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EDITORA

ZOONOSES AND PUBLIC HEALTH: THE ROLE OF THE VETERINARIAN IN CONTROLLING EMERGING ZOONOSES IN RIVERSIDE COMMUNITIES OF PORTEL, MARAJÓ ISLAND, PARÁ STATE

ZOONOSES E SAÚDE PÚBLICA: O PAPEL DO MÉDICO VETERINÁRIO NO CONTROLE DE ZOONOSES EMERGENTES EM COMUNIDADES RIBEIRINHAS DO MUNICÍPIO DE PORTEL NA ILHA DO MARAJÓ NO ESTADO DO PARÁ

ZOONOSIS Y SALUD PÚBLICA: EL PAPEL DEL VETERINARIO EN EL CONTROL DE ZOONOSIS EMERGENTES EN COMUNIDADES RIBEREÑAS DEL MUNICIPIO DE PORTEL EN LA ISLA DE MARAJÓ EN EL ESTADO DE PARÁ

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ABSTRACT

Objective: This study aims to analyze the role of the veterinarian in the control of emerging zoonoses in riverside communities of the municipality of Portel, located on Marajó Island, State of Pará, highlighting the main sanitary risk factors and the possibilities for preventive action in public health.

Theoretical Framework: The research is based on the One Health approach, which integrates human, animal, and environmental dimensions in the fight against zoonoses,

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especially in vulnerable territories. Studies such as Silva et al. (2021) and Oliveira (2023) support the importance of veterinary involvement within the Brazilian Unified Health System (SUS).

Method: This is a qualitative exploratory study conducted between January and May 2025 in the agroextractive communities of Jacaré-Puru, Acangatá, and Alto Camarapí. Semi-structured interviews were conducted with residents and community health agents, along with direct observations and photographic records. Data were analyzed using the thematic content analysis technique.

Results and Discussion: The results revealed a lack of basic sanitation, consumption of untreated water, presence of free-roaming animals, and a shortage of preventive actions. The veterinarian's role proved to be essential but was practically absent in the studied communities, limiting surveillance and prevention strategies.

Research Implications: The effective integration of veterinarians into the SUS could significantly contribute to reducing zoonoses in traditional Amazonian communities, promoting collective health and equity.

Originality/Value: This study offers an applied perspective of Veterinary Medicine in riverside Amazonian contexts, highlighting local gaps and proposing evidence-based solutions.

Keywords: One Health. Emerging Zoonoses. Riverside Communities. Veterinarian. Amazon.

RESUMO

Objetivo: O objetivo deste estudo é analisar o papel do médico veterinário no controle de zoonoses emergentes em comunidades ribeirinhas do município de Portel, na Ilha do Marajó, Estado do Pará, destacando os principais fatores de risco sanitário e as possibilidades de atuação preventiva em saúde pública.

Referencial Teórico: A pesquisa fundamenta-se na abordagem de Saúde Única (One Health), que integra as dimensões humana, animal e ambiental no enfrentamento das zoonoses, especialmente em territórios vulneráveis. Estudos como Silva et al. (2021) e Oliveira (2023) sustentam a importância da atuação veterinária integrada ao SUS.

Método: Trata-se de uma pesquisa qualitativa de caráter exploratório, conduzida entre janeiro e maio de 2025, nas glebas Jacaré-Puru, Acangatá e Alto Camarapí. Foram realizadas entrevistas semiestruturadas com moradores e agentes comunitários de saúde, observações diretas e registros fotográficos. A análise dos dados seguiu a técnica de análise temática de conteúdo.

Resultados e Discussão: Os resultados evidenciaram ausência de saneamento básico, consumo de água não tratada, presença de animais soltos e carência de ações preventivas. A atuação do médico veterinário mostrou-se essencial, mas praticamente inexistente nas localidades visitadas, limitando estratégias de vigilância e prevenção.
Implicações da Pesquisa: A inserção efetiva do médico veterinário no SUS pode contribuir significativamente para a redução das zoonoses em comunidades tradicionais da Amazônia, promovendo saúde coletiva e equidade.

Originalidade/Valor: O estudo oferece uma perspectiva aplicada da Medicina Veterinária em contextos ribeirinhos da Amazônia, ressaltando e propondo soluções com base em evidências locais.

