Revista ARACÊ
ISSN: 2358-2472

PERCEPTION OF DOG AND CAT OWNERS ABOUT RESPONSIBLE GUARDIANSHIP, ANIMAL HEALTH CARE AND RISKS OF ZOONOSES TRANSMISSION IN SEROPÉDICA, RIO DE JANEIRO

https://doi.org/10.56238/arev6n3-197

Submitted on: 15/10/2024 **Publication date:** 15/11/2024

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ABSTRACT

The growing acquisition of companion animals associated with reproductive uncontrol and abandonment reveal that the absence of responsibility for the animal can pose risks to public health. Thus, the present study consisted of evaluating the knowledge of the Seropédica community about zoonoses, population control and responsible animal care. To this end, the aspects that support responsible guardianship were evaluated through a structured questionnaire applied to 417 tutors during the anti-rabies vaccination campaign for dogs and cats in the municipality of Seropédica, RJ. Data collection was conducted by students of the Tutorial Education Program - PET and volunteer students, both groups being undergraduate students in Veterinary Medicine at UFRRJ. The data obtained were organized using Microsoft Excel software and the descriptive analysis was performed using quantitative and qualitative methods. Through the analysis, it was revealed that 74.10% of people had between 1 and 3 animals at home, while 15.83%, 9.59% and 0.48% had between 4 and 5 animals, 6 or more animals and no animals, respectively. Regarding the practice of vaccination, 68.11% vaccinated their animals, 7.67% did not vaccinate and 24.44% vaccinated only against rabies in vaccination campaigns. Regarding the use of antiparasitic drugs, 85.13% used it in their animals, while 14.87% did not. In addition, 22.54% castrated all of their animals, 24.70% castrated only a few, and 52.76% did not castrate any of their animals. Regarding medical and veterinary care, 50.12% took their animals to the veterinarian, while 49.88% did not. Regarding castration, 69.78% of the owners stated that the measure is effective to prevent unwanted offspring, to promote the well-being of domestic animals (62.35%), to reduce stray animals (55.88%), to conserve

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wildlife (26.86%), to mitigate zoonoses (41.73%) and to preserve human health (32.61%). In addition, 77.22% defined stray animals as unowned, abandoned animals living on urban streets and 24.22% defined them as unowned, but community-assisted animals. Regarding the concept of responsible guardianship, they highlighted the care and well-being of the animal (53.00%), followed by responsibility (10.79%), guarantee of protection (1.92%), demonstration of love and affection (11.03%), in addition to daily actions such as bathing, walks, feeding and vaccination (16.31%), while 11.51% are unaware of the concept. 78.66% stated that the population of stray animals can affect human health, mainly by the transmission of diseases (53.00%), transmission of fleas (5.28%) or both (24.46%). Regarding zoonoses, 65.95% recognized the possibility of transmission of diseases from animals to humans, and 56.35% stated that they knew the term zoonoses, highlighting rabies (87.29%), scabies (70.98%), leptospirosis (53.96%), sporotrichosis (39.33%), toxoplasmosis (34.29%) and leishmaniasis (32.13%). These data provide a comprehensive view of the perception and knowledge of the participants in relation to veterinary public health issues, emphasizing that the investigated population is still uninformed, which reflects the challenge and demand of the continuous need for education and awareness about responsible custody and prevention of zoonoses.

Keywords: One Health. Public health. Population Control. Health Education.

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INTRODUCTION

Living and bonding with pets can bring numerous benefits to humans, such as reducing anxiety and stress levels. Due to changes in social and cultural habits, a bond has been created between man and animals, which requires tutors to take special care of their pets, so that they practice principles called responsible guardianship (Rodrigues et al., 2017). Responsible pet care is conceptualized as the condition in which the owner meets the environmental, physical and psychological needs of the animal, as well as prevents it from causing accidents, transmitting diseases or causing any damage to the community or the environment (Ishikura et al., 2017). Pet custody has been described in different parts of the world in relation to various social and behavioral determinants such as educational level, social class and family composition. However, little is known about the population of domestic animals and responsible guardianship in the Brazilian reality (Domingues et al., 2015).

In Brazil, in 2019, about 46% of households had at least one dog and about 19% had at least one cat according to data from the National Health Survey (PNS) released by the Brazilian Institute of Geography and Statistics (IBGE, 2021 a; b). The growing acquisition of companion animals is accompanied by significant public health problems, such as the overpopulation of abandoned animals, the spread of zoonoses, bite aggression and mistreatment (Andrade et al., 2015). According to the IBGE, in 2023, in the state of Rio de Janeiro, there were more than 3.4 million abandoned dogs and cats, and dogs accounted for the majority of animals, with 2.2 million cases, followed by cats, with 1.2 million.

