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Situational profile of equidae breeders in the municipality of Soure, Pará: an approach to glanders and adoption of relevant sanitary measures

Perfil situacional dos criadores de equídeos do município de Soure, Pará: uma abordagem quanto ao mormo e a adoção das medidas sanitárias pertinentes

Eloísa do Amparo Rodrigues do Carmo[1*], Solange de Araújo Melo[2], Clóvis Thadeu Rabello Improta[2], Kelly Cristiny Gomes da Paixão Albuquerque[3], Ana Paula Vilhena Beckman Pinho[4], Elaine Leão Queiroz Serrão[5]

ABSTRACT: A survey was conducted on the knowledge, attitudes, and behaviors of Equidae breeders in the municipality of Soure, Marajó Island, Pará, regarding animal health problems in the properties, especially glanders and adoption of sanitary measures that are pertinent to their combat, to elaborate on educational technical material with the appropriate methodology. The study included 50 interviewees from urban and rural areas of this municipality. Regarding data collection, structured interviews containing 22 multiple choice questions on the socioeconomic characteristics of breeders and/or owners of Equidae, breeding habits and models, and conceptions about sanitary control and their relationship with the animal health defense agency were conducted. From the qualitative analysis of data, 66% (33/50) interviewees were identified as literate, which facilitates the choice of the best language to use for communication. Regarding the choice of the best language for the transfer of information, 62% (31/50) interviewees said that a mobile phone is currently the best tool for transmitting information. Further, 40% (20/50) interviewees breed their Equidae extensively, raising an alert for epidemiological surveillance, and only 10% (5/50) interviewees turned to ADEPARÁ when the animals were sick. Based on the study results, Equidae breeders need guidance regarding the actions of the animal health defense services, and sanitary education is a fundamental measure for raising awareness and clarification of glanders to mitigate damage to public health and animal welfare, avoiding its spread in the State.

KEYWORDS: glanders; public health; health education.

RESUMO: Foi realizado um levantamento sobre conhecimentos, atitudes e comportamentos dos criadores de equídeos do município de Soure, na Ilha do Marajó, Pará, quanto aos problemas sanitários nas propriedades, em especial, ao mormo e a adoção de medidas sanitárias pertinentes ao seu combate - elaboração de material técnico educativo com metodologia adequada ao público-alvo trabalhado. A pesquisa contou com 50 entrevistados pertencentes às zonas urbana e rural desse município. Quanto a coleta de dados, foram realizadas entrevistas estruturadas contendo 22 questões de múltipla escolha referentes às características socioeconômicas dos criadores e/ou proprietários de equídeos; aos hábitos e aos modos de criação; às concepções sobre o controle sanitário e a relação destes com o órgão de defesa sanitária animal. Da análise qualitativa dos dados, observou-se que 66% (33/50) dos entrevistados são alfabetizados; o que facilita a escolha da melhor linguagem para o repasse de informações; 62% (31/50) elencou que o celular, atualmente, é a melhor ferramenta para a transmissão de informações; 40% (20/50) cria seus equídeos de maneira extensiva, representando um alerta à vigilância epidemiológica e apenas 10% (5/50) recorre à ADEPARÁ quando os animais adoecem. Com base no estudo, foi possível concluir que os criadores de equídeos necessitam de orientações quanto às ações do serviço de defesa sanitária animal, sendo a educação sanitária medida fundamental para conscientização e esclarecimento deles sobre o mormo, de maneira a mitigar seus danos à saúde pública e ao bem-estar dos animais, evitando sua propagação no Estado.

PALAVRAS-CHAVE: Mormo; Saúde Pública; Educação Sanitária.

