaining challenges regarding forensic anthropology infrastructure in Brazil. The results of this study should be interpreted in light of its limitations, which include the lack of quality analysis and the lack of paired analysis. There is a need for new systematic reviews on the topic, considering a paired review approach and quality analysis in order to achieve greater scientific rigor and quality in the synthesis of evidence.

Keywords: Forensic Anthropology. Role (Figurative). Mass Disaster. Victim Identification. Brazil.

RESUMO

A antropologia forense tem passado por um processo de ganho de importância no Brasil, por exemplo, no contexto de desastres de massa, de pessoas desaparecidas e de investigações criminais. Um dos alicerces do papel do antropologista forense é a identificação, o Brasil não foge dessa regra. Em diferentes localidades no globo terrestre,

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vem sendo estudado o papel do antropologista forense em sua localidade, como na Tailândia e na Austrália. Nesse contexto, esse manuscrito científico se propõe a analisar o papel do antropologista forense no Brasil, com o objetivo de descrever os principais papéis da profissão no território brasileiro, tornando mais claro similaridades e divergências da profissão em comparação a outros países. O presente estudo se propõe a ser uma revisão de literatura sistemática e integrativa seguida a partir de protocolo próprio pré-estabelecido. Pesquisou-se nas bases de dados PubMed (MEDLINE) e LILACS complementada por meio de pesquisa complementar. Encontrou-se a partir dessas buscas no PubMed e na LILACS um número (n) inicial de 104 estudos. Retirada duplicatas, ficou-se com 99 estudos. Após leitura de títulos e resumos, excluiu-se 85 estudos, restando 14 artigos para leitura completa. Por fim, excluiu-se 13 estudos, sobrando 1 artigo, com a busca complementar, incluiu-se mais 5 estudos pertinentes, obtendo um somatório de “n” final de 6. A partir dos resultados combinadas com a discussão, foi possível notar que os antropologistas forenses no Brasil desempenham papéis essenciais na identificação de pessoas desaparecidas, tanto em contextos criminais quanto de desastres de massa. Nota-se um crescente ganho de relevância da área no Brasil, mas ainda com desafios estruturais. Considera-se que são necessários mais investimentos para manter a crescente e superar os desafios ainda existentes quanto a infraestrutura da antropologia forense no Brasil. Os resultados desse estudo devem ser interpretados à luz de suas limitações, o que inclui a não realização de análise de qualidade e o não pareamento da análise. Há necessidade de novas revisões sistemáticas sobre o tema, considerando uma abordagem de revisão pareada e com análise de qualidade a fim de maior rigidez científica e qualidade na síntese das evidências.

Palavras-chave: Antropologia Forense. Papel (Figurativo). Desastre de Massa. Identificação de Vítimas. Brasil.

RESUMEN

La antropología forense ha cobrado importancia en Brasil, por ejemplo, en el contexto de desastres masivos, personas desaparecidas e investigaciones criminales. Uno de los pilares del rol del antropólogo forense es la identificación, y Brasil no es la excepción. El rol de los antropólogos forenses se ha estudiado en diversos lugares del mundo, como Tailandia y Australia. En este contexto, este manuscrito científico busca analizar el rol de los antropólogos forenses en Brasil, describiendo las principales funciones de la profesión y aclarando similitudes y diferencias en comparación con otros países. Este estudio es una revisión sistemática e integradora de la literatura, siguiendo un protocolo preestablecido. Se realizaron búsquedas en las bases de datos PubMed (MEDLINE) y LILACS, complementadas con investigación adicional. Estas búsquedas en PubMed y LILACS arrojaron un número inicial (n) de 104 estudios. Tras eliminar los duplicados, quedaron 99 estudios. Tras leer los títulos y resúmenes, se excluyeron 85 estudios, dejando 14 artículos para la lectura completa. Finalmente, se excluyeron 13 estudios, quedando solo un artículo. Una búsqueda complementaria incluyó 5 estudios más relevantes, resultando en una "n" final de 6. Con base en los resultados, combinados con la discusión, fue posible observar que los antropólogos forenses en Brasil desempeñan un papel esencial en la identificación de personas desaparecidas, tanto en contextos criminales como de desastres masivos. El campo está adquiriendo creciente relevancia en Brasil, pero aún enfrenta desafíos estructurales. Se considera que se necesita mayor inversión para mantener este crecimiento y superar los desafíos restantes relacionados con la infraestructura de antropología forense en Brasil. Los resultados de este estudio