The term "zoonosis", used since the nineteenth century, originally designated diseases in animals, but later came to include diseases transmissible between humans and animals. Humans have a long relationship of dependence on animals, which can act as reservoirs or sources of pathogen infection for human populations. Understanding the importance of preventing zoonoses implies considering strategic activities in the epidemiological context, such as animal vaccination and education about the direct and indirect risks of transmission, as well as practices that prevent the proliferation of vectors (Oliveira et al., 2022). Today, the "One Health" approach reinforces this integrated vision, recognizing the interconnectedness between human, animal, plant and environmental health. Established by Decree No. 12,007, of April 25, 2024, the Interinstitutional Technical Committee on One Health promotes a multisectoral and multidisciplinary response to face contemporary public health challenges (Brasil, 2024).

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Pet abuse, while historically underestimated and considered of lesser social relevance, has received increasing attention with increasing societal demand for justice for crimes against animals. Guardians who do not practice responsible custody are subject to maltreatment laws (Sousa et al., 2023). Forensic medicine and forensic veterinary medicine play essential roles when investigating harm to both human and animal health, reinforcing the concept of "One Health," which highlights the inseparable connection between animal, human, and environmental health (Ribeiro et al., 2020).

To strengthen this approach, disseminating concepts such as responsible ownership, population control, and prevention of zoonoses among children and young people becomes crucial. Health education aimed at this audience can promote a more ethical and responsible relationship with animals, contributing to a safe and conscious practice and strengthening, from an early age, the pillars of a more integrated public health (Ribeiro et al., 2020). In this sense, recent studies have sought to expand the understanding of the variables associated with responsible pet ownership and control (Barni et al., 2021; Penaforte et al., 2024). These data are essential to create educational materials aimed at different audiences, including people with low income and education, as well as dog and cat owners, providing an informed basis for the development of mechanistic models and new study designs, which can improve health education actions and population control practices in a comprehensive and inclusive way .

In view of these perspectives, this study aimed to analyze the perception of animal owners about the knowledge of responsible animal care, population control and animal health care, focusing on the understanding of the knowledge and practices adopted for the control of zoonoses in the municipality of Seropédica, RJ. In addition, health education work was carried out with these tutors aiming at health promotion through recommendations to promote more effective responsible custody.

METHODOLOGY

The present work involved a field research with an emphasis on public health education and training that used a questionnaire as a data collection instrument, applied to residents of the municipality of Seropédica, Rio de Janeiro, who participated in the rabies vaccination of dogs and cats in November 2023.

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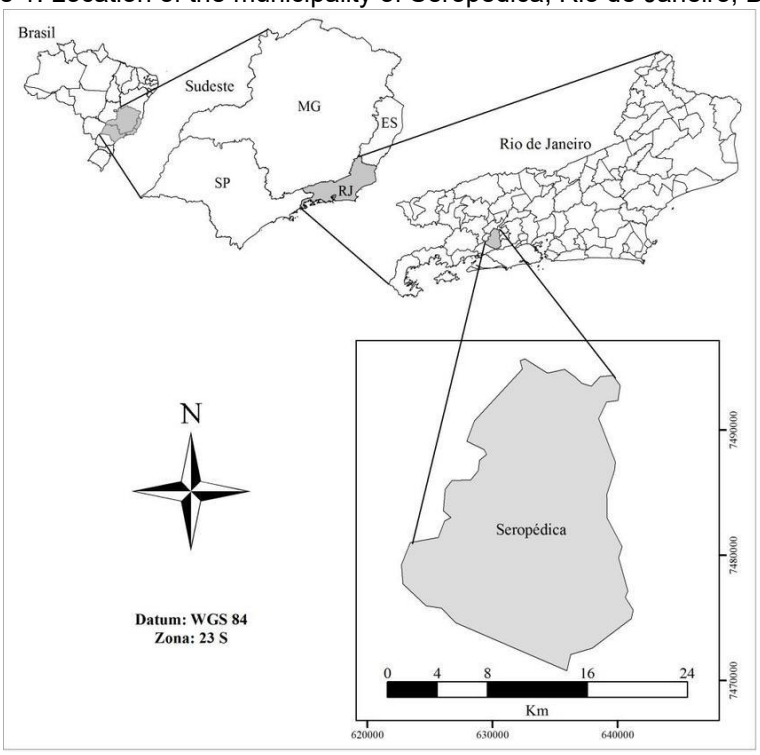
DELIMITATION OF THE STUDY AREA