[1]Universidade Estadual do Maranhão (UEMA), Programa de Pós-graduação em Defesa Sanitária Animal, Cidade Universitária Paulo VI, São Luís/MA; Agência de Defesa Agropecuária do Estado do Pará – ADEPARÁ, Travessa Mariz e Barros, n° 1.184, Belém/PA
[2]Universidade Estadual do Maranhão (UEMA), Departamento de Patologia, Programa de Pós-graduação em Defesa Sanitária Animal, Cidade Universitária Paulo VI, São Luís/MA
[3]Universidade Federal do Pará (UFPA), Programa de Pós-graduação em Análises Clínicas Profissional, Rua Augusto Corrêa, Campus Básico, Instituto de Ciências Biológicas, Belém/PA; Agência de Defesa Agropecuária do Estado do Pará – ADEPARÁ, Travessa Mariz e Barros, n° 1.184, Belém/PA
[4]Universidade de São Paulo (USP), Programa de Pós-graduação em Epidemiologia Experimental aplicada às Zoonoses da Faculdade de Medicina Veterinária e Zootecnia da Universidade de São Paulo, Avenida Prof Orlando Marques de Paiva, n° 87, São Paulo/SP; Agência de Defesa Agropecuária do Estado do Pará – ADEPARÁ, Travessa Mariz e Barros, n° 1.184, Belém/PA
[5]Agência de Defesa Agropecuária do Estado do Pará – ADEPARÁ, Travessa Mariz e Barros, n° 1.184, Belém/PA
*Corresponding author: eloisadocarmo@yahoo.com.br
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INTRODUCTION

Horse breeding in Brazil occupies a prominent place with the agroproductive chain, especially with regard to technological advances and improvements in the genetic contribution of Equidae production and generation of jobs (MAPA, 2016). The importance of this sector has a significant impact on the restructuring and consolidation of the legal bases of the National Equine Health Program (NEHP), either in the deployment of epidemiological studies, health education, traffic control, registration, sanitary inspection, or certification.

According to the agricultural census conducted by the Brazilian Institute of Geography and Statistics (*Instituto Brasileiro de Geografia e Estatística* - IBGE), Brazil registered 5,815,134 equines in 2019, with the Midwest region having the highest number (1,416,029 animals). The State of Pará has a population of approximately 445,603 equines, distributed in an area of approximately 1,247,955,238 km², occupying the fourth position in Brazil in equine breeding (IBGE, 2019). In most livestock farms, equine equines are bred alongside other species and the animals are used in animal management and transport practices. Therefore, diseases such as glanders, due to their zoonotic character, take on some importance.

Glanders, a zoonotic bacterial infection caused by *Burkholderia malle,* belongs to the World Organisation for Animal Health's (OIE) list of diseases; thus, it requires mandatory notification of any suspicious case (OIE, 2013). It is a highly contagious disease that mainly affects horses, mules, and donkeys (VAN ZANDT et al., 2013). In humans, the disease is fatal (ALIBASOGLU et al., 1986). Glanders was first identified in Brazil in 1811, with the introduction of horses from the region of Porto, Portugal on Marajó Island, Pará State (PIMENTEL, 1998). According to MOTA (2006), there is no drug-based treatment for treating animals with this infection, and it is necessary to adopt bite control measures to prevent the spread of the pathogen.

Thus, prior detection of the disease through a diagnostic test for suspected clinical cases and screening of apparently normal horses is essential for disease control and prophylaxis (MOTA et al., 2000). Accordingly, through Normative Instruction n°06 (BRASIL, 2018 a.), the clinical and epidemiological investigation of equines located in the epidemiological unit under investigation was established for the control and prophylaxis of glanders, among other criteria, followed by isolation of suspected and/or confirmed cases, implementation of sanitation measures, and notification of the occurrence of the disease to local public health authorities.

IMPROTA (2015) proposed an educational diagnosis as a tool capable of defining the profile of the public and its environment, which is essential to develop an educational project that aims at cognitive, affective, and psychomotor changes in a population about a health problem perceived by the Health Defense or by the community itself.

MATERIALS AND METHODS

Study area

The study was conducted in the municipality of Soure, which is located in the physiographic zone of Marajó and islands, located at Latitude 00° 40' 3" South and Longitude 48° 30' 27" West.

Target audience

Rural owners of equines and/or Equidae breeders in the municipality of Soure.

Educational diagnosis

The study was conducted to elaborate on the educational diagnosis established through structured and unstructured interviews and direct observations so that the information obtained was necessary to better understand the reality existing in the locality. The questionnaire included subjective and objective questions on the sociocultural and economic profile and on perceptions of this zoonosis. The analyses of the questionnaires helped in decision making about the approach to be used from the material on educational actions.