deben interpretarse a la luz de sus limitaciones, que incluyen la falta de análisis de calidad y la falta de análisis pareados. Existe la necesidad de nuevas revisiones sistemáticas sobre el tema, considerando un enfoque de revisión pareada y análisis de calidad para lograr mayor rigor científico y calidad en la síntesis de la evidencia.

Palabras clave: Antropología Forense. Rol (Figurativo). Desastre Masivo. Identificación de Víctimas. Brasil.



1 INTRODUCTION

The human race has different identities and variations by itself, for example, the identification of an individual by techniques and characteristics of the dental framework or by skeletal methods and individualities characterize, respectively, forensic dentistry and forensic anthropology (JAYAKRISHNAN; REDDY; VINOD KUMAR, 2021). Areas that are growing, given technological advances and the impossibility on certain occasions of using other methods of identification due to the lower availability of human remains (JAYAKRISHNAN; REDDY; VINOD KUMAR, 2021). The identification process is the basis behind the various roles played by the forensic anthropologist.

A mass disaster was defined as:

A severe disruption to the functioning of a community or society, causing widespread human, material, economic, and/or environmental losses that exceed the capacity of the affected community or society to cope, as highlighted by the *United Nations International Strategy for Disaster Reduction (2018)* (DE BOER et al., 2018).

In this context, one of the great roles of the forensic anthropologist is, through scientific and systematized methods, to identify the human remains of the victims. After all, the identification of the victims of these events is considered an important sign of respect not only for the deceased, but also for the family and friends of the survivors (DE BOER et al., 2018). In addition, identification may be legally required, for example, to assist criminal proceedings or facilitate the resolution of estates and/or inheritances (DE BOER et al., 2018).

Preparedness for disasters and/or mass fatalities is evolving as a discipline (WIERSEMA; WOODY, 2016). Significant field, morgue, and laboratory work performed by a variety of professionals has taken place in response to disaster on a global scale around the world in many contexts, including human rights investigation, natural and man-made disasters, and investigations of terrorist incidents over the past two decades (WIERSEMA; WOODY, 2016). Demonstrating why the role of the forensic anthropologist has gained importance in recent times. Large-scale mass disasters resulted in a literary subsidy that allowed and guided the creation of departments and committees to act in the face of these incidents, such as INTERPOL and the International Committee of the Red Cross (WIERSEMA; WOODY, 2016).



Different countries and localities have been studying the role of forensic anthropology in disasters or other events that pertain to their history, analyzing it from the perspective of their region. Forensic anthropology became established around the 1940s, when physical anthropologists were hired by government and law enforcement agencies to assist in the identification of unknown human remains (TRAITHEPCHANAPAI; MAHAKKANUKRAUH; KRANIOTI, 2016). As is to be expected, countries that have suffered mass disasters, such as the attack on the *World Trade Center* (September 11, 2001, United States of America) or national or civil wars (for example, as occurred in Argentina and Venezuela), have earlier recognized the value of forensic anthropologists as a vital part of interdisciplinary teams in the analysis of human remains in mass disasters (TRAITHEPCHANAPAI; MAHAKKANUKRAUH; KRANIOTI,

2016). The Thai perspective initially comes especially from the mass disaster resulting from the 2004 tsunami in Thailand, a natural catastrophe, which clearly indicated the lack of expertise in a country desperately in need of services to identify large numbers of victims and human remains simultaneously (TRAITHEPCHANAPAI; MAHAKKANUKRAUH; KRANIOTI, 2016).