The study was carried out in the municipality of Seropédica, located in the Metropolitan Mesoregion of Rio de Janeiro (Figure 1). According to the last census carried out by the Brazilian Institute of Geography and Statistics (IBGE, 2022), the resident population of Seropédica is 80,596 people, with a population density of 303.92 inhabitants per square kilometer, average monthly salary of formal workers of 3.6 minimum wages and Municipal Human Development Index (MHDI) of 0.713. The city occupies a territorial area of 283,634 km² and borders the municipalities of Rio de Janeiro, Nova Iguaçu, Japeri, Queimados, Itaguaí and Paracambi. It has 39,947 registered households and 29,321 occupied permanent private households. The choice of the study in this municipality was due to the significant presence of dogs and cats on the streets, many of which have tutors who allow the free unsupervised access of these animals.

Figure 1. Location of the municipality of Seropédica, Rio de Janeiro, Brazil.



ETHICAL ASPECTS

The research did not require approval by the Ethics Committee on the Use of Animals (CEUA), since it did not involve animal use/experimentation. However, all procedures followed the ethical guidelines for research with human beings, ensuring respect for the privacy and informed consent of the participants. The participation of the

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tutors in the questionnaire was voluntary, and it was ensured that there would be no form of coercion to answer the questions asked. Participants were informed about the purpose of the study, the use of the data collected, and their rights in relation to the research. During the interview process, the tutors were given a copy of the Informed Consent Form regarding the research.

SAMPLE DESIGN

To calculate the sample, the population size of 80,596 people (IBGE, 2022), a confidence level of 95%, and a precision of 5% were considered. Initially, the first approximation of the sample was calculated using the formula n = 1/d2. Then, the value of the first sample approximation was used to calculate the adjusted sample number, considering the size of the population, based on the following formula (Thrusfield, 2018):

$$\mathrm{n}adj = \frac{\mathrm{N\ x\ n}}{\mathrm{N + n}}$$

where: n*adj* = adjusted sample number; N = population size; n = first sample approximation, d = desired precision. Thus, the sample number of 398 tutors was calculated to be interviewed.

SAMPLING OF TUTORS

The research had the participation of undergraduate students of the Tutorial Education Program (PET) in Veterinary Medicine and volunteer students of the campaign, who received prior training on the topics to be addressed. The approach of the tutors took place randomly at 14 vaccination points strategically distributed throughout the municipality of Seropédica during the anti-rabies vaccination campaign for dogs and cats on November 11, 2023. These points were located in several neighborhoods of different social classes in the municipality. The inclusion criterion for participation in the research was to be the guardian/guardian of the animal at the time of vaccination and to be over 18 years of age.

DATA COLLECTION INSTRUMENT

The data collection instrument used in this research was an epidemiological questionnaire, previously validated in a sample of animal owners living on the campus of

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the Federal Rural University of Rio de Janeiro (UFRRJ). The questionnaire, consisting of 13 open-ended and closed-ended questions, consisted of two main sections: the first contained questions applied before the mentoring session on population control and responsible guarding; the second, applied after the tutoring, included two final questions designed to assess the clarity of the information transmitted and the satisfaction of the participants. The questionnaire was structured in the following thematic blocks: a) socioeconomic characteristics; b) information about the animals domiciled with the participants; c) knowledge about zoonoses and population control; and d) evaluation of the tutoring.

Data collection took place in person using the online platform *Google Forms* to optimize efficiency in the collection of responses. The main objective was to evaluate the level of understanding and perception of the participants about responsible guardianship, population control and zoonoses.

MENTORING ON POPULATION CONTROL AND RESPONSIBLE GUARDING

The tutoring was carried out with the support of didactic material/educational pamphlets (Figures 2 and 3), produced by the student members and the teacher of the PET group using Canva software. The pamphlets were given to the tutors to reinforce learning about zoonoses, population control and responsible guarding.

Figure 2. Front of the folder used in the tutoring of the research that evaluated the perception of tutors about population control and responsible guardianship. After the tutoring, the folder was donated to the tutors who participated in the rabies vaccination in Seropédica. Source: Elaboration by the authors (2023).