Structured interviews

Equidae owners were interviewed directly after they provided written informed consent. The responses were provided directly by Equidae breeders and/or owners using an interview script composed of 22 multiple-choice questions that addressed aspects related to the socioeconomic characteristics of Equidae breeders and/or owners, breeding habits and models, conceptions about health control, and the relationship between the interviewees and the animal health defense agency. The data obtained (questionnaires and observations *in loco*) were tabulated and processed, after which they were analyzed and interpreted. The information was stored in electronic spreadsheets and then ordered and presented in tables, which allowed for a good view of the set of variables. Descriptive statistical analyses were performed, obtaining absolute and relative frequencies.

Following Resolution N°466 of December 12, 2012 (BRASIL, 2012), especially development criteria and ethical engagement, the present study sought to mitigate the risks that the study could promote, applying the questionnaire as quickly as possible, maintaining the confidentiality of the interviewee, and avoiding discomfort and embarrassment.

Unstructured interviews

Questions were elaborated to take care of subjects that were not addressed during the structured interview or that arose

and had some relevance according to the interviewer during direct observations.

Direct observations

Aspects of the interviewees' daily lives were recorded, including what was not addressed during structured and unstructured interviews, seeking general aspects, the breeding system, and the management of property. Thus, it was observed that the topography of the area is flat, with the presence of flooded soil, which hampered access to the communities located in the rural area of the municipality, thus requiring the use of motorized canoes in the river channels for movement. Properties located in urban areas were easily accessible. The state and condition of the properties' headways varied; some had simple and very precarious structures, while others had wooden constructions with masonry pillars.

The properties closest to the municipality headquarters have electricity; however, most of them have solar energy. Some of the corrals are in good condition. Other properties did not have these facilities for the safe management of animals, who are raised loosely in the field. Only three properties had stables. Regarding the use of water recipients, the animals share the same recipient. The waste produced in the properties is incinerated. In relation to the interviewees' behaviors, some were receptive. However, they were quiet at the beginning of the interview.

Sample calculation

The sample size was calculated based on the number of rural properties with registered Equidae from the municipality of Soure, according to the Agricultural Integration System (*Sistema de Integração Agropecuária* – SIAPEC). The city has 174 properties with 15,215 Equidae, 123 with 14,698 horses, 39 with 446 mules, and 12 with 71 donkeys (ADEPARÁ, 2019).

Accordingly, the study was conducted in 50 (approximately 49.58) rural properties with Equidae; the value was calculated using the formula for calculating the sample size for a reliable estimate of the population proportion (p) given by:

$$n = \frac{\frac{z^2 \times p\,(1-p)}{e^2}}{1 + \left(\frac{z^2 \times p\,(1-p)}{e^2 N}\right)}$$

where
n = number of individuals in the sample
N = total population size
z = z score (1.96)
p = Population proportion of individuals belonging to the category we are interested in studying
e = Margin of error or maximum error of estimation (in percentage in decimal format) that identifies the maximum difference between the sample proportion and the true population proportion (p), with a margin of error of 5%.

Inclusion criteria

- Rural owner of Equidae and/or Equidae breeder in the area in question
- Rural owner of Equidae and/or Equidae breeder not registered with ADEPARÁ
- Rural owners of Equidae and/or Equidae breeders who agreed to participate in the study, after knowing the objectives and importance of the study, by signing the informed consent form (ICF).

Exclusion Criteria

- Rural owner of Equidae and/or breeder of Equidae outside the area defined by the project
- Properties with breeders who previously bred Equidae and gave up the activity
- Owners of Equidae and/or Equidae breeders who did not agree to participate in this study, after knowing the objectives and importance of this work, by not signing the ICF.

Epidemiological study

A descriptive, epidemiological study was performed using an exploratory analytical approach. The delimitation of the study area was based on intentional non-probabilistic sampling. The study followed the sequence outlined below:

- Presentation of the team and invitation to participate in the study
- Presentation of questionnaires to the target audience
- Application of the knowledge questionnaire for the rural owners of equidae and/or breeders of equidae of the municipality of Soure
- Data tabulation
- Quantitative and qualitative analysis of the study performed

Ethics committee

The research was conducted according to ethical precepts, respecting the guidelines established through Resolution No. 196 of October 10, 1996, of the National Health Council (*Conselho Nacional de Saúde* - CNS), (BRASIL, 1996). The Project was submitted to the Research Ethics Committee involving Human Beings (REC) of the State University of Maranhão (*Universidade Estadual do Maranhão* - UEMA), through *Plataforma Brasil*, being approved with the Certificate of Presentation for Ethical Appraisal (CAAE) n° 29895820.9.0000.5554.