Palavras-chave: Saúde Única. Zoonoses Emergentes. Comunidades Ribeirinhas. Médico Veterinário. Amazônia.

RESUMEN

Objetivo: El objetivo de este estudio es analizar el rol de los veterinarios en el control de zoonosis emergentes en comunidades ribereñas del municipio de Portel, en la isla de Marajó, estado de Pará, destacando los principales factores de riesgo para la salud y las posibilidades de acción preventiva de salud pública.

Marco teórico: La investigación se basa en el enfoque Una Salud, que integra las dimensiones humana, animal y ambiental en la lucha contra las zoonosis, especialmente en zonas vulnerables. Estudios como los de Silva et al. (2021) y Oliveira (2023) respaldan la importancia de la atención veterinaria integrada en el SUS (Sistema Único de Salud).

Método: Se trata de un estudio cualitativo exploratorio realizado entre enero y mayo de 2025 en los barrios de Jacaré-Puru, Acangatá y Alto Camarapí. Se realizaron entrevistas semiestructuradas con residentes y agentes de salud comunitarios, así como observaciones directas y registros fotográficos. El análisis de datos se realizó mediante un análisis de contenido temático.

Resultados y Discusión: Los resultados revelaron la falta de saneamiento básico, el consumo de agua no tratada, la presencia de animales en libertad y la falta de medidas preventivas. El papel de los veterinarios fue esencial, pero prácticamente inexistente en los lugares visitados, lo que limitó las estrategias de vigilancia y prevención.
Implicaciones de la Investigación: La inclusión efectiva de los veterinarios en el Sistema Único de Salud (SUS) puede contribuir significativamente a la reducción de las zoonosis en las comunidades tradicionales amazónicas, promoviendo la salud colectiva y la equidad.

Originalidad/Valor: El estudio ofrece una perspectiva aplicada de la medicina veterinaria en contextos ribereños de la Amazonía, destacando y proponiendo soluciones basadas en la evidencia local.

Palabras clave: Una Salud. Zoonosis Emergentes. Comunidades Ribereñas. Veterinario. Amazonía.

1 INTRODUCTION

Zoonoses represent one of the greatest contemporary challenges to public health, especially in contexts of social and environmental vulnerability. These are infectious diseases that are naturally transmissible between animals and humans, with the potential to cause outbreaks and epidemics, especially in regions where sanitary conditions are precarious and access to basic health services is limited (World Health Organization, 2022). The advance of agricultural frontiers, deforestation, and the close coexistence between humans and domestic or wild animals favor the emergence of emerging zoonoses, many of which are still little known and underreported (Oliveira, 2023).

In Brazil, the veterinarian has a strategic role in the identification, control, and prevention of zoonoses, acting directly at the interface between animal health, human health, and the environment, according to the principles of the "One Health" approach (Silva et al., 2021). Its performance is especially relevant in rural and riverside communities, where the risks of contamination are amplified by the absence of basic sanitation, the consumption of untreated water and the frequent presence of domestic and wild animals in contact with the population.

In the municipality of Portel, located in the mesoregion of Marajó, state of Pará, the socio-environmental situation of the agroextractivist communities of the Jacaré-Puru, Acangatá and Alto Camarapí lands illustrates this reality well. In these communities, more than 93% of the households have inadequate basic sanitation, and it is common to dispose of sewage directly into the soil or rivers, the use of river water for human consumption and the absence of garbage collection (GOVERNO DO ESTADO DO PARÁ, 2013). Such conditions favor the spread of infectious diseases, such as malaria, leptospirosis, rabies and leishmaniasis, which have been historically reported in the region (SINAN, 2012).

Given this scenario, it is essential to discuss the role of the veterinarian in the formulation and implementation of integrated strategies for surveillance, health education and zoonosis control, with a special focus on riverside communities in the Amazon. The general objective of this study is to analyze the role of veterinarians in the control of emerging zoonoses in riverside communities in the municipality of Portel, on Marajó Island, highlighting the challenges and possibilities of action from a public health perspective.

2 THEORETICAL FRAMEWORK

The theoretical framework of this study is based on the One Health approach, which recognizes the interdependence between human, animal, and environmental health, especially in territories of high socio-environmental vulnerability such as the Legal Amazon

(FAO et al., 2019). This perspective has been widely adopted by international and national organizations in the fight against emerging zoonoses, highlighting the need for integrated actions between different sectors (WHO, 2022; Brazil, 2018).