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Figure 3. Back of the folder used in the tutoring of the research that evaluated the perception of tutors about population control and responsible guardianship. After the tutoring, the folder was donated to the tutors who participated in the rabies vaccination in Seropédica. Source: Elaboration by the authors (2023).

DATA ANALYSIS

The data obtained in the research were organized in tables using Microsoft *Excel software* and the descriptive analysis was performed using quantitative and qualitative methods.

RESULTS

The characterization of the sociodemographic profile of the 417 interviewees who participated in the vaccination campaign in the municipality of Seropédica, on November 11, 2023, can be seen in Table 1. The survey showed a predominance of female participation, with 54.68% of the participants identifying themselves as "she/her", while 44.84% identified themselves as "he/him". Only 0.48% preferred not to declare their gender. The age group of the participants revealed that 20.14% were between 18 and 25 years old, 15.83% between 26 and 35 years old, 28.30% between 36 and 50 years old, and the highest proportion, 29.26%, was over 50 years old. A small percentage (4.80%) of the participants chose not to inform their age.

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Table 1 - Characterization of the sociodemographic profile of pet owners who participated in the D-day of the anti-rabies vaccination campaign for dogs and cats, Seropédica, RJ, Brazil, 2023.

Variable	Category	Participants	
		N	%
Gender	She/her	228	54,68
	He/him	187	44,84
	He preferred not to declare	2	0,48
Age	18 to 25 years old	84	20,14
	26 to 35 years old	66	15,83
	36 to 50 years old	118	28,30
	More than 50 years	122	29,26
	He did not want to inform	20	4,80

Source: The authors (2024).

Table 2, representing the second block of questions of the questionnaire about the animals that lived with the participants, it was revealed that most participants (74.10%) had between 1 and 3 animals in their residence, while 15.83% had between 4 and 5 animals and 9.59% had 6 or more animals, and 0.48% did not have animals. Regarding the vaccination of animals, 68.11% of the participants reported that their animals were vaccinated regularly, 7.67% did not vaccinate their animals regularly, and 24.44% vaccinated their animals only against rabies through vaccination campaigns. Regarding the use of antiparasitic drugs, 85.13% of the participants stated that they used antiparasitic drugs in their animals, while 14.87% did not.

Regarding castration, 22.54% of the participants castrated all their animals, 24.70% castrated only a few, and 52.76% did not castrate any animals. Regarding periodic visits to the veterinarian, the data showed that 50.12% of the participants took their animals to the veterinarian regularly, while 49.88% did not. These data provide insight into animal ownership and care among participants, reflecting animal health practices and specific needs of the population studied.

Table 2 - Information on the animals of tutors who participated in the D-day of the anti-rabies vaccination campaign for dogs and cats, Seropédica, RJ, Brazil, 2023.

Variable	Category	Participants	
		N	%

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Number of animals per household	None	2	0,48
	1 to 3 animals	309	74,10
	4 to 5 animals	66	15,83
	6 or more animals	40	9,59
Vaccination of animals	They are vaccinated	284	68,11
	Not vaccinated	32	7,67
	Only for Rabies, through vaccination campaigns	101	24,44
Use of antiparasitics in animals	Yes	355	85,13
	No	62	14,87
Castration of animals	All	94	22,54
	Some	103	24,70
	None	220	52,76
Periodic visit to the veterinary medical professional	Yes	209	50,12
	No	208	49,88

Source: The authors (2024).

Table 3, which addressed knowledge about zoonoses, population control and responsible guardianship, among the 417 participants, it was highlighted that the castration of animals was widely recognized as an effective measure to prevent unwanted offspring (69.78%), followed by the promotion of the welfare of domestic animals (62.35%), reduction in the number of stray animals (55.88%), mitigation of zoonoses (41.73%), preservation of human health (32.61%) and conservation of wildlife (26.86%). Regarding the perception of stray animals, most participants (77.22%) defined them as ownerless, abandoned animals living on urban streets, while 24.22% recognized them as animals without an owner, but assisted by the community.

Regarding the definition of responsible animal care, the participants mainly highlighted the care and well-being of the animal (53%), followed by daily actions such as bathing, walks, feeding and vaccination (16.31%), demonstration of love and affection (11.03%), as well as responsibility (10.79%) and guarantee of protection (1.92%). However, a significant portion (11.51%) indicated ignorance about the concept. The majority of participants (78.66%) recognized that the increase in stray animals can affect human health, mainly by transmitting diseases (53%), transmitting fleas (5.28%) or both (24.46%).