Another study conducted scientific research in Switzerland in order to explore the level of knowledge and perception about forensic anthropology among other forensic professionals, police officers, and prosecutors (SIEBKE et al., 2023). The study explores that forensic anthropology is still little known and little used in the country, but there is a growing recognition of its potential and value, especially in cases of skeletonized or highly decomposed human remains (SIEBKE et al., 2023). In Australia, a scientific article describes the functions and processes of investigation of medicolegal deaths in Victoria, Australia (RANSON; BUGEJA, 2017). From the Australian perspective, collaboration between forensic anthropologists, pathologists, and the forensic medicine system is essential for the identification of victims in mass disasters and other complex cases (RANSON; BUGEJA, 2017).

From this perspective, the process of forensic identification of human remains remains a crucial and contributing role for forensic anthropologists in the investigation of deaths in various contexts and in various countries (WIERSEMA, 2016). In Brazil, forensic anthropology is deeply integrated with forensic medicine, together playing a key role in the identification of human remains, for example, in mass disasters, and in the elucidation of crimes (ANA CAROLINA BRITO et al., 2024). With regard to mass disaster, there are



two tragedies that have entered Brazilian history, the tragedies of Mariana and Brumadinho. On November 5, 2015, Brazil experienced its greatest environmental tragedy with the collapse of the Fundão dam in Mariana and, shortly thereafter, on January 25, 2019, it experienced its greatest social tragedy, which was the rupture of the Córrego do Feijão Dam, both representatives of terrible socio-environmental impact, with deaths, plant destruction and pollution (ROCHA, 2021). Where, after the rescue and rescue searches, the role of the forensic anthropologist became a crucial agenda in the role of human identification of these important Brazilian mass disasters.

In view of the above, the primary objective of this scientific manuscript is to expose the main roles of the forensic anthropologist in Brazil. With this, document similarities or divergences of the profession in comparison to other places in the world, making the roles of this professional in the Brazilian territory clearer.

2 METHODOLOGY

It is a literature review structured according to a specific protocol written prior to the beginning of the review, which leads to a systematic and integrative search of the existing literature on the research subject.

2.1 SURVEY QUESTION

The mnemonic PCC (P - population/participants, C - concept and C - context) was used to construct the following review question: "What are the roles of forensic anthropologists in Brazil?"

2.2 ELIGIBILITY CRITERIA

Participants: All types of studies in which forensic anthropologists provided health services to the population during the coping with mass disasters were included.

Concept: the concept was based on the roles of forensic anthropologists developed in Brazilian territory. Including current or historical experiences and problems, including in the context of mass disasters or missing persons.

Context: It was limited to studies on the role of the forensic anthropologist in the last 10 years, in the period from 2014 to 2024. Studies outside the time frame were not considered.

Types of sources: this literature review considered primary (original research) and secondary (systematic and non-systematic reviews) studies published, or not published, in national and international portals, repositories, and databases. Duplicate studies, no full text, and abstracts published in event proceedings were not considered.

Search strategy: initially, controlled descriptors (MeSH and DeCS) and non-controlled descriptors were identified, designed from the keywords of the search question, used for the construction of the initial search strategy, such as

"Identification", "Mass disaster", "Forensic Anthropology", "Forensic Anthropology", "Role", Brazil and "Brazil". Through experimentation, the syntax was refined and the search strategies adapted to each database or data repository used, for example, in PubMed with the syntaxes "(Role) AND (Forensic anthropology) AND (Brazil)" and ("Forensic Anthropology"[Mesh]) AND ("Brazil"[Mesh])", in LILACS with the syntax "Forensic Anthropology AND Brazil". The research was based on two databases, PubMed and LILACS (via VHL). In addition to the search in formal databases, a complementary investigation was carried out, including search syntaxes in scientific journals and journals, in order to enrich the understanding of the theme. Preprint databases were not searched.

Selection and screening of studies: the selection stage took place in June 2024 and, after the searches, all the identified records were grouped. The first stage consisted of the removal of duplicates; then the title and abstract reading stage. Ultimately, the analysis of the full text and references of the selected articles. The titles and abstracts, as well as the studies from the reference lists, were selected by an independent researcher, who evaluated the studies according to the eligibility criteria.

The exclusion criteria for this literature review were: studies outside the theme addressed, either because they do not address the role of the forensic anthropologist and/or do not address it in the context of Brazil; studies outside the time frame, that is, before 2014; duplicate studies or studies without full text; and abstracts published in annals of events.