According to Silva et al. (2021), the veterinarian has a strategic role in health surveillance actions, especially in the scope of primary care, and his or her performance in isolated territories with high exposure to risk factors is essential. In riverside communities, where there is precarious sanitary infrastructure, scarce access to health services, and close contact with domestic and wild animals, the risk of zoonoses is increased (Oliveira, 2023).

In addition, the literature points to the importance of health education and participatory surveillance as effective strategies for the prevention of zoonotic diseases, valuing local knowledge and strengthening multiprofessional action in the SUS (Brasil, 2018; Silva et al., 2021). The gap in the presence of veterinarians in territories such as Portel reveals a structural deficiency that compromises the effectiveness of public policies aimed at single health.

2.1 TABLES

Table 1

Risk factors for zoonoses and opportunities for veterinary care in riverside communities of Portel

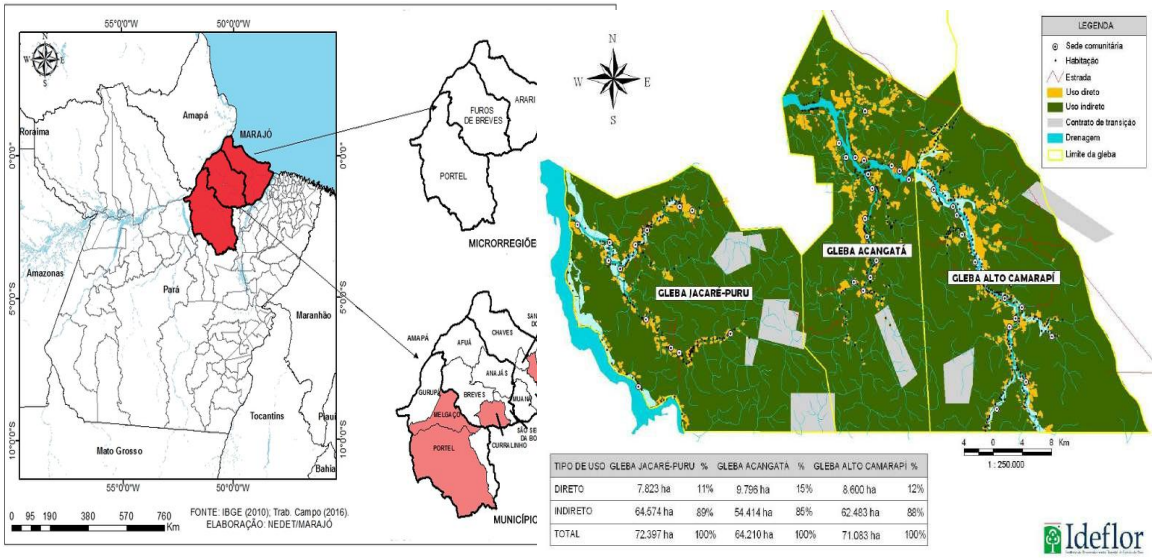
Risk Factor	Observed Frequency	Public Health Implications	Expected Performance of the Veterinarian
Lack of basic sanitation	Very common	Increases risk of waterborne disease (hepatitis, parasites, leptospirosis)	Participate in health diagnosis and health education on hygienic-sanitary measures
Presence of loose animals in the villages	Frequent	Increases the risk of zoonoses such as rabies, leishmaniasis, worms and bite accidents	Implement population management, vaccination and reproductive control programs for dogs and cats
Disposal of solid waste in soil and rivers	Very common	Creates foci for vectors such as mosquitoes and rodents, favoring arboviruses and leptospirosis	Integrate environmental surveillance actions and guide the correct disposal of waste with a sanitary focus
Low animal vaccination coverage	Frequent	It impairs the prevention of zoonoses such as rabies, brucellosis and leptospirosis	Carry out animal vaccination campaigns and participatory epidemiological monitoring
Consumption of untreated water	Very common	Contamination with agents such as *Giardia, E coli, Salmonella* and leptospires	Actions for water health surveillance and education on domestic purification methods