Statistical analysis

All the data collected using the questionnaires were recorded and tabulated in Excel spreadsheets, and the information obtained in epidemiological data surveys, in general, was analyzed using descriptive statistics.

RESULTS AND DISCUSSION

From the total of 50 properties obtained via sample calculation, 50 people (landowners and/or Equidae breeders) agreed to participate in the study. The data referring to these subjects who participated in the study are summarized in Tables I, II, III, and IV. The results show that 98% (49/50) of the interviewees were older than 20 years. PEREIRA et al. (2020) reported that breeders aged above 30 years represent a group of more experienced people that are more likely to adhere to the guidelines of animal health programs. Regarding the level of education, there was a predominance of literate individuals (33/50; 66%), which facilitated the choice of the best verbal language to be used in the transfer of information.

There were properties with various sizes in the sample population, from small family properties to large productive properties, as shown in Table I. One can also observe the low level of organization of the participants, with only 4% (2/50) being affiliated with Cooperatives, 2% (1/50) affiliated with Trade Unions, 6% (3/50) participated in Producer Associations, 2% (1/50) participated in Community Associations, and 80% (40/50) were not affiliated with Class Entities (Rural). For owners, belonging to the trade associations is important for their representation, participation, and co-responsibility with health programs for disease prevention (PEREIRA et al., 2020).

The means of communication determines the vehicle by which the producer must receive the information, reflecting on its acceptance, applicability, and success of the project. In this respect, the study points out that currently, cell phones are the best tool for forwarding information in the municipality, as declared by 62% of the interviewees (31/50). Regarding the best time to gather information, it was verified

Table 1. Sociocultural profile of Equidae breeders in the municipality of Soure/PA (n = 50).

Variable	n (%)	Variable	n (%)
Age group (years)		*Association*	
Less than 20 years	1 (2%)	Cooperative	2 (4%)
From 20 to 30 years	15 (30%)	Trade union	1 (2%)
From 31 to 40 years	12 (24%)	Producers Association	3 (6%)
From 41 to 50 years	7 (14%)	Community Association	1 (2%)
Over 50 years	15 (30%)	Does Not Participate	40 (80%)
		Did Not Reply	3 (6%)
Schooling			
Illiterate	1 (2%)	*Preferred Means of Communication*	
Primary incomplete	5 (10%)	Radio	1 (2%)
Primary complete	3 (6%)	Radio/Television/Cell phone	2 (4%)
Secondary incomplete	4 (8%)	Television	3 (6%)
Secondary complete	21 (40%)	Television/Cell phone	3 (6%)
Did not respond	16 (32%)	Cell phone	31 (62%)
		Cell phone/Internet	3 (6%)
Property area (ha)		Television/Cell phone/Internet	1 (2%)
Up to 5 ha	17 (34%)	Internet	6 (12%)
From 5 to 10 ha	8 (16%)		
From 10 to 20 ha	1 (2%)	*Preference to receive information (time)*	
From 20 to 50 ha	4 (8%)	Morning (5:00 am to 12:00 pm)	8 (16%)
Above 50 ha	10 (20%)	Noon (12:00 pm to 2:00 pm)	4 (8%)
Did not respond	10 (20%)	Noon (12:00 pm to 2:00 pm)/Afternoon (2:00 pm to 6:00 pm)	1 (2%)
		Afternoon (14:00 to 18:00)	11 (2%)
		Night (after 18 h)	16 (32%)
		Did not respond	10 (20%)

Table 2. Profile of the interviewees regarding the habit of breeding Equidae (n = 50).