Data extraction: general data, related to the identification of the studies, and specific data, related to participants, concept and context, were collected using a specific data extraction instrument, developed in the form of a Microsoft Excel spreadsheet, in line with the objective of the review. Thus, the extracted data included the main author, year of publication, title, country, journal, and the concepts of interest of the research. It

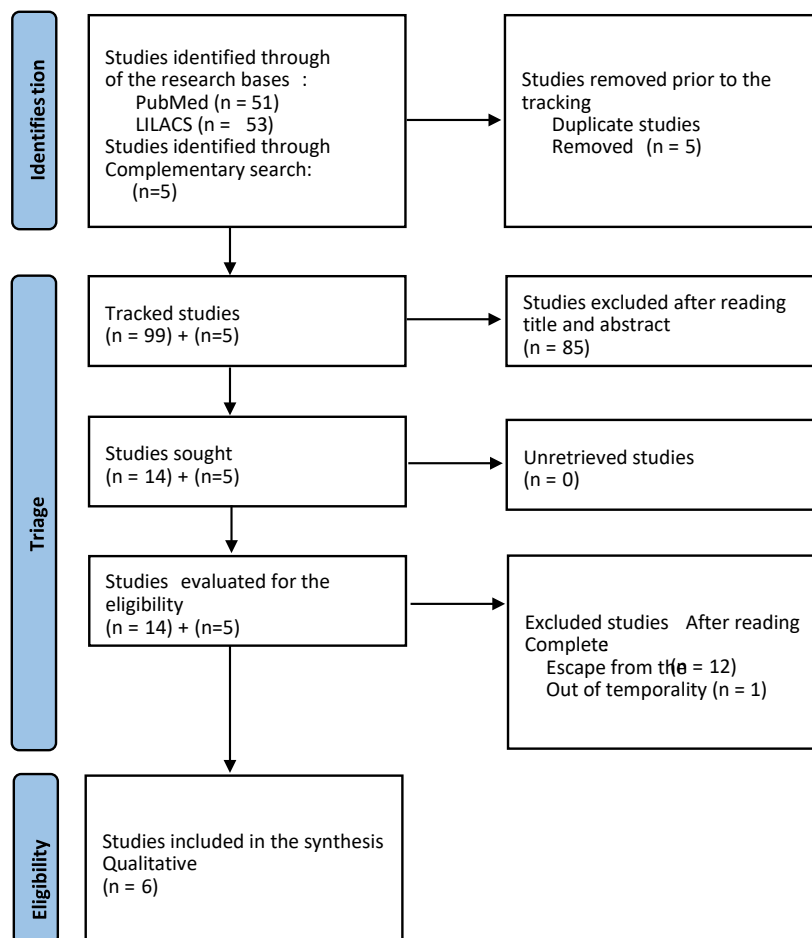
should be noted that there was no need to request any additional information or clarification about the data from the authors of the included articles.

3 RESULTS AND DISCUSSION

From the search strategies in PubMed and LILACS carried out, a number (n) of 104 studies was initially obtained. Duplicate articles were then removed, leaving 99 studies. After reading titles and abstracts, 85 studies were excluded, leaving 14 manuscripts for full reading. Finally, after reading it completely, 13 studies were excluded, leaving an "n" of 1 article. A complementary search was carried out, which led to the inclusion of 5 more studies pertinent to the present scientific manuscript. Thus, the sum of final articles eligible to be analyzed was n=6.

Figure 1

Adapted PRISMA 2020 study flowchart



Source: The author.

Regarding the characteristics of the studies, it was noted that the time interval between the oldest and the youngest was between 2016 and 2024. The origin of the main authors, in all the cases found, was from Brazil, as well as the focus of the studies was on the Brazilian population, which demonstrates the Brazilian commotion in better understanding forensic anthropology in Brazil.

One of the studies brought the approach of the forensic anthropologist in solving cases of missing persons and human trafficking through techniques to identify and recover human remains (CALMON, 2019). The article discusses the phenomenon of missing persons in the twenty-first century and the problems that still exist from a Brazilian perspective and, in this context, the forensic anthropologist in Brazil plays a primary role in, through scientific and systematic techniques and methods, assisting in the identification of these people (CALMON, 2019).