Hunting and contact with wildlife	Present in some areas	Transmission point of emerging zoonoses (hantavirus, yellow fever, wild leishmaniasis)	Conduct active surveillance and community education on the risks of handling and consuming wild animals
Deficiency of technical and sanitary assistance	Widespread	Lack of early diagnosis, underreporting of cases and disarticulation between human and animal health	Effective insertion in the SUS, integrating primary care and epidemiological surveillance teams

2.2 TITLE OF FIGURE

Figure 1

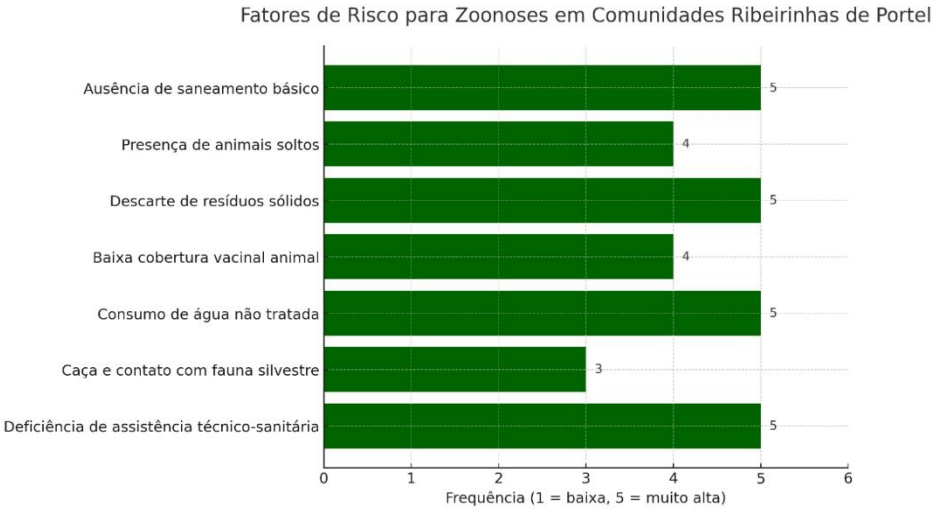
Map of the Marajó region The lands of the Municipality



Source: IBGE, (2010). IDEFLOR, (2013).

Figure 2

Frequency of the main risk factors for zoonoses in riverside communities in the municipality of Portel, Pará, based on the perception of residents and community health agents



Source: Field research data (2025).

2.3 DIRECT CITATION IN APA STANDARDS

"The performance of the veterinarian in riverside areas cannot be limited to animal clinical care. It is necessary that this professional is integrated into the actions of the SUS, contributing to sanitary surveillance and education in environmental health, with a focus on emerging zoonoses" (Silva et al., 2021, p. 144).

2.4 INDIRECT CITATION IN APA RULES

According to Oliveira (2023), the inclusion of veterinarians in isolated territories in the Amazon is an effective strategy to prevent zoonoses, considering the risks amplified by the lack of sanitation and contact with wild animals.

2.5 APA CITATION CITATION

The "One Health" approach has been defended as essential for Amazonian territories due to its ecological complexity (WHO, 2021, as cited in Oliveira, 2023, p. 102).

2.6 CITATION OF TWO AUTHORS IN THE APA RULES

According to Silva and Almeida (2022), the emerging zoonoses in riverside communities reflect the absence of integrated surveillance.

2.7 CITATION OF THREE OR MORE AUTHORS IN THE APA RULES

Herculano et al. (2021) point out that direct contact with animals loose in communities is one of the main vectors of emerging zoonoses in the Amazon region.

3 METHODOLOGY

This study was conducted through a qualitative exploratory approach, with the objective of understanding the occurrence of zoonoses and the challenges faced by riverside communities in the municipality of Portel, on Marajó Island, in the State of Pará. The choice of this approach is based on the need to capture local perceptions, practices, and realities that contribute to the emergence and spread of zoonotic diseases in contexts of vulnerability (Minayo, 2014).

The field research was carried out between January and May 2025, with on-site visits to the agroextractivist communities of the Jacaré-Puru, Acangatá and Alto Camaraph lands These locations were selected based on criteria of socio-environmental vulnerability, history of notifications of infectious diseases, and difficulties in accessing public health services and basic sanitation, as pointed out in the Socio-environmental Diagnosis of the Agroextractivist Communities of the Municipality of Portel (GOVERNO DO ESTADO DO PARÁ, 2013).