Variable	n (%)	Variable	n (%)
Number of Animals on the property		***Origin of Equidae***	
Up to 10 animals	38 (76%)	Birth on the property	13 (26%)
From 11 to 20 animals	1 (2%)	Birth on the property/Stable/Breeding Farm/Horse Farm	2 (4%)
More than 40 animals	5 (10%)	Stable/Breeding Farm/Horse Farm	11 (22%)
Did not respond	6 (12%)	Neighbor/friend/relative	14 (28%)
		Fields	6 (12%)
Animals on the property (species)		Did Not Reply	4 (8%)
Equine	17 (34%)		
Equine/Swine	3 (6%)	*Purpose of Equidae breeding*	
Canine/Equine	7 (14%)	Sport/Leisure	16 (32%)
Bovine/Equine	6 (12%)	Sale	8 (16%)
Canine/Bovine/Equine	4 (8%)	Work	15 (30%)
Canine	2 (4%)	Sport/Leisure/Sale	2 (4%)
Canine/Equine/Goat/Sheep	1 (2%)	Sport/Leisure/Sale/Exchange	1 (2%)
Bovídeo/Equine/Goat/Sheep	2 (4%)	Sport/Leisure/Pet	1 (2%)
Canine/Bovine/Equine/Swine	4 (8%)	Sport/Leisure/Work	1 (2%)
Canine/Bovine/Equine/Goat/Sheep	1 (2,%)	Sale/Work	2 (4%)
Canine/Equine/Swine/Goat/Sheep	1 (2%)	Exchange	1 (2%)
Canine/Bovine/Equine/Swine/Goat/Sheep	2 (4%)	Pet	1 (2%)
		Did Not Reply	2 (4%)

Table 3. Conception of the interviewees regarding the breeding method of Equidae breeding (n = 50).

Variable	**n (%)**	**Variable**	**n (%)**
Breeding method of Equidae		***Origin of water supplied to Equidae***	
Loose in the Fields all day	20 (40%)	Well	14 (28%)
Loose in the Fields all day/Stable	1 (2%)	Pipe-borne water	23 (46%)
Released during the day and held at night	14 (28%)	River water/River channel	5 (10%)
Held in pickets	11 (22%)	*Cachimba*	1 (2%)
Stables	2 (4%)	Well/Pipe-borne water	1 (2%)
Held by day and released at night	1 (2%)	Well/River water/River channel	1 (2%)
Released during the day and held at night/Held in pickets	1 (2%)	Pipe-borne water/River water/River channel	1 (2%)
		Did not respond	4 (8%)
Food offered to Equidae			
Ration	6 (12%)	Water Container	
Grass	14 (28%)	Plastic	33 (66%)
Ration/Grass	22 (44%)	Tire	1 (2%)
Feed/Grass/Corn	3 (6%)	Does not provide water, lets Equidae seek water in nature	9 (18%)
Ration/Grass/Hay	2 (4%)	Plastic/Metal	2 (4%)
Did Not Reply	3 (6%)	Plastic/Does not provide water, lets Equidae seek water in nature	3 (6%)
		Did Not Reply	2 (4%)

Table 4. Responses of the interviewees regarding the sanitary control of Equidae (n = 50).

Variable	n (%)	Variable	n (%)
Knowledge about ADEPARÁ		***Medication used in Equidae***	
Government body involved with trade and export	1 (2%)	Anthelmintics	6 (12%)
Government body involved with trade and export/ Associative entity linked to rural producers	1 (2%)	Vaccine	1 (2%)
Government body involved with animal health	24 (48%)	Antibiotic	6 (12%)
Government body involved with animal health/ Government Agency that helps the small breeder	2 (4%)	Doesn't do anything	1 (2%)
Government body that helps the small breeder	2 (4%)	Anthelmintics/Vaccine	3 (6%)
Government body that helps the small breeder/ Associative entity linked to rural producers	1 (2%)	Anthelmintics/Antibiotic	7 (14%)
Association linked to rural producers	1 (2%)	Anthelmintics/Vitamin/Antiparasitic	4 (8%)
Did not respond	18 (36%)	Vaccine/Antibiotic	2 (4%)
		Antibiotic/Vitamin/Antiparasitic	3 (6%)
Who they turn to when animals are diseased		Anthelmintics/Vaccine/Vitamin/ Antiparasitic	2 (4%)
They turn to the Veterinary Doctor	25 (50%)	Anthelmintics/Antibiotic/Vitamin/ Antiparasitic	9 (18%)
They turn to the Veterinary Doctor/Agricultural Products Store	1 (2%)	Anthelmintics/Antibiotic/Does Nothing	1 (2%)
They turn to ADEPARÁ	5 (10%)	Anthelmintics/Vaccine/Antibiotic/ Vitamin/Antiparasitic	3 (6%)
They use the Agricultural Products Store	15 (30%)	Anthelmintics/Vaccine/Vitamin/ Antiparasitic/Does Nothing	1 (2%)
Did not respond	4 (8%)	Anthelmintics/Vaccine/Antibiotic/ Vitamin/Antiparasitic/Does Nothing	1 (2%)
Attitude when Equidae get sick		***Attitude when Equidae die***	
Treats them	14 (28%)	Burn's them	9 (18%)
Sacrifices them	10 (20%)	Buries them	15 (30%)
Provides Vitamins	10 (20%)	Leaves them in the waste dump	14 (28%)
Doesn't do anything	2 (4%)	Leave's them in the fields	10 (20%)
Sacrifices/Provides Vitamins	3 (6%)	Burn's/Buries	1 (2%)
Did Not Reply	11 (22%)	Burn's/Leaves them in the fields	1 (2%)