It is known that there are several forms of identification, classically the role of the forensic anthropologist is associated with techniques and methods using human remains, especially the skeleton, to identify a person, which is not at all wrong, but although the central role revolves around identification, this can be done by different methods, such as the help of computed tomography, photogrammetry, modeling and 3D scanning, each with its own details and applications. A Brazilian study discusses the facial reconstruction technique in forensic anthropology in Brazil, highlighting its importance in the identification of human remains (ANA CAROLINA BRITO et al., 2024).

In addition to identifying people in crimes or disappearances of isolated people, the forensic anthropologist also acts in collective disappearances, as occurs in mass disasters. A study analyzed the socio-environmental impacts of the tragedies that occurred at the Mariana dams in 2015 and the Brumadinho dams in 2019, which became historical milestones of mass disasters in Brazil (ROCHA, 2021). In view of this, the forensic anthropologist assumed a fundamental role in the identification of human remains in order to return them to their respective families as a form of dignity to those who lost their loved ones in these terrible disasters, exemplifying another role of the Brazilian forensic anthropologist.

Forensic anthropology in Brazil is coming to the fore for several reasons, among them its role in mass disasters and criminal cases, in addition, it is also growing in structure, it is estimated that there are at least 34 institutions where investigations are carried out in the area, and in academia, with, for example, the creation of the first journal

dedicated to forensic anthropology in Brazil "*Brazilian Journal of Forensic Anthropology & Legal Medicine*" (CUNHA, 2019). However, the country still lacks structure in many places, in the State of Pará there are structures for bioanthropological study of skeletons at the Renato Chaves Center for Scientific Expertise (COLAF) in Belém, demonstrating a deficit, which is corroborated by the fact that there are low rates of experts in this area (average of 2.5 experts per state) and only 62.5% of the states have specific laboratories (SILVA, 2016).

All these important roles of forensic anthropology are highlighted by another Brazilian study, which points to it as crucial in the identification of victims in cases of mass disasters, crimes, and situations of disappearance, which, together with the deficit, reinforces the need for greater investments in training and technology to improve the effectiveness of identifications (GARCIA, 2020). And large societies such as the *Forensic Anthropology Society of Europe* (FASE) share the position brought by Brazilian studies, such as the crucial role in the identification of human remains, especially in skeletonized cases, and also guides the need for systematization, adequate infrastructure, and continuous training to further strengthen the area (DE BOER et al., 2020). Ultimately, it should be said that with modernity new roles have emerged for the forensic anthropologist, such as molecular forensic anthropology that stands out in the presence of skeletal remains and other analyses cannot be performed (PILLI, 2022).

The realization of this scientific article was justified by the need to map the profession, since despite being an area established in other countries, forensic anthropology in Brazil is still growing, and it is of great value to map the current state of the profession, identifying the main roles, responsibilities and challenges faced by Brazilian forensic anthropologists, with this, filling knowledge gaps on the subject through an integrative and systematic view.

One of the limitations of the research was that the review was carried out without matching, thus increasing the probability of biases related to selection, contributing to inadequate comparison of studies. Another limitation was the failure to evaluate the quality of the included articles.

4 FINAL THOUGHTS

The present integrative and systematic review of the roles of the forensic anthropologist in Brazil highlights the growing importance of this specialty in the Brazilian



context. It has been shown that Brazilian forensic anthropologists perform primary functions in a forensic investigation, such as the identification of missing persons, identification of persons in the context of crimes, and identification of persons after mass disasters. Thus, it becomes clear that the primary role of this professional revolves around, based on scientific methods and techniques, identifying human beings, for example, with validated anthropological methods, with CT scans and other technologies.

However, despite this growth in forensic anthropology, it still faces significant challenges in Brazil, such as the lack of adequate infrastructure, a low number of specialized experts, and only 62.5% of the states having laboratories dedicated to the area. From this perspective, these mishaps need to be overcome, for example, through greater investments in order to boost this growth that forensic anthropology is going through (SILVA, 2016).

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