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Transmission of diseases from animals to humans was recognized by 65.95% of the participants as a possibility (Table 3).

Regarding knowledge about zoonoses, 56.35% of the participants had already heard about the subject, and the diseases most mentioned as potential involvements were: rabies (87.29%), scabies (70.98%), leptospirosis (53.96%), sporotrichosis (39.33%), toxoplasmosis (34.29%) and leishmaniasis (32.13%) (Table 3). These data provide a comprehensive overview of participants' perception and knowledge regarding animal-related public health issues, emphasizing the ongoing need for education and awareness on responsible guardianship and prevention of zoonoses.

Regarding the evaluation of the action carried out by the PET group, which included tutoring and distribution of pamphlets about stray animals and responsible guardianship, the following question was asked to the participants: "Do you consider that the tutoring carried out by the PET group clarified important questions about stray animals and responsible guardianship?". Of the total number of participants, 97.84% reported having received satisfactory clarifications with the action, while only 2.16% indicated that they had not obtained sufficient information. Tutoring was evaluated as "excellent" by 67.39% of the participants, followed by "good" (28.30%), "regular" (3.60%), and only 0.72% considered that the action did not bring significant benefits.

Table 3 – Knowledge of animal owners who participated in the D-day of rabies vaccination of dogs and cats in Seropédica, RJ, about zoonoses, population control and responsible guardianship.

Variable	Category	Participants	
		N	%
Importance of castration of animals	Avoid unwanted chicks	291	69,78
	Ensuring the well-being of domestic animals	260	62,35
	Reduce street animals	233	55,88
	Wildlife conservation	112	26,86
	Reduction of zoonoses	174	41,73
	Preserving human health	136	32,61
Insight into stray animals	Ownerless, abandoned animals that live on urban streets	322	77,22
	Animals without owners, helped by the community	101	24,22

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Knowledge about responsible animal care	Animal care and welfare	221	53
	Responsibility	45	10,79
	Ensure protection	8	1,92
	Love and affection	46	11,03
	Acts and actions (bathing, walking, feeding, vaccinating, etc.)	68	16,31
	General and legal definitions (having an animal, not abandoning, adoption)	24	5,76
	Lack of knowledge of the meaning	48	11,51
Knowledge about the relationship between the increase in the number of stray animals affecting the health of humans	Yes	328	78,66
	No	89	21,34
How would this increase affect human health?	Disease transmission	102	24,46
	Flea transmission	22	5,28
	The two alternatives above are correct	221	53
	No Response	172	41,25
Do you know that your pet can transmit diseases to you?	Yes	275	65,95
	No	142	14
Heard of Zoonoses	Yes	235	56,35
	No	182	43,65
Diseases that can affect humans	Esporotricose	164	39,33
	Leishmaniasis	134	32,13
	Mange	296	70,98
	Leptospirosis	225	53,96
	Anger	364	87,29
	Toxoplasmosis	143	34,29

Source: The authors (2024).

DISCUSSION

Health promotion and access to public services for the population is the responsibility of municipal and state authorities. It is currently known that there is an intrinsic relationship between man, animals and the environment, a concept known as "One Health", and the imbalance generated in one of these pillars can have repercussions on the health of

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everyone, including humans. For this reason, it is ineffective to develop health promotion and disease control measures focused only on humans, given the growing proximity of man, nature, domestic and wild animals (Brandão, 2016). This approach promotes the transmission of zoonotic diseases, which are those that affect animals and humans. Thus, a multidisciplinary approach is necessary, and one of the areas that focuses on this theme of integration and interdisciplinarity is Veterinary Medicine, since it recognizes and promotes the inseparability between animal, human and environmental health (Anjos et al., 2021).

In the present survey, only 56.35% of the interviewees knew the term zoonosis, although 78.66% of them believed that the increase in stray animals can affect human health. Therefore, it is necessary to disseminate information about zoonoses and their risk factors to the population in a more comprehensive way, warning that even domiciled animals can transmit infectious and parasitic agents, since the occurrence of zoonoses increases as the distance between humans and animals decreases. In 1946, the World Health Organization identified the importance of prevention as a way to contain the advance of zoonoses and the need for Veterinarians to study, create and establish such prevention actions, in addition to using disease surveillance in animals as a crucial tool to prevent epidemics in humans (Overgaauw et al., 2020).