that the daytime is the period of preference for gathering information, as reported by 48% of the participants (24/50). According to PIGNATARI (2002), communication represents the sharing of elements, way of life, and behavior through norms, in which the information to be transmitted requires a source, destination, and channel.

Table II shows that 76% (38/50) of the interviewees had up to 10 animals. Equidae breeding, perhaps, being an activity that economically involves large investments (high cost of raising animals), whether in genetics, leisure activities or with the drug, cosmetics, and accessories chain, is occasionally classified as an elitist area (MAPA, 2016). Within this aspect, 34% (17/50) of the interviewees only reared Equidae while 66% (33/50) reared them together with other breeds given the high investment required, not having Equidae as their main activity. Twenty-eight percent (14/50) of the Equidae originated from the properties of neighbors, friends, or relatives while 26% (13/50) were born on the property.

The origin of the animals directly or indirectly interferes with the power of dissemination, reduction, or elimination of the risk of transmission of the disease, considering the exposed population, the animal species involved, the affected area, and the period determined. The risk is an estimate of the likelihood of the existence of a source of infection (BRASIL, 2007). According to the data obtained, Equidae are created for various purposes: sport/leisure, sale, work, exchange, or even for use as pets, as shown in Table 2. According to the Study of the Horse Agribusiness Complex (MAPA, 2016),

Equidae are found in establishments with various purposes: commercial (bred-to-sell products); professional (provision of services to third parties, e.g., riding schools) and individual (bred for personal use).

According to Table III, Equidae are bred extensively in 40% (20/50) of the properties, representing an epidemiological surveillance alert of the municipality of Soure, given the risk of spreading diseases among animals. Regarding the feed offered to Equidae, 22/50 of the interviewees (44%) offered ration and grass. Pipe-borne water represented 46% (23/50) of the origin of the water supply to these animals, 66% (33/50) provided water using a plastic container, and 18% (9/50) did not provide water but rather allowed their animals to get it for themselves.

The offer of good feed and good quality water directly interferes with the nutritional, body, and physiological conditions of the animals. To achieve these conditions, it is necessary to comply with the set of ideas called 'the five freedoms:' freedom from hunger and thirst, freedom from discomfort, freedom from pain, injury, and disease, freedom to express normal and natural behavior, and freedom from fear and distress (CCBEAF, 1967).

With regard to health control, when asked about the Animal Health Defense Agency, half of the interviewees (24/50;50%), recognized ADEPARÁ as the government agency involved with animal health (Table IV). Although they recognized ADEPARÁ, more work in terms of education and communication is required to promote a greater knowledge of this Agency and its Health Programs with this public, as only 10% (5/50) use this entity when the animals get sick; 50% (25/50) respondents admitted to having solicited the services of a veterinarian, 28% (14/50) respondents followed their own treatment, 20% (10/50) provided vitamins, and 20% (10/50) euthanized sick Equidae.