The techniques used for data collection included:

- Direct and systematic observations, recorded in a field diary;
- Semi-structured interviews with residents, community health agents (CHA) and primary health care professionals, totaling 25 participants;
- Photographic record, respecting the anonymity and free and informed consent of those involved.

The interviews addressed topics such as: perception of zoonotic diseases, living with domestic and wild animals, waste disposal, access to drinking water, hygiene care, presence of animal and human vaccination campaigns, and health surveillance actions. The interview instrument was developed based on previous studies on health surveillance and one health (FAO et al., 2019; Silva et al., 2021). The qualitative data were organized and analyzed through the thematic content analysis technique, as proposed by Bardin (2016), which allowed the identification of central categories related to risk factors and zoonoses prevention practices in the communities visited. The study respected the ethical principles of research with human beings, according to Resolution No. 510/2016 of the National Health Council, ensuring the anonymity of the participants and the use of the data exclusively for scientific purposes.

4 RESULTS AND DISCUSSIONS

The analysis of the data obtained in the field revealed a series of factors that favor the emergence and persistence of zoonoses in the riverside communities of the municipality of Portel, with emphasis on the localities inserted in the Jacaré-Puru, Acangatá and Alto Camarapí plots. Such factors include the absence of basic sanitation, the consumption of untreated water, the presence of loose domestic animals in the communities, the inadequate disposal of waste, and the scarce presence of continuous health surveillance actions. Interviews with residents and community health agents indicated that infectious and parasitic diseases are recurrent, especially during flood periods, when cases of diarrhea, fever, skin lesions and respiratory symptoms increase. In addition, the occurrence of suspected cases of leptospirosis, leishmaniasis and worms was reported, often not officially notified.

According to SINAN data (2012), the municipality of Portel has a high incidence of malaria (1,226 cases/100,000 inhabitants), leprosy (95.8 cases/100,000 inhabitants) and dengue (394.8 cases/100,000 inhabitants). The presence of environmental conditions favorable to the proliferation of vectors, such as standing water, absence of garbage collection and frequent contact with animals, aggravates this situation. In rural areas, 93.9% of households have inadequate sanitation, and the river is the main source of water for consumption (GOVERNO DO ESTADO DO PARÁ, 2013).

During the research, it was observed that the work of community health agents (CHA) is essential to mitigate health risks in the communities, but these professionals report the absence of training focused on zoonoses and single health. Studies such as that of Silva et al. (2021) highlight the importance of multiprofessional action with the involvement of veterinarians in health surveillance strategies in vulnerable territories. The scarce presence of veterinary professionals in primary care and environmental surveillance actions was pointed out as one of the main gaps in the local health system. This finding reinforces the need for effective insertion of this professional in public policies aimed at controlling zoonoses, especially in traditional and riverside communities (OLIVEIRA, 2023; WHO, 2022). Despite the relevance of the findings, it is important to highlight as a limitation of the study the fact that the data depended on the residents' reports, which may have influenced the accuracy of some information. Still, triangulation with direct observations and official documents contributed to strengthening the validity of the results.

5 CONCLUSION

The research carried out in the riverside communities of Portel evidenced a critical scenario in relation to risk factors for the occurrence of emerging zoonoses. The absence of

basic sanitation, the consumption of untreated water and the close coexistence between humans and animals were the main elements observed in the field that favor the persistence of these diseases. The importance of the veterinarian as a fundamental agent in the fight against zoonoses was evident, especially in rural and isolated areas, where the presence of this professional is still limited. Articulated action with community health agents and primary care professionals can expand the reach of prevention, health education and environmental surveillance actions.

The research reinforces the need for public policies aimed at the effective inclusion of Veterinary Medicine in the SUS, especially in vulnerable territories, such as the interior of the Amazon. It also emphasizes the urgency of promoting collective health actions with a focus on One Health, considering the interdependence between human, animal and environmental health. As a limitation, the study relied on primary data based on reports from residents and local professionals, which may restrict the accuracy of the information. However, triangulation with official documents and direct observations strengthened the consistency of the results.

As a future perspective, it is suggested the expansion of studies in other regions of Marajó Island, as well as the implementation of training programs aimed at zoonoses surveillance for local health agents and veterinarians, promoting greater integration between the areas of human, animal and environmental health.

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