Among the possible diseases that animals can transmit to humans, rabies was the most cited among the interviewees (87.29%), which may be related to the National Rabies Prophylaxis Program (PNPR) created in 1973, which implemented, among some actions, vaccination in dogs and cats. The PNPR resulted in a decrease in rabies cases in these animals, allowing the control of urban rabies in the country. Rabies, along with foodborne diseases, represents the most cited zoonoses in veterinary and human medicine studies, highlighting its notoriety in public health (Noguera et al., 2022). In the study presented, a considerable portion of the interviewees vaccinate their animals only against rabies, which may be related to the mass dissemination of vaccination campaigns, although better organization for health education actions is still needed (Silva et al., 2021). However, the absence of animal vaccination for other diseases and low adherence to factors associated with responsible guardianship, which includes other preventive care for the health of animals, may be associated with socioeconomic and behavioral factors of the owners (Penaforte et al., 2024; Barni et al., 2021).

In addition to vaccination, it is essential to highlight that other methods of preventing zoonoses, such as the use of antiparasitics, also need to be recognized by the population.

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Another effective method in reducing the spread of zoonoses is the castration of animals, which in addition to directly affecting the health and well-being of the animal, reducing the chances of having diseases related to the reproductive tract and having a longer stay in homes (Penaforte et al., 2022), also affects the population control of dogs and cats, reducing the number of stray animals in urban areas (Silva et al., 2014). However, despite having many benefits, 52.76% of the participants did not castrate any of their animals and only 32.61% believe that the castration of animals could preserve human health, which may be associated with socioeconomic factors. Barni et al., (2021) showed that guardians of animals with higher purchasing power had better levels of responsible guardianship, related to the castration of their animals, vaccination, and veterinary consultation, while the lowest levels were correlated with guardians with greater social vulnerability. The authors suggested educational actions aimed at specific audiences, such as tutors with lower income and education or cat-only tutors, in addition to the development of broader studies on the subject aimed at improving human attitudes towards animal welfare and the prevention of public health problems.

Scabies (70.98%) and leptospirosis (53.96%) were zoonoses recognized by the owners and are related to socioeconomic and environmental conditions, occurring in places with inadequate sanitation, overcrowding and limited access to health services (Carvalho, 2013). Only 32.13% of the interviewees recognized leishmaniasis among the zoonoses. This disease represents a public health problem that is increasingly present in the southeastern region of Brazil and has several associated predictors, including semi-domiciled dogs and dogs with free access to the street (Soares et al., 2022).

The work of health education and awareness of the population about the responsible care of animals carried out in the present work can be considered a strategic action for the prevention of zoonoses in the municipality of Seropédica, which is vulnerable due to the high number of abandoned and semi-domiciled animals. When responsible guardianship fails, it causes abandonment, contributes to the increase in the population of abandoned animals, and generates constant problems for the community, such as garbage dispersion, environmental contamination (resulting from the presence of pathogens in animal feces) in public areas, and transmission of zoonotic diseases (Barni et al., 2021).

Health education is essential in disease prevention, empowering the population with knowledge about healthy practices, health risks, and preventive measures (Anjos et al., 2021). In this field research, tutoring associated with the delivery of the educational folder

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proved to be effective, with 97.8% of the interviewees stating that it clarified important issues about stray animals and responsible guardianship. When the population receives clear and accurate information, they are more inclined to adopt healthy behaviors, seek preventive veterinary care, adhere to vaccination, and maintain hygiene practices. In addition, health education promotes informed decisions and a healthy lifestyle, resulting in public health benefits. Responsible animal ownership includes hygiene care, responsible breeding, feeding, and appropriate physical and mental challenges, and is essential to prevent problems in the human-animal bond. This type of education, led by veterinarians and physicians, contributes to the concept of One Health (Overgaauw et al., 2020).

CONCLUSION

The present study showed that the population interviewed in the municipality of Seropédica, Rio de Janeiro, is still unaware of the practices of responsible animal care, the real meaning of animal welfare and its serious consequences for public and animal health. This misinformation is revealed by the current situation in the region, where many animals do not receive basic care such as vaccination and regular veterinary medical follow-up. It is evident the imminent need for the government to invest in educational actions aimed at providing guidance on the health care of companion animals, including informing about the importance of castration, not only to avoid unwanted offspring but also to mitigate the spread of zoonoses.

ACKNOWLEDGMENTS

The authors thank the Federal Rural University of Rio de Janeiro, the Tutorial Education Program of the Ministry of Education and the National Fund for the Development of Education.

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