The information obtained using these questionnaires also revealed that 98% (49/50) of the interviewees use some form of medication in their animals. Regarding the fate of animals, when they died, 30% (15/50) indicated burying them, a condition liable to the generation of epidemiological risks considering the microorganisms present in the bodies of animals, leading to a possible contamination of the soil, surface water, and groundwater, as observed by FIGUEIREDO FILHO (2010). Direct observations indicate that the owners/breeders recognize that the correct destination of animal carcasses is one of the animal health safety measures used to prevent the occurrence of animal diseases on the properties. However, guidance and awareness measures are still needed for breeders and/or owners of Equidae as strategies to prevent and control the occurrence of diseases in Equidae. QUADROS (2015) warns about the risks associated with the incorrect disposal (directly in the soil) of dead animals, which leads to the release biological residues (disease-causing agents) that contaminate the soil and environment.

According to Figure 1, most of the participants recognized several diseases in these animals, although with popular names such as the "nasal mucus" (Glanders), Equine Infectious Anemia (EIA), Farcy or Droes (habronemiasis), "blinding plague" (equine encephalitis), and equine influenza. MORAES (2011) used a questionnaire to collect data from Equidae breeders and observed that 52% of them had not yet heard about glanders, reaffirming the need for the intensification of health education in this population. In Brazil, animal health has been an instrument provided for since the establishment of Decree Nº 24.548 of July 3, 1934, which establishes the fight against infectious and parasitic diseases.

Figure 2 shows that 30% (15/50) of the interviewees recognized cough and nasal mucus, wounds on the limbs, and skin ulcers as being symptoms of Equidae diseases. According to IN N° 50, of 24/09/2013, any suspicion or occurrence of disease in animals should be notified immediately to the Official Veterinary System (*Sistema Veterinário Oficial* - SVO) within 24 hours of their knowledge.

According to Figure 3, regarding the damage caused by glanders, 18% (9/50) of the interviewees admitted that the

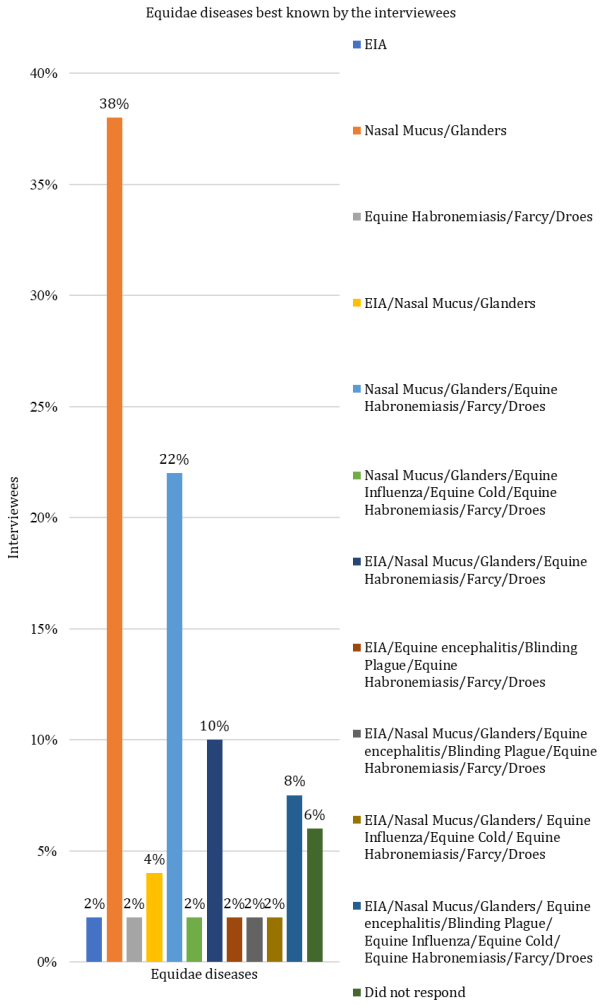

Figure 1. Equidae diseases best known by the interviewees.

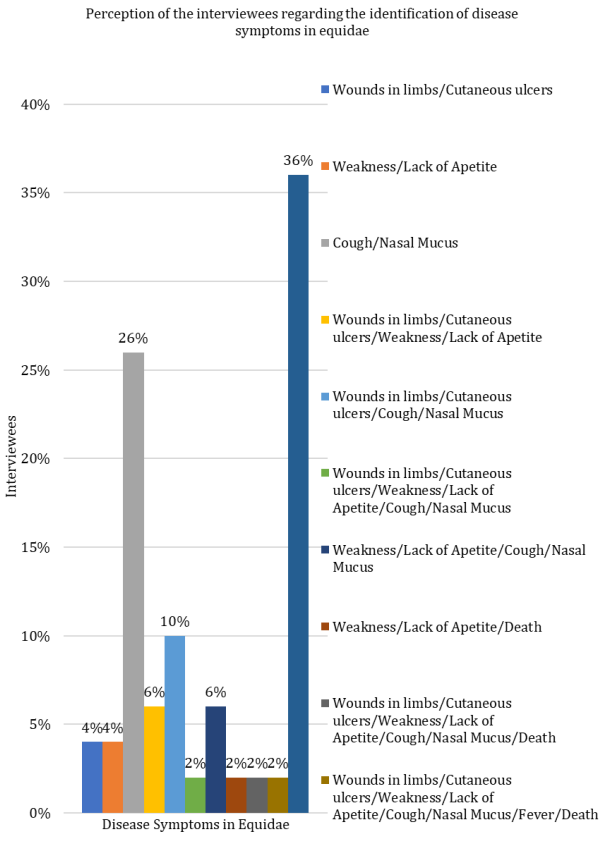

Figure 2. Perception of the interviewees regarding the identification of disease symptoms in Equidae.

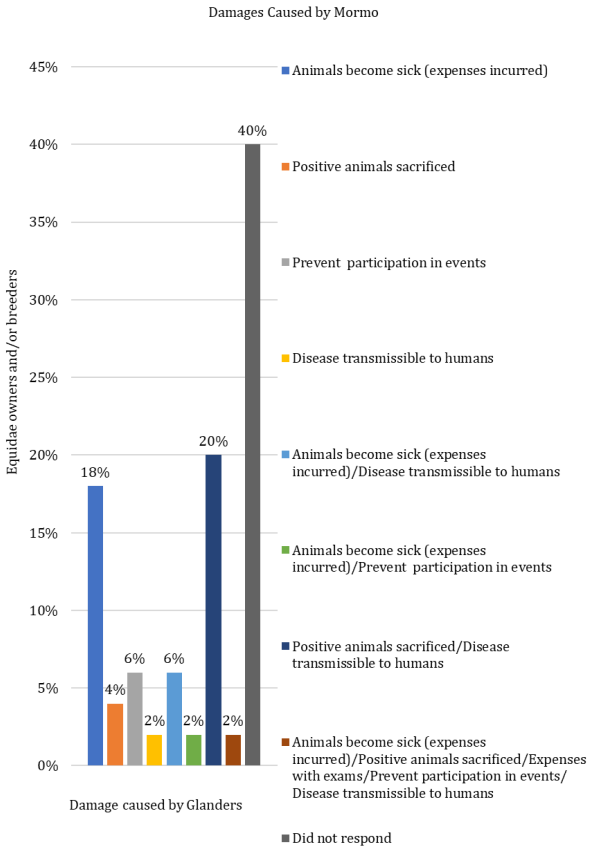

Figure 3. Damage caused by glanders.

animals may get sick, leading to expenses associated with medications, and 20% (10/50) of them recognized that sick animals will be euthanized, and the disease can be transmitted to humans. CUPELLO (2020), through a survey with rural family producers, found that more than half of the interviewees knew about glanders; however, they were unaware of its zoonotic nature. Accordingly, IN N° 06 of January 16, 2018, recommends that animals with positive laboratory results for glanders should be euthanized and destroyed within 15 days of the owner's notification.

CONCLUSIONS

Breeders and/or owners of Equidae need more precise guidance on the correct disposal of animal carcasses and the epidemiological repercussion of soil and water table contamination, which can lead to dreadful public health consequences. Furthermore, regarding the mandatory notification Equidae diseases, in addition to the intensification of epidemiological surveillance activities, the implementation of a proactive surveillance system with the producer, training him as a voluntary assistant of the health defense service, and with the application of specific methodologies for the municipality of Soure, for example, it is important to prepare educational videos, informative technical pamphlets, and posters that address certain aspects of the disease in animals and human beings, as well as the prevention of the disease and its associated damages.

The non-registration of Equidae breeders and/or owners is an obstacle to the execution of the actions of the NEHP, especially with regard to the adoption of mechanisms that ensure the health of the equine herd and the health of human beings.

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